



***JOINT VALIDATION & VERIFICATION REPORT***  
***Treatment of non-hazardous industrial waste to***  
***obtain Biocompost***

*PROJECT ID: BCR-AR-763-13-001*



***ASOCIACIÓN DE NORMALIZACIÓN Y CERTIFICACIÓN***

## Validation & Verification Report

Project Title	Treatment of non-hazardous industrial waste to obtain Biocompost.
Project ID	BCR-AR-763-13-001
Project holder	WORMS ARGENTINA S.A.
Project Type/Project activity	Manejo y disposición de residuos / Uso o Reemplazo de tecnología para eliminar o disminuir la generación de GEI en sistemas de tratamiento de residuos sólidos
Grouped project	Does not apply
Version number of the Project Document to which this report applies	Version 2.
Applied methodology	AMS.III.F, Avoid methane emissions through composting, Version 12.0 - Sectoral scope(s): 13.
Project location	Country: Argentina Region: Santa Fe City: Arroyo Seco
Project starting date	01/04/2018
Quantification period of GHG emissions reductions/removals	01/04/2018 to 31/12/2027
Estimated total and mean annual amount of GHG emission reductions/removals	Total estimated GHG reductions: <b>132,998 tCO<sub>2</sub>e</b> Average annual GHG reductions: 13,300 tCO <sub>2</sub> e/year
Monitoring period	01/04/2018 to 31/12/2022
Total amount of GHG emission reductions/removals	Total reductions: <b>57,495 tCO<sub>2</sub>e</b> Annual average: 11,499 tCO <sub>2</sub> e/year
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.

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	13. Take urgent action to combat climate change and its impacts.
Special category, related to co-benefits	Does not apply
Version and date of issue	Version 1.0
Work carried out by	Chief Verifier: Excalibur Acosta. Verifier: Nancy Adriana Barrera Independent Reviewer: Janai Monserrat Hernández
Approved by	Joel Miguel Ramirez.

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## 1 Executive summary

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The project Treatment of non-hazardous industrial waste to obtain Biocompost, proposed by Worms Argentina S.A., belongs to the Waste management and disposal sector, focused on the treatment of non-hazardous organic waste from biodiesel, oil and cellulose plants, dairy industry, breweries and agroindustries that produce GHG in the industrial belt region of Greater Rosario (Rosario - San Lorenzo - Puerto General San Martín - Timbúes), capacity of 2,450.82 tons per month average, applying composting. The accreditation period is contemplated for 10 years. The AMS.III.F methodology, Avoid methane emissions through composting, Version 12.0, has been applied to calculate the estimated reduction of GHG emissions.

The scope of the GHG project Validation and Verification is under the BioCarbon Registry includes GHG project boundaries, physical infrastructure, activities, technologies and processes, GHG sources, GHG types and reporting period (01/04/2018 to 31/12/2022). For GHG declarations containing emission reductions it includes the material side effects, baseline (verification) and baseline (validation) scenarios described in the Validation and Verification Plan (FOROVV-P01.26).

ANCE conducted a validation and documentary verification with a duration of seven working days, prior to the site visit of the GHG reduction project prepared by Worms Argentina S.A., under an approach based on the existing risk analysis of incurring errors, omissions or misrepresentations by the organization. The site visit took place on December 5 and 6, 2023.

The activities associated with the documentary verification included: a sampling plan, risk analysis of the sampled sources, verification plan and a reproduction of the emission calculations considering emission factors, global warming potentials, conversion factors and calorific powers; analyzing in turn, the consistency of the energy consumption data collected according to the calculation base and complementary documents provided by the organization, through Worms Argentina S.A.

During the review of the information, ANCE found 8 findings: 3 corrective actions and 5 qualifications. After reviewing the documentation and explanations provided by the project owner, all findings were closed in a clear and transparent manner.

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## 2 Objective, scope and criteria

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The main objective of the validation and verification audit was to evaluate the controls associated with the information system and the data related to the Greenhouse Gas (GHG) emission reductions reported by WORMS ARGENTINA S.A. This evaluation was carried out by reviewing the input information during the documentary and on-site phase activities, with the purpose of:

- Confirm that the project, its activities, methods and procedures, as described in the PDD WORMS /I/ document and its corresponding annexes, comply with the criteria established in section 2.3 of this report.

- Verify that the information related to the declaration of the GHG project and the Emission Sources associated to it, are duly supported.
- Ensure that information on reported GHG emission reductions consistently demonstrates the veracity of such reductions.

In summary, the validation and verification audit focused on ensuring the integrity and reliability of the information related to the project and its impacts on GHG emissions, ensuring compliance with the standards established in section 2.3 of the report.

The scope of the Project Validation and verification is in accordance with the BCR Standard Version 3.2. September 23, 2023 and based on the criteria of ISO 14064-2:2019 and the rules, procedures, methodologies and methodological tools of the Clean Development Mechanism: AMS.III.F, Avoid methane emissions through composting, Version 12.0 - Sectoral scope(s): 13.

### 3 Validation and verification planning

#### 3.1 Validation and verification plan

The Validation and Verification Plan for the Treatment of non-hazardous industrial waste to obtain Biocompost project was executed in accordance with the BCR Version 3.2 scope, September 23, 2023, and those established in the ISO 14064-3 standard. This covers the limits of the project that focuses on the treatment of non-hazardous industrial waste to obtain Biocompost, as well as the physical infrastructure, activities, technologies and processes, Greenhouse Gas Emission Sources, types of Greenhouse Gases (GHG) and the monitoring report, the Evidence Collection Plan (sampling), risk analysis, audit team, level of assurance, materiality, validation and verification criteria and activities.

Table 1. Project boundary.

PROJECT BOUNDARY								
GHG sources, sinks and reservoirs (SSRs) or project technologies	Reduction of emission			Increase of removal				
	Direct	Indirect		Direct	Indirect			
Landfill	X			N.A.	N.A.			
Composting site (CH <sub>4</sub> )	X			N.A.	N.A.			
Composting site (N <sub>2</sub> O)	X			N.A.	N.A.			
Mobile equipment	X			N.A.	N.A.			
Others for electrical energy consumption		X		N.A.	N.A.			
Types of GHGs included in the GHG statement:	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFC	PFC	NF <sub>3</sub>	SF <sub>6</sub>	
Data provenance for baseline scenario and GHG project baseline:	Historical data for one year ( X )			Historical data for an average of several years ( )				

Regarding the duration of the Validation and Verification activities, ANCE provided a schedule of activities with the duration of the activities:



Table 2. Validation / verification activities

Activity	Responsible	Duration (days)
Elaboration of internal No COI Matrix	ANCE	3
Request for GHG declaration and supporting information.	ANCE	1
Submission of supporting information	WORMS	2
Documentary verification	ANCE	7
Development of Risk Analysis/Evidence Gathering Plan (sampling)	ANCE	2
Preparation and Submission of Verification/Verification/Validation Plan	ANCE	2
On-site Verification/Validation and Submission of Findings Report	ANCE – WORMS	2
Delivery of Findings Report	ANCE	1
Client's attention to findings	WORMS	30
Analysis of findings attention by OVV	ANCE	30
Preparation and submission of Consolidated Findings Report	WORMS	5
Validation/Verification of Findings Report	WORMS	3
Elaboration and sending of draft Statement/Opinion and V/V Report	ANCE	7
Vo.Bo. of the draft by the Client	WORMS	3
BioCarbon Registry technical review	BCR	N.D.
Signature and delivery of Verification Statement/Opinion and Verification Report (digital)	ANCE	N.D.

### 3.2 Audit team

Table 3. Validation / verification team

Validation / verification team		Activities
<b>Lead Validator/Verifier</b> (in testifying Waste handling and disposal sector)	Excalibur Ernesto Acosta Miranda	Documentary information review Site visit Preparation of Validation and Verification Report Documentary information review
<b>Validator/verifier:</b> (in testifying Waste handling and disposal sector)	Nancy Adriana Barrera Gómez	Documentary information review
Independent Reviewer		
<b>Revisor independiente:</b> (in testifying Waste handling and disposal sector)	Janai Monserrat Hernández Contreras	Independent technical review

ANCE is committed to compliance with the BCR Anti-Corruption Policy described in section 8.2. 4 of the BCR Standard Validation and Verification Manual, with the intention of strengthening compliance with this policy ANCE performed the corresponding risk analysis through the Risk Identification and Mitigation Matrix identified as Internal COI Analysis\_WORMS, with the

intention of determining that there are no conflict of interest, impartiality and operational risks that prevent the execution of the verification process in an impartial manner, as well as the determination of applicable safeguards and mitigation measures.

### 3.3 Level of assurance and materiality

The activities corresponding to the GHG Project Declaration Validation/Verification Body focused on the validation and verification of the PDD of the Project Treatment of non-hazardous industrial waste to obtain Biocompost developed by WORMS ARGENTINA S.A. /I/, under a reasonable assurance level ( $\geq 95\%$ ) and a materiality of 5%, complying with the requirements of ISO 14064-3:2019 and ISO 14065:2013 standards and the provisions of the BCR Standard Project Validation and Verification Manual version 2.3, point 10.2.5 Assurance level and materiality:

- (a) the level of assurance of validation and/or verification of the GHG Project shall not be less than 95%,
- (b) the material discrepancy of the data supporting the project baseline and the estimated GHG emission reductions or removals may be up to  $\pm 5\%$ .

### 3.4 Sampling plan

According to the Validation/Verification Plan (see table 4), once the project limits were defined, a Sampling Plan was established for the years to be verified (01/04/2018 to 31/12/2022) and for the Project accreditation period (01/04/2018 to 31/12/2027). This plan identifies the project's emission sources, the type of fuel used and the activity that generates the greenhouse gas (GHG) emission reductions, including the amount generated and its respective percentage of significance, which must be equal to or greater than 95%. Those identified with blue color are the ones that should be checked mainly, considering a percentage of emissions covered on site of 99.82%, later, after the site visit it was observed that gasoline was not part of the project scope, so those emissions were discarded, so in the end the 100% review was considered.

As part of the Validation and Verification activities for the collection of evidence, the following techniques were considered for application:

- Observation: is the ocular evaluation carried out to make sure how the operations are executed;
- Recalculation: analysis based on the calculation tools applied.

*Table 4. SSRs de reducción de emisiones y su porcentaje de contribución al total de emisiones*

Year	Emission Source, Baseline Scenario	Emission Source, Project Scenario	Reductions t CO <sub>2</sub> e	Representative percentage %
2018	Landafill	Composting site (CH <sub>4</sub> )	5034	4%

Year	Emission Source, Baseline Scenario	Emission Source, Project Scenario	Reductions t CO <sub>2</sub> e	Representative percentage %
2019		Composting site (N2O)	13870	10%
		Mobile equipment		
		Others for electricity consumption		
	Landafill			
		Composting site (CH4)		
2020		Composting site (N2O)	11372	9%
		Mobile equipment		
		Others for electricity consumption		
	Landafill			
		Composting site (CH4)		
2021		Composting site (N2O)	12120	9%
		Mobile equipment		
		Others for electricity consumption		
	Landafill			
		Composting site (CH4)		
2022		Composting site (N2O)	15099	11%
		Mobile equipment		
		Others for electricity consumption		
	Landafill			
		Composting site (CH4)		
2023		Composting site (N2O)	15101	11%
		Mobile equipment		
		Others for electricity consumption		
	Landafill			
		Composting site (CH4)		
2024		Composting site (N2O)	15101	11%
		Mobile equipment		
		Others for electricity consumption		
	Landafill			
		Composting site (CH4)		
2025		Composting site (N2O)	15101	11%
		Mobile equipment		
		Others for electricity consumption		
	Landafill			
		Composting site (CH4)		
2026		Composting site (N2O)	15101	11%
		Mobile equipment		
		Others for electricity consumption		
	Landafill			
		Composting site (CH4)		

Year	Emission Source, Baseline Scenario	Emission Source, Project Scenario	Reductions t CO <sub>2</sub> e	Representative percentage %
	Landafill			
		Composting site (CH4)		
2027		Composting site (N2O)	15101	11%
		Mobile equipment		
		Others for electricity consumption		

## 4 Validation and verification procedures and means

### 4.1 Preliminary assessment

ANCE conducted a documentary verification with a duration of seven (7) working days, prior to the site visit of the Project Treatment of non-hazardous industrial waste to obtain Biocompost developed by WORMS ARGENTINA S.A. The activities associated with the documentary review included: a sampling plan, risk analysis of the sampled sources, verification plan and a reproduction of the emission calculations considering emission factors, global warming potentials, conversion factors and calorific powers, the application of the AMS methodology. III.F, Avoid methane emissions through composting, Version 12.0; analyzing in turn, the consistency of the data collected in accordance with the calculation base and complementary documents provided by the organization, through POLARIS NETWORK ESPAÑA SL as developer; the documentation presented is listed as follows.

### 4.2 Document review

- /I/ Project Description Document version 1 (PDD-Worms-Solid V2.doc);
- /II/ Emission Reduction Spreadsheet (WORMS solid V2.xlsx);
- /III/ Sealing and verification report (OTN° 307-15719 y 28315) – 2019, 2021 y 2022;
- /IV/ Fuel consumption billing records 2020;
- /V/ Fuel consumption billing records 2021;
- /VI/ Fuel consumption billing records 2022;
- /VII/ Electricity consumption invoices, supplier Empresa Provincial de la Energía de Santa Fe (2018 - 2022);
- /VIII/ Annual revenue control (2018 - 2022);
- /IX/ Bitacoras of waste as raw material for composting 2018 (April to December);
- /X/ Bitacoras of waste as raw material for composting 2019 (January to December);
- /XI/ Bitacoras of waste as raw material for composting 2020 (January to December);
- /XII/ Bitacoras of waste as raw material for composting 2021 (January to December);

- /XIII/ Bitacoras of waste as raw material for composting 2022 (January to December);
- /XIV/ Calculation of the CO2 Emission Factor of the Argentine Electric Power Grid, Energy Data  
- Calculation of the CO2 Emission Factor of the Argentine Electric Power Grid  
(energia.gob.ar);
- /XV/ Records of Emission Factors of the Wholesale Electricity Market of Argentina, Emission  
Factor | CAMMESA;
- /XVI/ CO2 emissions calculated on the basis of retail sales of liquid fuels in EESS - año 2018.  
Government Secretary of Energy, Argentina;
- /XVII/ Joint Resolution 1/2019, RESFC-2019-1-APN-SECCYMA#SGP;
- /XVIII/ Amendment record - compost - solids (Tramite en proceso, 2023)
- /XIX/ PE-8.2 Compost quality control (pdf)
- /XX/ PE-8.2-01 Effluent discharge procedure (.pdf)
- /XXI/ PE-8.2-02 Transport entry control instructions (.pdf)
- /XXII/ PE-8.2-04 Instructions for waste acceptance for composting (.pdf)
- /XXIII/ Billing of electric energy consumption (01/04/2018 to 31/12/2022)
- /XXIV/ Invoicing of diesel consumption (01/04/2018 to 31/12/2027)
- /XXV/ Monitoring Report Template (Version 2.0) of the Project Treatment of non-hazardous  
industrial waste to obtain Biocompost (BCR\_Monitoring-Report-solid2023.doc)
- /XXVI/ Diesel and Electric Energy Consumption File, Actual Fuel Used (xlsx)
- /XXVII/ DGD Tool: SDG-Tool-2023-WORMS Solid (SDG-WORMS solid V2.xlsx)
- /XXVIII/ Decree (PEP) 2151/14. From 17/07/2014. B.O.: 05/08/2014. Non-Hazardous Waste.
- /XXIX/ LAW ON MINIMUM BUDGETS FOR ADAPTATION AND MITIGATION TO GLOBAL CLIMATE  
CHANGE, Law 27520.

**Methodologies reviewed;;**

- /a/ AMS-III.F., Small-scale methodology: Avoidance of methane emissions through  
composting. Version 12.0;
- /b/ Tool 04 - Methodological tool - CDM, Emissions from solid waste disposal sites. Version  
08.1;
- /c/ Tool 13 - Methodological tool - CDM, Project and leakage emissions from composting.  
Version 02.0;

- /d/ Methodological tool, Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation, Version 03.;
- /e/ Methodological tool, Tool to calculate project or leakage CO2 emissions from fossil fuel combustion, Version 03.;
- /f/ Methodological tool - CDM, Demonstration of additionality of small scale project activities. Version 13.1;
- /g/ Methodological tool ,Tool for the demonstration and assessment of additionality Version 07.0;
- /h/ Annex 27 - CDM GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES. Version 09.0;
- /i/ Annex 7 - CDM GUIDELINES ON ADDITIONALITY OF FIRST-OF-ITS-KIND PROJECT ACTIVITIES. Version 02.0;

### 4.3 Interviews

The following table shows the people who have been in direct contact with ANCE during the validation and verification process:

Name	Position and/or area	Process/activity or associated input	Interview in
Marcos Méndez	Project Developer – Polaris	Project Description Tour of the project facilities Methodologies Monitoring plan Sustainable development Environmental impact and Baseline and monitoring	Remote
Andres Beltramo	Commercial Manager	Collection and safekeeping of non-hazardous waste manifests and shipments Consultation with local stakeholders Argentine regulatory framework	On-site
Berlits López Camargo	Technical laboratory manager	Parameters and quality control of the composting process	On-site
Víctor Lepera	Commercial Manager	Strategic Process Management	On-site
Fernando Molinari	RRII	Carbon market advisor	On-site

### 4.4 On-site visit

An on-site visit was conducted by the lead evaluator on December 5 and 6, 2023. This visit included a tour of the facilities of the Treatment of non-hazardous industrial waste to obtain Biocompost Project, as well as the visit to obtain solid waste and all the composting processes, so the weighing scale, the waste storage yard, the compost piles, the quality laboratory and the

storage yard were visited. The purpose of this visit was to resolve questions and issues identified during the desk review and to obtain additional information on the project's compliance with the relevant criteria applicable to the BCR Standard. The assessment team has conducted interviews between December 5 and 6, 2023 with operational staff, the project owner and the project developer to assess the information included in the project documentation.

#### **4.5 Clarification, corrective and forward actions request**

During the documentary review and on-site inspection carried out by ANCE, the information supporting the statements in the Project Document Treatment of non-hazardous industrial waste to obtain Biocompost was reviewed, considering the Methodological tool, Emissions from solid waste disposal sites. Version 08.1 /b/ and the BCR Standard. Derived from the review ANCE found findings categorized as shown below and as specified in Annex 2. Clarification requests, corrective action requests and forward action requests.

##### **4.5.1 Clarification requests (CLs)**

Annex 2 of this report describes the results and the responses provided by the project owner to the five requests for clarification (5 CL) generated by the evaluation team during the validation and verification of the Document Treatment of non-hazardous industrial waste to obtain Biocompost project, as well as the concluding responses provided by the project owner to these queries.

##### **4.5.2 Corrective actions request (CARs)**

Annex 2 of this report describes the results and the responses provided by the project owner to the three corrective action requests (3 CARs) generated by the evaluation team during the validation and verification of the Document Treatment of non-hazardous industrial waste to obtain Biocompost project, as well as the concluding responses provided by the project owner to these queries.

##### **4.5.3 Forward action request (FARs)**

Not applicable, during the validation and verification process there was no request for corrective actions.

A total of 8 findings, 5 clarifications and 3 corrective actions were established as a result of the Validation and Verification audit. Annex 2 shows the report on the findings established by ANCE and the resolution carried out by the project proponent.

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## **5 Validation findings**

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The validation process was carried out considering the BCR Standard Version 3.2, the GHG Project Validation and Verification Manual version 2.3, in addition to the stipulations of ISO 14064-2:2019 and the internal procedures of the ANCE Validation and Verification Body. During the validation and verification process of the Treatment of non-hazardous industrial waste to obtain

Biocompost project, a seven-day documentary review was carried out, followed by an on-site inspection visit on December 5 and 6. As a result of the aforementioned reviews, 8 findings were established, of which the following are related to the validation process:

No.	Reference to noncompliance	Description of finding	Type of Nonconformity: (CAR, CL, FAR)
3	6.6 Selection of GHG SSRs for monitoring or estimation of GHG emissions and removals, Standard 14064 part 2, 2019.	During the validation and verification of the Project, it was found that diesel and gasoline consumption reported in the invoices (PLANILLA COMBUSTIBLE.xlsx) and energy consumption are overestimated and not adjusted to the project limit, so it is necessary to record the energy consumption based on the declaration of the project limit and scope.	CL
4	2.2 Objective	Correct the wording of the Project Objective in accordance with the BCR Standard: "It is important to note that the project objectives should be consistent with the proposed activities and the expected GHG mitigation results", so it is necessary that the focus is directed to the Project and not to the organization.	CAR
5	3.1.1 Conditions of applicability of the methodology	Clarify the applicability of the methodologies used for the Project's emissions reduction. In the PDD there is a replication of the paragraphs of the methodology without reflecting the application of each one.	CL
6	3.2.3 Time frames and analysis periods	Clarify the specific period covered by the Project considering that it will last 10 years.	CL

## 5.1 Project description

The project Treatment of non-hazardous industrial waste to obtain Biocompost consists of the treatment of non-hazardous waste from biodiesel, oil and pulp plants, dairy industry, breweries and agro-industries in the area surrounding Worms. ANCE as validating and verifying agency assessed the project according to BCR Standard 10.1.5 Activities related to waste management and disposal, being a project considered with the activity Use or Replacement of technology to eliminate or reduce GHG generation in solid waste treatment systems. F, Avoid methane emissions through composting, Version 12.0 /a/, so these methodology requirements were considered for the estimation of emission reductions.

During the evaluation, it was observed that in the property where the Project is located there are all the operations related to the treatment of solid waste starting with the waste reception area where a review of the shipments and/or manifests of the input is performed, it is worth mentioning that the waste generators have the obligation according to the government regulations of Argentina to manage non-hazardous waste, from its generation to its final disposal (Decree (PEP) 2151/14. From 17/07/2014. B.O.: 05/08/2014. Non-Hazardous Waste.)/XXVIII/. Worms serves as a final disposal company by treating non-hazardous waste with composting and vermicomposting technologies, resulting in a new product and eliminating the waste, giving rise to a circular economy process. Worms weighs the waste to check the weight recorded on the



shipment and/or manifest provided by the carrier (procedure PE-8.2-02). Once the cargo transport has been checked, the process input is entered; however, it is not considered suitable for processing until it is subjected to laboratory tests to rule out any hazardous characteristics or that it does not comply with Worms' processes (Procedure PE-8.2-04) /XXII/. The weight data recorded on the consignment and/or manifest is considered a monitorable variable and is entered into the equation of the aforementioned methodology.

Subsequently, the technician in charge of the composting process prepares the compost piles, open-pit and vermicompost. The compost manager ensures that the quality of the compost complies with what is necessary for the process to be efficient and comply with Argentina's operating regulations (P-8.2 Quality controls for compost production)/XIX/:

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

For the vermicomposting process, the same principles of input acceptance as described above apply; however, the composting process has the following characteristics:

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

It is important to mention that, during the on-site inspection, neither methane flaring nor any energy recovery from the treatment was ruled out for both processes.

## 5.2 Project type and eligibility

During the validation and verification process, ANCE evaluated the following criteria based on observation, interviews and review of Project information.

*Table 5. Project type and eligibility*

Eligibility criteria	Evaluation by validation body
Scope of the BCR Standard	During the evaluation of the Treatment of non-hazardous industrial waste to obtain Biocompost project, it was validated that the emission reductions are derived from the treatment of waste (non-hazardous), so the project owner conducted the analysis according to the methodology AMS.III.F, Avoid methane emissions through composting, Version 12.0 /a/, which is allowed by

Eligibility criteria	Evaluation by validation body
	the BCR standard, so that the estimate of emissions and emission reductions is limited to CO <sub>2</sub> , CH <sub>4</sub> , and N <sub>2</sub> O.
<b>Project type</b>	During the on-site inspection, it was validated that the project corresponds to the Waste Sector, for the treatment of non-hazardous waste by composting.
<b>Project activity(es)</b>	It was validated that the project activity corresponds to the Use or Replacement of technology to eliminate or reduce GHG generation in solid waste treatment systems, an activity that corresponds to CDM Sector 13: Waste Management and Disposal. During the interviews and through observation, it was validated that the project has replaced landfill disposal with composting technology, thus contributing to the reduction of GHG emissions.
<b>Project scale (if applicable)</b>	Small scale, according to the methodology.

### 5.3 Grouped project (if applicable)

Through ANCE's evaluation of the project, it was noted that the project is not clustered.

### 5.4 Other GHG program

During the documentary review and on-site inspection interviews, it was validated that the Project.

### 5.5 Quantification of GHG emission reductions and removals

ANCE performed the evaluation of the GHG emissions reduction calculation according to VVM 10.3.2 Means of verification and the methodology AMS.III.F, Avoid methane emissions through composting, Version 12.0. /a/, in addition, the analysis of the calculation file used by the project proponent (WORMS solid V2.xlsx) was performed. The analysis begins by considering the following equation:

$$ER_y = BE_y - (PE_y + LE_y)$$

Where:

*ER<sub>y</sub>*: Emission reductions in the year y (tCO<sub>2</sub>e)

*BE<sub>y</sub>*: Baseline emissions in year y (tCO<sub>2</sub>e)

*PE<sub>y</sub>*: Project emissions in the year y (tCO<sub>2</sub>e)

*LE<sub>y</sub>*: Leakage emissions in the year y (tCO<sub>2</sub>e)

The following steps were carried out to evaluate the above equation and calculate the estimated emissions in the Project:

#### Step 1. Identification of baseline variables

For the determination of the baseline, the project proponent used the equation described in the AMS.III.F methodology, Avoid methane emissions through composting, Version 12.0.:

$$BE_y = BE_{CH_4,SWDS,y} + BE_{ww,y} + BE_{CH_4,manure,y} - MD_{y,reg} \times GWP_{CH_4}$$

Where:

Variable	Concept	Assessment
$BE_y$	Baseline emissions in year y (tCO <sub>2</sub> e)	
$BE_{CH_4,SWDS,y}$	Annual potential methane generation from solid waste composted by the project activity during years x from the start of the project activity (x=1) to year y (tCO <sub>2</sub> e).	The project proponent applied the stipulations of the methodological tool "Emissions from solid waste landfills".
$BE_{ww,y}$	If applicable, baseline emissions of the co-composted wastewater, calculated according to AMS-III.H procedures. (tCO <sub>2</sub> e)	ANCE validated that the project scope does not contemplate wastewater treatment.
$BE_{CH_4,manure,y}$	If applicable, baseline emissions of composted manure from project activities, according to AMS-III.D procedures. (tCO <sub>2</sub> e).	ANCE validated that the project scope does not include manure treatment.
$MD_{y,reg}$	Amount of methane that would have to be captured and flared in the year and to comply with current regulations (ton).	ANCE validated that the project scope does not consider methane flaring.
$GWP_{CH_4}$	Global warming potential of methane	28

## Step 2. Determination of the annual methane generation potential.

The project proponent calculated the annual methane generation potential according to the Methodological Tool, Emissions from solid waste disposal sites V. 8.1 /b/, considering the following constants for the determination of the baseline emissions:

Variable	Concept	Assessment
$x$	Years of the time period in which waste is disposed at SWDS, from the first year of the time period (x = 1) to year y (x = y).	ANCE validated what is established in the PDD /I/ of the Project regarding the durability of the project, which is 10 years.
$y$	Year of the crediting period for which methane emissions are calculated (y is a consecutive 12-month period).	
$DOC_{f,y}$	Fraction of degradable organic carbon (DOC) that decomposes under the specific conditions given in the SWDS for year y (fraction by weight).	To obtain the Determination of the fraction of DOC that breaks down in the SWDS, the project proponent used Application B (0.5) non-monitorable value, ANCE agrees with the value.
$\varphi_y$	Model correction factor to account for model uncertainties for year y.	The project proponent used option 1 of the calculation options for the Model Correction Factor Determination (0.85), it is considered as a non-monitorable value. ANCE agrees with the value.

Variable	Concept	Assessment
$OX$	Oxidation factor (reflects the amount of methane in SWDS that is oxidized in soil or other material covering the waste).	The project proponent used the default value of the tool (0.1). ANCE agrees with the value.
$f_{,y}$	Fraction of methane captured in SWDS and flared, flared, or otherwise used in a manner that avoids methane emissions to the atmosphere in year y.	ANCE validated that the Project does not include flaring or any energy use of methane in the scope.
$F$	Fraction of methane in SWDS gas.	
$MCF_y$	Methane correction factor for year y	The project proponent used the default value for anaerobically managed solid waste landfills (1), a non-monitorable value. ANCE agrees with the value.
$DOC_j$	Fraction of degradable organic carbon in waste type j (fraction by weight)	ANCE validated the use of the default value (15%) of $DOC_j$ considering that the waste treated is similar to Food, food, beverage and tobacco waste (other than sludge).
$k_j$	Decomposition rate of waste type j (1/year)	ANCE validates the use of the default value (0.185), the site is in a mostly temperate location.
$j$	Type of waste or waste types in MSW	The treatment of one type of waste is validated.
$GWP_{CH_4}$	Global warming potential of methane	28

### Step 3. Quantification of solid waste

The project owner keeps track of the amount of non-hazardous solid waste entering the process through manifests and shipments, this activity is part of the Argentine regulation (<https://www.argentina.gob.ar/normativa/nacional/ley-25612-76349>), so these documents have official validity. The project holder files these documents and the quantities are placed in electronic files on a monthly basis with the following name XX - Control Camiones Abril 20XX.xlsx (considering that the accreditation of the project is 01/04/2018 to 31/12/2027). The project proponent uses the monthly summation of the amount of non-hazardous waste from manifests and shipments. This data is subject to constant monitoring. ANCE agrees with the collection of this data.

### Step 4. Quantification of the project's emissions from electricity consumption

The owner of the Project does not have direct measurements of electricity consumption; therefore, to determine the Project's emissions, an estimate was made based on the equipment and lighting fixtures that use electricity. To carry out the quantification, the Tool to calculate baseline, project and/or leakage emissions from electricity consumption /d/ was applied.

To calculate emissions from electricity consumption, the project owner used the emission factors published by the Wholesale Electricity Market (Emission Factor | CAMMESA) /XV/. ANCE validated the data used.

### Step 5. Quantification of project emissions from fossil fuel consumption

The owner of the Project does not have direct measurements of diesel consumption, so to determine the Project's emissions, an estimate was made according to the equipment and mobile sources that consume the fuel. To carry out the quantification of emissions, the Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion /e/ was applied. ANCE validated the estimate made by the project owner to obtain diesel consumption.

Regarding the use of the emission factor, the emission factor published in the document Emisiones de CO<sub>2</sub> calculadas a partir de las ventas al público de combustibles líquidos en EESS - año 2018 was used. Secretaria de Gobierno de Energía, Argentina: 2.61 kgCO<sub>2</sub>/l.

### Step 6. Quantification of the project's emissions from composting

The project proponent applied the tool "TOOL04 Methodological tool Emissions from solid waste disposal sites, Version 08.1 /b/ for the estimation of project emissions, considering the variable factors described in step 2, with the variable to be monitored being the amount of non-hazardous waste entering the composting plant.

### Step 7. Calculation of GHG emissions reductions

Considering the equation for calculating emission reductions described in methodology /a/:

$$ER_y = BE_y - (PE_y + LE_y)$$

The project proponent calculated the baseline according to the methodology /a/, where:

$$BE_y = BE_{CH_4,SWDS,y}$$

The calculation was performed for the years covered by the project accreditation 01/04/2018 to 31/12/2027.

ANCE validated that the Project has not been transferred from another activity nor is the existing equipment being transferred to another activity, furthermore, the compost is not being subjected to anaerobic storage or disposed of in a SWDR. Therefore, for this project there is no leakage.

$$LE_y = 0$$

The project proponent calculated the project emissions according to the methodology Project and leakage emissions from composting /c/ considering the following equation:

$$PE_{COMP,y} = PE_{EC,y} + PE_{FC,y} + PE_{CH_4,y} + PE_{N_2O,y} + PE_{RO,y}$$

Variable	Concept	Assessment
$BE_{PE_{COMP},y}$	Project emissions associated with composting in year y (t CO2e/year)	
$PE_{EC,y}$	Projected emissions from electricity consumption associated with composting in year y (t CO2/year)	ANCE validated the calculation of estimated emissions from estimated electricity consumption as described in Step 4.
$PE_{FC,y}$	Project emissions from fossil fuel consumption associated with composting in year y (t CO2/year)	ANCE validated the calculation of estimated emissions from estimated diesel consumption as described in Step 5.
$PE_{CH_4,y}$	Projected methane emissions from the composting process in year y (t CO2e/year)	The project owner calculated the project emissions estimate using the amount of waste input and recorded through manifests and shipments. The information described in Step 2, 3 and 6 was used.
$PE_{N_2O,y}$	Projected nitrous oxide emissions from the composting process in year y (t CO2e/year)	
$PE_{RO,y}$	Projected methane emissions from wastewater runoff associated with co-composting in year y (t CO2e/year)	The project scope does not include wastewater treatment.

The project proponent performed the emissions estimation calculation considering the steps described above, ANCE proceeded to analyze and replicate the calculation, obtaining the following.

Table 6. Reducciones de emisiones del Proyecto

Año	ANCE	WORMS
2018	5,034	5,034
2019	13,870	13,870
2020	11,371	11,372
2021	12,120	12,120
2022	15,100	15,099
2023	15,101	15,101
2024	15,101	15,101
2025	15,101	15,101
2026	15,101	15,101
2027	15,101	15,101
<b>Total</b>	<b>132,998</b>	<b>132,999</b>
	<b>% Materialidad:</b>	<b>0.00</b>

#### 5.5.1 Start date and quantification period

During the validation and verification of the Project it was observed that the start of operations of the Project was on 01/04/2018, this was observed in the non-hazardous waste registration logs in conjunction with the shipments and manifests on file.

The accreditation period of the Project is from 01/04/2018 to 31/12/2027, contemplating 10 years of durability, declaring an emissions reduction of 135,719. This data was validated by ANCE reporting a materiality of 0.00% and a reasonable assurance level.

### 5.5.2 Application of the selected methodology and tools

#### 5.5.2.1 Title and Reference

The approved UNFCCC methodology for baseline, project emissions and monitoring is AMS-III.F. "Small-scale methodology Avoidance of methane emissions through composting" (version 12.0) /a/ has been applied by the GHG mitigation project.

In addition, the project activity also uses the following tools:

- Methodological tool - CDM, Project and leakage emissions from composting. Version 02.0; /c/
- Methodological tool - CDM, Emissions from solid waste disposal sites. Version 08.1 /b/;
- Tool to calculate baseline, project and/or leakage emissions from electricity consumption /d/;
- Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion /e/;

#### 5.5.2.2 Applicability

The project activity meets the applicability criteria of the /a/ methodology as the project consists of controlled aerobic treatment by composting of non-hazardous waste, and the project activity does not recover or flared gas. ANCE validated and verified this assertion as follows:

*Table 7. Applicability*

No.	Applicability	Evaluation by ANCE
2.	This methodology includes measures to avoid methane emissions to the atmosphere from biomass or other organic matter that would otherwise have been left to decompose anaerobically in a solid waste landfill (SDS), or in an animal waste management system (AWMS), or in a wastewater treatment system (WTS). Controlled aerobic treatment by biomass composting is introduced in the project activity.	Through the on-site inspection and interviews ANCE validated that the project activity is for composting of non-hazardous waste.
3.	The project activity does not recover or flare gas from the disposal site (unlike AMS-III.G "Landfill methane recovery"), and does not carry out controlled combustion of waste that is not biologically treated in a first step (unlike AMS-III.E "Avoidance of methane production from biomass decomposition by controlled combustion, gasification or mechanical/thermal treatment"). Project activities that recover biogas from wastewater treatment will use AMS-III.H "Methane recovery from wastewater treatment" methodology. Project activities involving co-digestion of organic materials will apply the methodology AMS-III.AO "Methane recovery by controlled anaerobic digestion".	Through the on-site inspection and interviews ANCE validated that the project activity does not generate gas (CH <sub>4</sub> ).

No.	Applicability	Evaluation by ANCE
4.	Activities are limited to those that result in emission reductions of less than or equal to 60 kt CO <sub>2</sub> equivalent per year.	During the validation and verification, the calculation file II.
5.	This methodology is applicable to the composting of the organic fraction of municipal solid waste and biomass waste from agricultural or agro-industrial activities, including manure.	Through on-site inspection and interviews ANCE validated that the project activity receives non-hazardous waste from surrounding grain processing companies /VIII/, /IX/, /X/, /XI/, /XII/, /XIII/.
6.	This methodology includes the construction and expansion of treatment facilities, as well as activities that increase the capacity utilization of an existing facility. For project activities that increase capacity utilization at existing facilities, project participants shall demonstrate that special efforts have been made to increase capacity utilization, that the existing facility is in compliance with all applicable laws and regulations, and that the existing facility is not included in another CDM project activity. The special efforts shall be identified and described.	ANCE validated and verified that during the project period (01/04/2018 to 31/12/2022) there has not been an expansion in the operational limits of the Project, it was validated that the Project activity complies with the environmental regulations of the State /XVII/, /XVIII/.
7.	This methodology is also applicable to co-composting of wastewater and biomass solid waste, where the wastewater would otherwise have been treated in an anaerobic wastewater treatment system without biogas recovery. The wastewater in the project scenario is used as a source of moisture and/or nutrients for the biological treatment process, e.g., empty fruit bunch composting (EFB), a residue from palm oil production, with the addition of palm oil mill effluent (POME), which is the wastewater co-produced from palm oil production.	ANCE validated that during the site visit that the scope of the project does not contemplate wastewater treatment.
8.	In case of co-composting, if it cannot be demonstrated that the organic matter would have been left to decompose anaerobically otherwise, the baseline emissions related to such organic matter will be counted as zero, while the project emissions will be calculated according to the procedures presented in this methodology for all co-composted substrates.	ANCE validated during the site visit that the scope of the project does not contemplate co-composting, being non-hazardous waste the only input to the process and these are subject to evaluation prior to incorporation into the composting process /XIX/ and /XXII/.
9.	The location and characteristics of the disposal site of biomass, animal manure and co-composting wastewater in the baseline condition shall be known so that their methane emissions can be estimated, using the provisions of AMS-III.G, AMS-III.E (relating to stockpiles), AMS-III.D "Methane recovery in animal manure management systems" or AMS-III.H, respectively.	ANCE validated during the site visit that the scope of the project does not contemplate co-composting.
10.	In the project scenario, blending materials may be added 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 controlled 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 shall also comply with the requirements of paragraphs 3 and 4/c/ of the latest version of AMS-III.D.	ANCE validated and verified that only the amount of non-hazardous solid waste registered in the manifests and shipments that are submitted to composting /VIII/, /IX/, /X/, /XI/, /XII/, /XIII/ is used to calculate the estimated reductions.
11.	In the case of solid waste removed from a solid waste landfill, the following requirement shall be verified ex ante at the beginning of each crediting period:	ANCE validated that the solid waste entering the composting plant is not extracted from a landfill but the plant serves as a final destination for the processed waste.



No.	Applicability	Evaluation by ANCE
a.	Establish that the identified landfill(s) can be expected to accommodate the wastes to be used for the project activity during the crediting period; or	Not applicable.
b.	Establish that it is common practice in the region to dispose of waste in solid waste landfill(s).	
12.	Project participants shall clearly define the geographical boundary of the region referred to in paragraph 11(b) and document it in the DPDD-MDL. When defining the geographical boundary of the region, the project participants shall consider the origin of the waste, i.e. if the waste is transported up to 50 km, the region may cover a 50 km radius around the project activity. In addition, it should also consider the distance to which the final product will be transported after composting. 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 shall it exceed 200 km. Once defined, the region must not change during the crediting period(s).	ANCE validated that in no case does the activity exceed the 200 km range in the transportation of waste to the composting plant and in the transportation of the product, a measurement was made using Google earth of the main waste generators that send waste to WORMS based on shipments and manifests, resulting in a distance of ±51km.
13.	In case the compost produced is handled aerobically and subjected to land application, appropriate conditions and procedures (not leading to methane emissions) must be ensured.	ANCE validated that during the site visit that the non-hazardous waste is subjected to a proper composting process /XIX/ such that the project owner has complied with the State's environmental regulations /XVII/ and /XVIII/.
14.	In case the compost produced is handled aerobically and subjected to land application, appropriate conditions and procedures (not leading to methane emissions) must be ensured.	ANCE validated that, during the on-site inspection, the process does not contemplate thermal or mechanical treatment.
15.	In case the produced compost is stored under anaerobic conditions and/or delivered to a landfill, emissions from residual organic content shall be taken into account and calculated according to the latest version of the methodological tool "Emissions from solid waste landfills".	During the site visit, ANCE validated and verified that the compost is not stored in anaerobic conditions nor is it delivered to a landfill, but that the compost is marketed to farmers surrounding WORMS /VIII/.

In conclusion, ANCE agrees with the application of the methodology AMS.III.F, Avoid methane emissions through composting, Version 12.0 /a/, considering that the applicability criteria were correctly addressed by the project holder.

#### 5.5.2.3 Methodology deviations (if applicable)

The Treatment of non-hazardous industrial waste to obtain Biocompost project is in accordance with the /a/ methodology, so this section does not apply.

#### 5.5.3 Project boundary, sources and GHGs

Considering what is mentioned in the methodology /a/ referring to the project limits, ANCE validated:

1. The project activity replaces the disposal of waste in sanitary landfills and open dumps where direct methane emissions could be generated.
2. During the site inspection it was validated that the project does not consider wastewater co-composting in its scope.

3. There is a composting and bermi-composting process capable of receiving a maximum of 137.25 tons of non-hazardous waste per day.
4. It was validated that there is a yard where waste is received and a specific area where compost is prepared for sale.
5. Due to the nature of the project and according to the methodology /a/ the project emits the following GHGs:

Table 8. GHG evaluated

Source	GHG	Included (Yes/No)	Evaluación por ANCE
Baseline scenario- landfill site	CO <sub>2</sub>	No	During organic matter decomposition reactions in landfills, CO <sub>2</sub> emissions are considered zero, ANCE validates this confirmation.
	CH <sub>4</sub>	Yes	Methane is the main GHG produced in the decomposition of organic matter in a landfill, ANCE validates this confirmation. For the estimation, the amount of treated waste /IX/ to /XIII/ was used.
	N <sub>2</sub> O	No	During organic matter decomposition reactions in landfills, N <sub>2</sub> O emissions are considered to be zero, ANCE validates this confirmation.
Project scenario –  - Composting site - Luminarias - (Emisiones indirectas) - Equipo de bombeo (Emisiones indirectas) - Equipos de volteo (fuentes móviles)	CO <sub>2</sub>	Yes	Indirect emissions from electricity consumption in lighting and pumping equipment (reported in tCO <sub>2</sub> e), total energy was counted; however, there are other activities on the owner's property that are outside the scope of this project's activity /XXIII/. Direct emissions from combustion in mobile sources. total diesel fuel was accounted for, however, on the owner's property there are other activities outside the scope of this project's activity /XXIV/.
	CH <sub>4</sub>	Yes	Product derived from the composting process. The amount of waste treated from /IX/ to /XIII/ was used for the estimation. Direct emissions from combustion in mobile sources. The total amount of diesel fuel was counted; however, on the owner's property there are other activities outside the scope of this project /XXIV/.
			Product derived from the composting process. The quantity of treated waste /IX/ to /XIII/ was used for the estimation.
	N <sub>2</sub> O	Yes	Direct emissions from combustion in mobile sources. the total amount of diesel fuel was counted; however, on the owner's property there are other activities outside the scope of the activity of this project /XXIV/.

ANCE validated the limits of the project according to the activity and established in the methodology /a/, during the on-site visit the sources described in this section were observed.

#### 5.5.3.1 Eligible areas in the GHG project boundaries (for AFOLU projects)

Not applicable.

#### 5.5.4 Baseline or reference scenario

The project activity involves the operation of composting for the treatment of non-hazardous solid waste, therefore, the methodology applied /a/, "the baseline scenario is in the absence of the project activity, biomass and other organic matter (including manure, if applicable) are allowed to decompose within the project boundary and methane is emitted to the atmosphere. Baseline emissions are the amount of methane emitted from the decomposition of degradable organic carbon from biomass solid waste or manure."

PDD version 2 /l/ correctly identifies the baseline scenario and the development of the variables and parameters used is noted in the calculation tool /ll/.

**Step 1.** The evaluation of the baseline scenario was considered as described in the methodology AMS.III.F, Avoid methane emissions through composting, Version 12.0, where the calculation of estimated emissions from waste treatment was based on the Methodological Tool Emissions from solid waste disposal sites (Version 08.1) /b/ and the following parameters were evaluated:

*Table 9. Baseline parameters*

Parámetro	Evaluación
$\varphi_y$	Default value
$OX$	Default value
$F$	Default value
$DOC_f$	Default value
$MCF_y$	Default value
$k_y$	Default value
$W_j$	Mesure
$DOC_j$	Default value

ANCE validated that the parameters and measurements were properly applied according to the methodology /a//b)/IX to XIII.

**Step 2.** ANCE validated that the baseline equation parameters were obtained from the methodology /a/, /b/, the project proponent evaluated a low uncertainty (PDD, 3.5).

**Step 3.** ANCE validated that the Project activity complies with the due diligence regarding composting described by State /XVII/ and /XVIII/.

**Step 4.** ANCE validated that the baseline and quality scenario identification procedures are in accordance with the methodology /a/, /b/, /c/.

#### 5.5.5 Additionality

To demonstrate additionality, the project proponent correctly applied the Methodological Tool for the demonstration and assessment of additionality Version 07.0 /f/, /g// methodology. The project proponent performed the additionality analysis considering that the activity is first in its class, the details of the validation performed by ANCE are described as follows:

## Step 0: Demonstration whether the proposed project activity is the first-of its-kind

Table 10. Additionality

Methodology criteria /g/	Evaluation
14. This step is optional. If it is not applied it shall be considered that the proposed project activity is not the first-of-its-kind.	<p>The project proponent evaluated the additionality considering the project as the first of its kind.</p> <p>The project proponent decided to delimit the applicable geographic area to 200 km, considering the strategic area in which it is located (belt of Gran Rosario: Rosario - San Lorenzo - Puerto General San Martín - Timbúes), where the main grain processing industries are located.</p> <p>The project proponent found that there are three companies that generate compost in the area, however, they mostly process household waste and manure from the livestock industry. ANCE validated the locations and activities of the companies through their website, concluding that the statement described in the PDD /i/ is correct.</p> <p>Biofertyl: <a href="https://www.biofertyl.com.ar/sustratos-y-enmiendas/">https://www.biofertyl.com.ar/sustratos-y-enmiendas/</a>; Symeco: <a href="https://symeco.com.ar/#proceso">https://symeco.com.ar/#proceso</a>; Hi-Soil: <a href="https://hisoil.com.ar/">https://hisoil.com.ar/</a>.</p>
15. This step serves for the demonstration of additionality by means of the first-of-its-kind.	
16. If the proposed CDM project activity(ies) apply measure(s) that are listed in the definitions section above, the latest version of the “Guidelines on additionality of first-of-its-kind project activities” available on the UNFCCC website shall be applied to demonstrate that the project activity is the first-of-its-kind.	<p>ANCE validates that the Project activity is associated with the measures listed in the /i/ guidelines:</p> <p>d) Methane formation avoidance</p>
17. If the proposed CDM project activity(ies) apply other measure(s) than those identified in the definitions section above, the project proponents shall propose approach for demonstrating that a project is a “first-of-its-kind”.	<p>The PDD does not consider other measures.</p>
18. Outcome of Step 0: If the proposed project is the first-of-its-kind, its additionality is demonstrated; otherwise, proceed to Step 1.	<p>ANCE validated that the project activity is additional considering that it is the first of its kind.</p>

### 5.5.6 Conservative approach and uncertainty management

The Project Proponent evaluated the uncertainty considering official data from the applied methodologies /a/, /b/ and direct measurements reported in the manifests and shipments (PDD, 3.5). Derived from the lack of calibrations in 2018 and 2021 and considering the variations between the weight of the shipment and the weight measured on the scale, the project owner

calculated an uncertainty percentage of 2%, which has been directly involved in the calculation of emission reductions.

#### 5.5.7 Leakage and non- permanence

ANCE validated that the Project equipment is not transferred from another activity nor is existing equipment transferred to another activity, furthermore, the compost is not subjected to anaerobic storage nor is it disposed of in a SWDR. Therefore, there is no leakage for this project.

During the site visit it was observed that the Project is a strategic destination for the treatment of waste from grain processing industries. Furthermore, considering that this assessment contemplates validation and verification, the project has been operating since 2018.

### 5.6 Monitoring plan

The Monitoring Plan submitted by the project proponent complies with the CDM methodologies according to the scope of the project activity AMS-III.F. Small-scale methodology Avoidance of methane emissions through composting Version 12.0 /a/, Methodological Tool, Emissions from solid waste disposal sites V. 8.1 /b/ and Methodological tool, Project and leakage emissions from composting Version 2.0 /c/, in addition to the guidelines of the BCR TOOL MONITORING, REPORTING AND VERIFICATION (MRV) Version 1.0. The evidence of monitoring is described in the Project Monitoring Plan /XXV/ and in section 16 of the PDD /I/.

The information necessary for the estimation of emissions according to the methodology /a/, /c/ used for the project activity is the measurement of non-hazardous waste, this data is directly involved in the equations for the estimation of emissions of the baseline scenario and the project scenario.

For the project emissions, the estimation of fuel consumption (diesel) and electricity consumption used in the project activity are also considered important data.

During the validation and verification carried out by ANCE, it was observed that, through the shipments and manifests /IX/, /X/, /XI/, /XII/, XIII) there is a continuous monitoring of the weight reported in the documents, ANCE carried out a sample review of physical documents, reaching a sample of 922 documents. The project holder submitted the calibration of the scale Act of sealing and verification (OTN° 307-15719) - 2019 /III/.

For electricity and diesel consumption, the project owner made an estimate based on the equipment specifications Actual fuel used.xlsx /XXVI/, ANCE validated the application of the estimate in the Project's emissions calculation.

The baseline estimate calculation was validated using as monitored data the amount of waste that would be destined to a site, the consideration applied is that the amount of waste treated by the project activity is the amount that would be destined to a disposal site.

The monitoring for the estimation of emissions is carried out according to the verification periods stipulated by the project and under the guidelines of methodologies /a/, /b/, /c/. In each verification period the activity data must be monitored. The emission factors to be considered correspond to those validated and presented in this section of the report.

To estimate the reductions, the values to be monitored are as follows:

Data	Concept	Monitoring	Data source	Responsible
$W_{j,x}$	Amount of solid waste of type j disposed of or whose disposal has been avoided in the SWRS in year x (t).	Monitoring in the project / Annual	Shipments and manifests	Andres Beltramo Commercial Manager
$EC_{PJ,j,y}$	Amount of electricity that would be consumed by baseline k in year y	Estimate / Annual	Calibration of INGAPSA receiving platform, model TTH21, serial number P340. /III/, /IX/ to /XIII/.	Andres Beltramo Commercial Manager
$FCi_{i,j,y}$	Amount of fuel type i burned in process j during year y	Estimate / Annual	Diesel and electric energy consumption file "Actual fuel used.xlsx" /XXVI/.	Andres Beltramo Commercial Manager
$DOC_{f,y}$	Fraction of degradable organic carbon (DOC) that decomposes under the specific conditions given in the SWDS for year y (fraction by weight).	Not monitorable	Methodology /c/	Marcos Méndez Project Proponent
$\varphi_y$	Model correction factor to account for model uncertainties for year y.	Not monitorable	Methodology /c/	Marcos Méndez Project Proponent
$OX$	Oxidation factor (reflects the amount of methane from SWDS that is oxidized in soil or other material covering the waste).	Not monitorable	Methodology /c/	Marcos Méndez Project Proponent
$MCF_y$	Methane correction factor for year y.	Not monitorable	Methodology /c/	Marcos Méndez Project Proponent
$DOC_j$	Fraction of degradable organic carbon in waste type j (fraction by weight)	Not monitorable	Methodology /c/	Marcos Méndez Project Proponent
$k_j$	Decomposition rate of waste type j (1/year)	Not monitorable	Methodology /c/	Marcos Méndez Project Proponent
$j$	Type of waste or types of waste in MSW	Not monitorable	Methodology /c/	Marcos Méndez Project Proponent

ANCE validated that the project owner has operational procedures /XIX/ to /XXII/ for the management of solid waste entering the composting plant, which ensure the quality of the compost and the amount of waste treated used for the calculation of estimated GHG reductions.

The project owner evaluated the environmental aspects that could have an impact as a result of the project activity:

Environmental aspect	Evaluation	Monitoring
SOIL RESOURCE PROTECTION PROGRAM	The project owner implements a subprogram to detect hazardous waste and prevent spills; Performs the necessary operations to prevent overflows or flooding.	Yearly
WATER RESOURCE PROTECTION PROGRAM	The project owner carries out the evaluation of water quality parameters in the extraction well.	Yearly
AIR QUALITY REPORT	The project owner performs the air quality assessment, including ppm (parts per million) and hydrogen sulfide, and subcontracts an authorized third party to carry out this operation.	Yearly
WATER QUALITY ANALYSIS	The project owner carries out the evaluation of wastewater discharge parameters, subcontracts an authorized third party to carry out this operation.	Yearly

During the site visit by means of interviews, it was validated that what was established in the Monitoring Report regarding environmental aspects is correct and that the project activity does not generate impacts that compromise the environment.

The project Treatment of non-hazardous industrial waste to obtain Biocompost correctly applied the "Tool for the determination of contributions to the Sustainable Development Goals (SDGs) of Greenhouse Gas (GHG) mitigation projects" /XXVII/, in accordance with the provisions of the standard.

The Monitoring Plan established by the project establishes a clear mechanism to identify each SDG, associated activities, requirements, responsible party, indicators and monitoring frequency, among others. This is considered by ANCE as adequate in terms of the procedure established for the evaluation of each monitoring.

According to the SDG Tool, it was identified that some SDGs were indicated by default, which implies that they are mandatory. Consequently, the project identified those indicators and targets applicable by SDG, as follows.

Table 11. SDG Evaluation

SDG	Indicator	Goal
SDG 9. Industry, Innovation and Infrastructure.	9.2.2 Manufacturing employment as a proportion of total employment	Proportion of local people employed in total number of employees.
SDG 11. Sustainable Cities and Communities	11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities.	Final discharge out of total urban solid waste generated.
SDG 12. Responsible consumption and production	12.5.1 National recycling rate, tons of material recycled	Biocompost production
SDG 13 - Climate action	13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production.	Emissions Reductions of the Project activity.

The monitoring plan is based on a monitoring methodology approved within the framework of the methods referred to in section 8 of the BCR Standard and the following:

- a) The importance of the project within the national context was validated, being an alternative for the reduction of waste generation, emissions generation and adaptation to a circular economy;
- b) ANCE can confirm that all indicators of importance for project performance monitoring and reporting regarding the frequency, responsibility and authority for recording, monitoring, measuring and reporting of project activities, as well as stipulations explained within the methods and protocols being used, have been incorporated into the project monitoring plan;
- c) Reported parameters, including their source, monitoring frequency and review criteria for measurements and equipment management, as indicated in the PDD /I/, were verified as correct.

After the documentary review and the site visit, ANCE considers that the information expressed in the PDD /I/, the Monitoring Plan and the BCR monitoring tools are correct.

## 5.7 Compliance with applicable legislation

The owner of the Project complies with the legislation that involves the project activity, being the compliance reference the Joint Resolution No. 1/2019 of the NATIONAL AGRICULTURAL HEALTH



AND FOOD QUALITY SERVICE (SENASA), for compliance with the described, it was validated that the owner of the project has the procedure PE-8.2 Compost quality control /XIX/.

## 5.8 Carbon ownership and rights

Through interviews during the site visit ANCE validated that the ownership of the carbon credits belongs to WORMS ARGENTINA S.A.

During the validation, it was checked that the project activity is not registered to other emissions trading programs (CDM, Gold Standard, VCS, CERCARBONO, CSA GHG Clean and Climate Action Reserve project registry) or other forms of environmental crediting and is not part of any compliance scheme (binding caps). ANCE reviewed the websites of each of the GHG programs. This project is considered to be a first time application to any GHG scheme.

## 5.9 Risk management

The Project has contemplated the evaluation of environmental, social and financial risks, and each one has been assigned the mitigation of the evaluated risk. The Project is considered ex post, because it has been operating since 2018 and this is the period that it is positioned as a necessary activity for the surrounding companies.

The Project proponent used the BCR standard "Risk and permanence" tool.

## 5.10 Environmental aspects

The project proponent considers the environmental and social impact assessment sub-programs described in section 9 of the PDD, based on the BCR NO NET HARM ENVIRONMENTAL AND SOCIAL SAFEGUARDS (NNH) tool, version 1.0, the Project has been assessed considering that the Project does not generate impacts to the environment.

No negative impacts were identified in these assessments; the transformation of the waste into a new and beneficial product for the soil is considered a positive impact. ANCE confirmed the above from the on-site visit and review of the monitoring report.

## 5.11 Socioeconomic aspects

No negative impacts were identified in these assessments; the transformation of the waste into a new and beneficial product for the soil is considered a positive impact. ANCE confirmed the above from the on-site visit and review of the monitoring report.

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## 6 Verification findings

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The verification process executed by ANCE, through its Validation/Verification Body for GHG Emission Declarations and Projects was performed under the approach defined by ISO 14064-

3:2019. Specification with guidance for the validation and verification of GHG declarations. The above, to provide a reasonable level of assurance that the GHG reductions reported in tons of CO<sub>2</sub> equivalent and the information integrating the Project Treatment of non-hazardous industrial waste to obtain Biocompost, were prepared taking into consideration the requirements of the Biocarbon Registry Standard version 3. 2, the GHG Project Validation and Verification Manual version 2.3 and the corresponding 14064-2:2019 Specification with guidance, at the project level, for the quantification, monitoring and reporting of emission reductions or enhancement of greenhouse gas removals.

In order to ratify the information analyzed during the documentary review, on December 5 and 6, 2023, the on-site inspection of the sources indicated in the sampling plan related to the calculation of estimated emission reductions was carried out, verifying the evidence supporting the information and data documented by the project proponent.

The following processes were considered for the activities associated with this phase:

- Evaluation of the identification of reportable GHGs associated with project activities.
- Applications of AMS-III.F., Small-scale methodology: Avoidance of methane emissions through composting. Version 12.0 /a/ and its references /b/, /c/, /d/, /e/.
- Evaluation of the processes of emission source identification, emission reductions, request, collection, consolidation, transformation and reporting of consumption and production data used for the quantification and reporting of the GHG emission reductions project.
- Evaluation of the evidence supporting the consumption and production data associated with the project activity.
- Evaluation of the controls associated with the information systems used by the project owner.
- Evaluation of the routines for the control of input, transformation and output errors of the data and information used for the project.
- Evaluation of the review processes carried out by the personnel responsible for the project.
- Evaluation of the methods to ensure that the equipment associated with the monitoring and measurement of project data is calibrated and properly maintained, as well as the methodologies implemented for the calculation of estimated values at the facility.

As a complement to the aforementioned activities, ANCE conducted interviews with people directly and indirectly related to the project activity considering the associated process/activity or fuel/inputs.:

*Table 12. Interviews*

Name	Position and/or area	Process/activity or associated input	Interview in
Marcos Méndez	Project Developer – Polaris	Project Description Tour of the project facilities	Remote

Name	Position and/or area	Process/activity or associated input Methodologies Monitoring plan Sustainable development Environmental impact and Baseline and monitoring	Interview in
Andres Beltramo	Commercial Manager	Collection and safekeeping of non-hazardous waste manifests and shipments Consultation with local stakeholders Argentine regulatory framework	On-site
Berlits López Camargo	Technical laboratory manager	Parameters and quality control of the composting process	On-site
Víctor Lepera	Commercial Manager	Strategic Process Management	On-site
Fernando Molinari	RRII	Carbon market advisor	On-site

Derived from the verification activities carried out by the lead verifier, the following findings were established (the analysis is shown in Annex 2):

No.	Reference to noncompliance	Description of finding	Type of nonconformity: (CAR, CL, FAR)
1	Paragraph 6.3.2.2. of Tool 04. Tool 04, Emissions from solid waste disposal sites, V. 08.0	During the validation and verification carried out in documents and on site, it was found that the quantities of non-hazardous organic waste used for the calculation of estimated reductions differed from those found in the manifests and shipments received by the organization (solid waste records folder), causing a material difference.	CAR
2	6.7 Quantification of GHG emissions and/or GHG removals, Standard 14064 part 2, 2019.	During the validation and verification of the project, it was found that there are emission factors for electricity consumption published by the Secretary of Energy of Argentina, which are more accurate values for the calculation of emissions estimates.	CAR
3	6.6 Selection of GHG SSRs for monitoring or estimation of GHG emissions and removals, Standard 14064 part 2, 2019.	During the validation and verification of the Project, it was found that diesel and gasoline consumption reported in the invoices (PLANILLA COMBUSTIBLE.xlsx) and energy consumption are overestimated and not adjusted to the project limit, so it is necessary to record energy consumption based on the declaration of the project limit and scope.	CL
4	2.2 Objective	Correct the wording of the Project Objective according to the BCR Standard: "It is important to note that the project objectives should be consistent with the proposed activities and the expected GHG mitigation results", so it is necessary that the focus is directed to the Project and not to the organization.	CAR

No.	Reference to noncompliance	Description of finding	Type of nonconformity: (CAR, CL, FAR)
5	3.1.1 Conditions for the applicability of the methodology	Clarify the applicability of the methodologies used for the Project's emissions reduction. In the PDD there is a replication of the paragraphs of the methodology without reflecting the application of each one.	CL
6	3.2.3 Timelines and periods of analysis 3.3.2.3.3.1.	Clarify the specific period covered by the Project considering that it will last 10 years.	CL
7	3.5 Uncertainty Uncertainty	Qualify the uncertainty analysis for the direct measurements of solid waste.	CL
8	3.7 Mitigation Mitigation	Clarify how the mitigation results were achieved as a consequence of the execution of the project activities (application of the methodology).	CL

## 6.1 Project and monitoring plan implementation

### 6.1.1 Project activities implementation

The verification of the project Treatment of non-hazardous industrial waste to obtain Biocompost corresponds to the monitoring period 01/04/2018 to 31/12/2022.

ANCE evaluated the implementation of the project activities according to those described in the PDD /I/ as described in the Monitoring Plan /XXV/. The project holder has a specific area of 70,000 square meters to carry out the composting activities. The first project activity related to monitoring is the entry control process /XXI/, in which the scale operator reviews the consignment or manifest to ensure that the waste does not have any hazardous characteristics and weighs the truck (entry and exit) and records the weight /IX/ to /XIII/ to compare it with the amount declared on the consignment. During the on-site inspection, it was validated that the laboratory manager performs a visual inspection of the unloaded waste and measures the temperature (unloading of the waste is discarded if it exceeds 55°C) /XXII/. The weighing scale was subject to calibrations for the years 2019, 2021 and 2022 /III/.

The project proponent also included in the monitoring the consumption of diesel and electricity used in the project, however, these values were obtained by estimation /XXVI/.

ANCE was able to verify the progress in meeting the objectives with the documents presented in the monitoring matrix of the project activities and its reference documents.

The main activities that support compliance with the emission reduction targets for the period 2018-20222 in the project Treatment of non-hazardous industrial waste to obtain Biocompost were demonstrated with different supporting documents (4.2), there were some deviations in the measurement of the amount of waste, however, in the calculation of the estimated

reductions of the project the project proponent applied conservative measures in order not to overestimate the declared reductions.

### 6.1.2 Monitoring plan implementation and monitoring report

ANCE reviewed and was able to confirm that the PDD monitoring report was performed in consistency with the Monitoring Plan submitted by the project proponent. The monitoring plan is intended to facilitate the monitoring, recording, reporting and verification activities necessary to evaluate the project performance and determine the emission reductions with the applied methodology /a/.

The verification team has verified all parameters presented in the monitoring plan with the requirements of methodologies /a/, /b/, /c/. In this regard, the Monitoring Plan contains all required parameters, with appropriate descriptions regarding: Data source, measurement measurement procedures, monitoring frequency and procedures to be applied.

#### 6.1.2.1 Data and parameters

The values monitored annually and verified during the site visit are as follows::

<b>Responsible for monitoring</b>		Andres Beltramo			
$W_{y/Q_y}$		Amount of solid waste of type j disposed of or prevented in the SDRS in year x			
<b>Measurement units:</b>		Tons			
<b>Quality procedures:</b>		PE-8.2; PE-8.2-01; PE-8.2-02; PE-8.2-04			
<b>Measuring equipment</b>		Scale BC-0348			
<b>Year</b>	2018	2019	2020	2021	2022
<b><math>W_y</math> (t)</b>	6,500.79	17,913.35	14,689.19	15,657.01	19,503.10
<b>Calibration</b>	No realizada.	Minutes of sealing OT N°307-15719	No realizada.	Minutes of sealing OT N°307-15719 – 62325	Minutes of sealing OT N°307-15719 – 68603
<b>Responsible for monitoring</b>		Andres Beltramo			
$FC_{i,y}$		Fossil fuel consumption in the project			
<b>Measurement units:</b>		Litters			
<b>Quality procedures:</b>		Diesel and electric power consumption file "Actual fuel used.xlsx" /XXVI/			
<b>Measuring equipment</b>		Estimated			
<b>Year</b>	2018	2019	2020	2021	2022
<b><math>W_y</math> (t)</b>	6,800.00	21,497.00	17,628.00	18,789.00	23,407.00
<b>Calibration</b>	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
<b>Responsible for monitoring</b>		Andres Beltramo			

<b><math>EC_{PJ,y}</math></b>		Amount of electrical energy in the project			
<b>Measurement units:</b>		MWh/yr			
<b>Quality procedures:</b>		Diesel and electric power consumption file "Actual fuel used.xlsx" /XXVI/			
<b>Measuring equipment</b>		Estimated			
<b>Year</b>	2018	2019	2020	2021	2022
<b><math>W_y</math> (t)</b>	12.00	19.00	21.00	22.00	24.00
<b>Calibration</b>	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
<b>Responsible for monitoring</b>		Andres Beltramo			
<b>SDG9</b>		Make cities and human settlements inclusive, safe, resilient and sustainable			
<b>Monitoreo:</b>		Annual			
<b>Quality procedures:</b>		BCR_Monitoring-Report-solid2023 and the file SDG WORMS solid V2			
<b>Responsible for monitoring</b>		Andres Beltramo			
<b>SDG11</b>		Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation			
<b>monitoring:</b>		Annual			
<b>Quality procedures:</b>		BCR_Monitoring-Report-solid2023 and the file SDG WORMS solid V2			
<b>Responsible for monitoring</b>		Andres Beltramo			
<b>SDG12</b>		Ensure sustainable consumption and production patterns.			
<b>monitoring:</b>		Annual			
<b>Quality procedures:</b>		BCR_Monitoring-Report-solid2023 and the file SDG WORMS solid V2			
<b>Responsible for monitoring</b>		Andres Beltramo			
<b>SDG13</b>		Take urgent action to combat climate change and its impacts			
<b>monitoring:</b>		Annual			
<b>Quality procedures:</b>		BCR_Monitoring-Report-solid2023 and the file SDG WORMS solid V2			

The monitoring plan includes the monitoring of project implementation, the description of the monitoring plan in the PDD includes the following for each of these monitoring tasks:

- Data and parameters used for emission reduction estimation;
- Technical description of monitoring activities;
- Description of data collection;
- Data quality control;
- Data storage; and

- Responsibilities

During monitoring, data will be collected related to the variables/parameters listed in the PDD and Monitoring Report.

The ANCE validation and verification team performed a review of all input data, parameters, formulas, calculations, conversions, resulting uncertainties and output data to ensure consistency with the criteria set out in the calculation methodologies /a/, /b/, /c/ used and the Monitoring Report.

The verification team reproduced the calculations to ensure the accuracy of the results. Where appropriate, references to analysis methods or default values were verified with the corresponding source.

#### 6.1.2.2 *Environmental and social effects of the project activities*

For the monitoring period the Project proponent evaluated the environmental impacts considering the following.:

Aspecto	Conformidad
SOIL RESOURCE PROTECTION	
Hazardous Waste Management Subprogram	Cumplimiento regulatorio
Drainage and Flooding Control Subprogram	Medida interna de seguridad
WATER RESOURCE PROTECTION PROGRAM	
Groundwater monitoring subprogram	Medida interna de seguridad
AIR QUALITY REPORT	Cumplimiento regulatorio
WATER QUALITY ANALYSIS	Cumplimiento regulatorio

No negative impacts were identified in these evaluations. ANCE was able to verify this compliance from the on-site inspection visit..

With respect to the evaluation of social aspects, ANCE verified that the project activity does not generate adverse effects involving society.

#### 6.1.2.3 *Procedures for the management of GHG reductions or removals and related quality control for monitoring activities*

ANCE confirms that all values involved in the Project emission reductions, measurement results and estimates have been incorporated into the monitoring plan, the frequency, responsibility and authority for recording, tracking, measuring and reporting of project activities have been clearly developed with procedures and ongoing communication between the licensee and the Project proponent.

#### 6.1.2.4 *Description of the methods defined for the periodic calculation of GHG reductions or removals, and leakage*

ANCE confirms that the methods applied for the calculation of GHG emission reductions of the Project Treatment of non-hazardous industrial waste to obtain Biocompost are in accordance

with the /a/, /b/, /c/ methodology in its Monitoring methodology and the evaluation required by the BCR Standard.

*6.1.2.5 Assignment of roles and responsibilities for monitoring and reporting the variables relevant to the calculation of reductions or removals*

Section 15.2 of the monitoring report shows the workstations responsible for monitoring the variables and parameters for the calculation of the GHG reduction station. During the site visit the ANCE verification team met with the personnel in charge.

*6.1.2.6 Procedures related with the assessment of the project contribution with the Sustainable Development Goals (SDGs)*

The proponent of the project has evaluated compliance with the Sustainable Development Goals for the monitoring period 01/04/2018 to 31/12/2022, following up with the methodological tool of the BCR program, SDG Tool /XXVII/.

For SDG 9 the project aims to achieve target 9.2.2 "Manufacturing employment as a proportion of total employment", ANCE confirms, through interviews and review of the /XXVII/ tool, that the number of jobs held by local people has increased from 40% to 59%.

Regarding SDGs 11 and 12, for target 11.6.1 "Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities" and 12.5.1 "National recycling rate, tons of material recycled", respectively, the project holder is mainly dedicated to the treatment of non-hazardous waste, its processes contribute to the circular economy where the waste becomes a raw material in another process, This process has been validated and verified by ANCE.

Sustainable Development Goal 13 focuses on achieving a specific indicator that seeks to reduce total greenhouse gas emissions per year. From the monitoring of GHG emissions carried out for the period of analysis, a value of 15,195 tCO<sub>2</sub>e (on average) released into the atmosphere each year was recorded; of which 100% were the result of the transformation of solid waste into compost.

*6.1.2.7 Procedures associated with the monitoring of co-benefits of the special category, as applicable*

No applicable.

Considering that for the year 2018 and 2021 the Project holder did not submit the calibrations of the weighing scale, according to the calibration frequency established in the monitoring plan /XXV/, the project holder has decided to apply to the emission reduction estimation equation a conservative uncertainty percentage (2%) considering the error that could be generated by the absence of this certification.

The monitoring of variables described in the monitoring report has been carried out in accordance with the monitoring plan contained in the PDD/I/ in a correct and sufficient manner.



ANCE has verified the monitored data for the required parameters and has considered them complete, reliable and consistent.

For the remaining accreditation period, the project owner intends to strengthen the measurements of all project variables.

## 6.2 Quantification of GHG emission reductions and removals

ANCE has evaluated the emission reductions reported for the project Treatment of non-hazardous industrial waste to obtain Biocompost according to the methodology AMS.III.F, Avoid methane emissions through composting, Version 12.0 and the criteria of the BCR Validation and Verification Manual, the application was verified for the crediting period established in the monitoring report (01/04/2018 to 31/12/2022), in addition, of all the variables involved in said methodology /a/ and the applicable references /b/, /c/, /d/ and /e/.

### 6.2.1 Methodology deviations (if applicable)

No deviations were found for the application of the methodology /a/.

### 6.2.2 Baseline or reference scenario

The calculation procedure used by the Project proponent to quantify the GHG reductions in the baseline scenario as a result of the implementation of the project activity during the monitoring period is summarized below and its results are summarized below.

According to the formulas presented in Section 5.5 of this report, the Project proponent calculated the baseline as follows:

The methodological tool Emissions from solid waste disposal sites Version 08.1 /b/, describes the steps required for the calculation of the baseline for the project activity, the project proponent carried out the quantification of the records of solid waste entering the composting process for the monitored crediting period (01/04/2018 to 31/12/2022), this project does not consider flaring or energy use of waste gases, parameters established in the methodology /b/ and cited by the IPCC were used. The baseline for waste deposited in a landfill is as follows:

*Table 13. GHG emissions in the baseline scenario.*

Año	GHG emissions in the baseline scenario (tCO <sub>2</sub> e/year)
2018	5,034
2019	13,870
2020	11,372
2021	12,120
2022	15,099

The audit team verified all calculations of greenhouse gases emitted during the monitoring period for baseline emissions. No errors were found that materially affected the emissions reported by

the project during the monitoring period. The spreadsheet formulas (WORMS solid V2.xls), conversions, estimates and consistent use of data and parameters have been carefully reviewed by the ANCE audit team.

### 6.2.3 Mitigation results

ANCE verified the calculation of emission reductions of the Treatment of non-hazardous industrial waste to obtain Biocompost Project, for the project period established in the monitoring report (01/04/2018 to 31/12/2022), the audit team performed the analysis according to the methodology AMS.III.F, Avoid methane emissions through composting, Version 12.0, the BCR Standard and the MVV, for the evaluation a reasonable assurance level and a materiality percentage of 5% were contemplated. The verification team performed a comparison of the parameters and calculation variables mentioned in the PDD monitoring plan and the monitoring report.

During the documentary review, the audit team reviewed the calculation tool prepared by the project proponent /II/; during the on-site inspection visit, the quantities of waste stated in the shipments and manifests were reviewed; the audit team reviewed a sample of 922 shipments without finding any errors during the review; the operation of the compost plant was validated and verified. The emissions of the baseline scenario and the preceding emissions of the project and the estimated emissions reduction of the project were calculated, in each calculation the verification team calculated the materiality, obtaining as a result 0.00%.

ANCE concludes that the project presented by WORMS ARGENTINA S.A. as project owner and POLARIS NETWORK ESPAÑA SL as proponent is correct and complies with the methodology /a/.

#### 6.2.3.1 GHG emissions reduction/removal in the baseline scenario

Section 6.2.2 shows the GHG emissions of the baseline scenario.

#### 6.2.3.2 GHG emissions reduction/removal in the project scenario

For the project Treatment of non-hazardous industrial waste to obtain Biocompost, the reduction of GHG emissions is calculated according to equation 2 of the AMS methodology. III.F, Avoid methane emissions through composting, Version 12.0:

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

Taking into account what is described in sections 6.2.2 and 6.2.3 of this report, the annual net reduction of GHG emissions for the project is:

*Table 14. GHG reductions in the project*

Year	Baseline	Emission	Leakage	Reduction
2018	5,750.25	716.25	-	5,034.01
2019	15,845.20	1,975.45	-	13,869.76
2020	12,993.28	1,621.75	-	11,371.53

Year	Baseline	Emission	Leakage	Reduction
2021	13,849.36	1,728.91	-	12,120.45
2022	17,251.41	2,151.91	-	15,099.50
2023	17,251.41	2,150.79	-	15,100.62
2024	17,251.41	2,150.79	-	15,100.62
2025	17,251.41	2,150.79	-	15,100.62
2026	17,251.41	2,150.79	-	15,100.62
2027	17,251.41	2,150.79	-	15,100.62
				<b>132,998.34 ton CO2e</b>

### 6.3 Environmental and social effects of the project activities and no net harm

For the monitoring period, the project proponent considered the assessment of environmental and social impacts sub-programs described in sections 8 and 9 of the monitoring report, based on the BCR NO NET HARM ENVIRONMENTAL AND SOCIAL SAFEGUARDS (NNH) tool, version 1.0, the project activities do not cause any net harm to the environment or to local communities and society in general.

No negative impacts were identified in these assessments; the transformation of waste into a new and beneficial product for the soil is considered a positive impact. ANCE confirmed this from the on-site visit and review of the monitoring report.

### 6.4 Sustainable Development Goals (SDGs)

The identification of applicable SDGs was carried out according to the BioCarbon Registry TOOL. SUSTAINABLE DEVELOPMENT GOALS (SDGS). Version 1.0. Monitoring indicators and evidence are presented in section 6.1.2.6 of this report.

### 6.5 Climate change adaptation

ANCE considers that within the framework of the National Policy on Climate Change /XXIX/ "Art. 24.- Measures. The National Climate Change Cabinet, through the National Climate Change Adaptation and Mitigation Plan, and the competent authorities of each jurisdiction, shall establish concrete mitigation measures and actions, especially: (i) Encourage the implementation of practices, processes and technological improvements that allow the control, reduction or prevention of greenhouse gas emissions in activities related to transportation, provision of services and production of goods from their manufacture, distribution and consumption to their final disposal", the project activities promote adaptation to climate change, by reducing methane emissions and promoting responsible, safe and adequate waste treatment, avoiding open dumps and generating circular economy strategies in the environment.

### 6.6 Co-benefits (if applicable)

This point is not applicable to the project.

## 6.7 REDD+ safeguards (if applicable)

This point is not applicable to the project.

## 6.8 Double counting avoidance

According to the BCR Standard, the Avoid Double Counting tool is defined as accounting for GHG mitigation results in tCO<sub>2</sub>e, in the following scenarios.:

- a) A ton CO<sub>2</sub>e is counted more than once to demonstrate compliance with the same GHG mitigation goal.
- b) One ton CO<sub>2</sub>e is counted to demonstrate compliance with the GHG mitigation goals.
- c) A ton CO<sub>2</sub>e is counted more than once to obtain remuneration, benefits or incentives.
- d) A ton CO<sub>2</sub>e is verified, certified or credited and assigned more than one serial for a single mitigation outcome.

To avoid double counting, the project holder submitted the following evidence in compliance with numeral No 8.1 of the double counting avoidance tool:

- Project and project holder information, this information is clear in the PDD.
- GHG registration authorization - Evidence is presented on the page with the project registration at the following Link: <https://globalcarbontrace.io/projects/58>.
- Project Description Document (PDD), version 2.0 of the PDD is presented.
- Monitoring Report (MR) - the MR version 2.0 is presented.
- Additional information is the result of the validation and verification process of the project.

The audit team verified 100% of the legal information provided by the project proponent, confirming that the sources of information used were the official ones. Therefore, it considers that the information provided allows concluding that the project complies with the legal requirements.

## 6.9 Stakeholders' Consultation

The project activity has been involved with government representatives to donate compost and, to the extent that the project represents an alternative for climate change mitigation and the application of a circular economy, it has received governmental recognition; during verification, in section 10 of the PDD we reviewed the links to the web pages where this is described.

Worms has an open portal for complaints or suggestions from companies or the surrounding community, however, so far there is no record.

### 6.9.1 *Public Consultation*

The project has gained recognition from the community for its success in minimizing environmental impact. In operation since 2018, it has exhibited no production of unpleasant odors, noise, waste, or air and water emissions. As confirmed by ANCE during their visit to the site, the project unquestionably brings benefits to society.

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## 7 Internal quality control

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ANCE reviewed the monitoring documentation, described in the PDD, considered that they conform to the procedures described in the validated monitoring plan and monitoring report and checked for differences that could cause an increase in GHG emission reduction estimates in the actual monitoring periods.

ANCE has confirmed that there are no significant material discrepancies between the actual monitoring system and the monitoring plan established in the PDD and the applied methodologies /a/, so there is no overestimation of the requested reductions. The project owner monitors the parameters required to determine the project reductions in accordance with the monitoring plan and the applicable methodology. It is worth mentioning that the project proponent applied an uncertainty percentage (2%) to the treated waste due to the lack of accuracy of the measured data.

The reported parameters, including their source, monitoring frequency and review criteria, indicated in the PDD, were verified to be correct. The required management system procedures, including responsibility and authority for monitoring activities, were verified to be consistent with the DMP. The knowledge of the personnel associated with the project activities was considered satisfactory by the ANCE verification team.

Finally, in ANCE's quality management process, there is an independent internal review of the validation and verification process, which ensures the scope, program standards and how the validation and verification report manages to gather this evidence and its proper management to present the final statement.

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## 8 Validation and verification opinion

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As the OVV GEI ANCE Conformity Assessment Body, contracted by WORMS ARGENTINA S.A. through POLARIS NETWORK ESPAÑA SL, we have reviewed and verified the design of mitigation measures for the project "Treatment of non-hazardous industrial waste to obtain Biocompost." We confirm that it fully complies with the BCR Standard, addressing various aspects:

- The project meets all criteria of the BioCarbon Registry standard version 3.2, September 23, 2023;
- The project is in accordance with AMS.III.F, Avoid methane emissions through composting, Version 12.0;
- The Monitoring Plan is transparent and adequate;
- The additionality of the project is justified in the PDD;
- Verification has reached a reasonable level of assurance: 95%;
- The project has been evaluated with a Materiality of less than 5%;
- Based on the processes and procedures performed, the GHG statement is materially correct and a true representation of the GHG data and information and is prepared per the applicable standard;
- The project was assessed on the basis of its contribution to the Sustainable Development Goals (SDG9, SDG11, SDG12 and SDG13).

Based on the risk-based validation approach and the evidence obtained as a result of the activities associated with the validation process and the attention to findings, the OVV GEI ANCE has reached the following conclusion:

The Greenhouse Gas Emissions reductions of the Treatment of non-hazardous industrial waste to obtain Biocompost prepared by WORMS ARGENTINA S.A. and developed by POLARIS NETWORK ESPAÑA SL for the crediting period 01/04/2018 to 31/12/2027, and the monitoring period 01/04/2018 to 31/12/2022 are substantially correct and the validated and verified emissions reductions are a faithful representation of the information and emissions data referenced below:

Quantification period of GHG emissions reductions: **132,998 t CO<sub>2</sub>e**

Total amount of GHG emission reductions: **57,495 tCO<sub>2</sub>e**

This Validation and Verification Report is issued, based on the stipulated in the BCR Standard Version 3.2. September 23, 2023, the Validation and Verification Manual and based on the criteria of ISO 14064-3:2019, with a reasonable level of assurance, the above is guaranteed at a materiality level of less than 5%, specifically, 0.00%, between the net emission reductions reported by the Project and the net reductions validated and verified by the OVV-GEI-ANCE.

In conclusion, the OVV-GEI-ANCE issues a positive opinion because there is sufficient or appropriate evidence to support a claim; considering that there are no material misstatements,

there is sufficient and appropriate evidence to support the emissions and the necessary controls are in place for data management for emission reduction reporting.



Excalibur E. Acosta Miranda  
Leader Validator/Verifier

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## 9 Validation statement

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The validation statement is attached to this document.

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## 10 Verification statement

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Attached to this document is the verification statement.

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## 11 Annexes

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## Annex 1. Competence of team members and technical reviewers

Currently, the validation and verification team is in the process of certifying the waste management sector to the Mexican Accreditation Entity.

acreditación



entidad mexicana de acreditación, a.c.

**ACREDITA**

**A**

**ASOCIACIÓN DE NORMALIZACIÓN Y  
CERTIFICACIÓN, S.A. DE C.V.**

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ALCALDÍA GUSTAVO A. MADERO, CIUDAD DE MÉXICO, MÉXICO.  
(55) 5747-4590  
[www.ama.org.mx](http://www.ama.org.mx)

**Como Organismo de Certificación para  
Validar y Verificar la Emisión de Gases  
Efecto Invernadero**

De acuerdo con los criterios establecidos en la norma de referencia:  
**ISO/IEC 17029:2019 / ISO 14065:2020**  
*para uso en la acreditación u otras formas de reconocimiento e*  
**ISO 14064-3:2019**  
**Gases de efecto invernadero - Parte 3: Especificación con orientación para la  
validación y verificación de declaraciones sobre gases de efecto invernadero**

**Acreditación Número: GEI001/15**  
**Número de referencia: 23GEI0074**  
**Fecha de acreditación: 2015/06/26**  
**Fecha de actualización: 2023/11/23**  
**Fecha de emisión: 2023/11/23**

Por la entidad mexicana de acreditación, a.c.



**Maria Isabel López Martínez**  
Directora General



\*El presente documento no tiene validez sin su anexo técnico correspondiente 23GEI0094 y 23GEI0095





## *Annex 2. Clarification requests, corrective action requests and forward action requests*

Finding ID	1	Type of finding	Clarification / Corrective/ Forward action	Date DD/MM/YY
<b>Section No.</b>				
5.5 Quantification of GHG emission reductions and removals, step 3				
<b>Description of finding</b>				
During the validation and verification carried out in documentary mode and on site, it was found that the quantities of non-hazardous organic waste used for the calculation of estimated reductions differed from those found in the manifests and shipments received by the organization (solid waste records folder), causing a material difference.				
<b>Project holder response (dd/mm/yyyy)</b>				
31/01/2024				
<b>Documentation provided by the project holder</b>				
File containing the compilation of solid residues : WORMS solid V2.xlsx				
<b>CAB assessment (dd/mm/yyyy)</b>				
The project owner recalculates the GHG emission reductions using the amounts reported in the shipment logs and manifests received by the organization. 06/02/2024				

Finding ID	2	Type of finding	Clarification / Corrective/ Forward action	Date DD/MM/YY
<b>Section No.</b>				
5.5 Quantification of GHG emission reductions and removals, step 4				
<b>Description of finding</b>				
During the validation and verification of the Project, it was found that there are emission factors for electricity consumption published by the Secretary of Energy of Argentina, which are more accurate values for the calculation of emissions estimates.				
<b>Project holder response (dd/mm/yyyy)</b>				
31/01/2024				
<b>Documentation provided by the project holder</b>				
file with corrections of the emissions calculation for electricity consumption: WORMS solid V2.xlsx Calculation of the CO2 Emission Factor of the Argentine Power Grid, Datos Energía - Calculation of the CO2 Emission Factor of the Argentine Power Grid (energia.gob.ar)				
<b>CAB assessment (dd/mm/yyyy)</b>				

The Project owner recalculates the GHG emission reductions using the emission factors for electricity consumption that the Ministry of Energy, through the Wholesale Electricity Market, officially. (06/02/2024)

Finding ID	3	Type of finding	Clarification / Corrective/ Forward action	Date DD/MM/YY
<b>Section No.</b>				
5.5 Quantification of GHG emission reductions and removals, step 4				
<b>Description of finding</b>				
During the validation and verification of the project, it was found that diesel and gasoline consumption reported in the invoices (PLANILLA COMBUSTIBLE.xlsx) and energy consumption are overestimated and not adjusted to the project limit, so it is necessary to record the energy consumption based on the declaration of the limit and scope of the project.				
<b>Project holder response (dd/mm/yyyy)</b>				
31/01/2024				
<b>Documentation provided by the project holder</b>				
The file contains the quantities of energy used in the project activity: WORMS solid V2.xlsx Combustible real usado.xlsx Consumo_Gasoil_COMPOST.xlsx				
<b>CAB assessment (dd/mm/yyyy)</b>				
The owner of the Project made a conservative estimate of the energy consumption (diesel and electricity) used in the Project, based on the operation and observation of the Project, it was determined that gasoline consumption in the Project is zero. (06/02/2024)				

Finding ID	4	Type of finding	Clarification / Corrective/ Forward action	Date DD/MM/YY
<b>Section No.</b>				
4.1 Preliminary assessment				
<b>Description of finding</b>				
Correct the wording of the Project Objective in accordance with the BCR Standard: "It is important to note that the project objectives should be consistent with the proposed activities and expected GHG mitigation outcomes.", so the focus needs to be directed to the Project and not to the organization.				
<b>Project holder response (dd/mm/yyyy)</b>				
31/01/2024				
<b>Documentation provided by the project holder</b>				
The updated PDD was reviewed: PDD-Worms-Solid V2.doc				

<b>CAB assessment (dd/mm/yyyy)</b>
The project objective was corrected by mentioning the proposed activities and the expected mitigation results of the project. (06/02/2024)

Finding ID	5	Type of finding	Clarification / Corrective/ Forward action	Date DD/MM/YY
<b>Section No.</b>				
5.5.2.2 Applicability				
<b>Description of finding</b>				
Clarify the applicability of the methodologies used for the Project's emissions reduction. In the PDD there is a replication of the paragraphs of the methodology without reflecting the application of each one.				
<b>Project holder response (dd/mm/yyyy)</b>				
31/01/2024				
<b>Documentation provided by the project holder</b>				
The updated PDD was reviewed: PDD-Worms-Solid V2.doc WORMS solid V2.xlsx				
<b>CAB assessment (dd/mm/yyyy)</b>				
El titular del proyecto realizó la evaluación de la metodología propuesta para la reducción de emisiones (3.1.1 Applicability conditions of the methodology). (06/02/2024)				

Finding ID	6	Type of finding	Clarification / Corrective/ Forward action	Date DD/MM/YY
<b>Section No.</b>				
5.5.1 Start date and quantification period				
<b>Description of finding</b>				
Clarify the specific period covered by the Project considering that it will last 10 years.				
<b>Project holder response (dd/mm/yyyy)</b>				
31/01/2024				
<b>Documentation provided by the project holder</b>				
The updated PDD and calculation was reviewed: PDD-Worms-Solid V2.doc WORMS solid V2.xlsx				
<b>CAB assessment (dd/mm/yyyy)</b>				
The project owner clarified the estimated emission reductions for the project considering the duration of the project (10 years), and also included in the PDD the estimated reductions for the entire project period. (06/02/2024)				

Finding ID	7	Type of finding	Clarification / Corrective/ Forward action	Date DD/MM/YY
<b>Section No.</b>				
5.5.6 Conservative approach and uncertainty management				
<b>Description of finding</b>				
Qualify the uncertainty analysis for direct solid waste measurements.				
<b>Project holder response (dd/mm/yyyy)</b>				
22/02/2024				
<b>Documentation provided by the project holder</b>				
The updated PDD and calculation was reviewed: PDD-Worms-Solid V2.doc WORMS solid V2.xlsx				
<b>CAB assessment (dd/mm/yyyy)</b>				
The project holder performed the uncertainty assessment for the measurements of non-hazardous solid waste entering the composting process. (26/02/2024)				

Finding ID	8	Type of finding	Clarification / Corrective/ Forward action	Date DD/MM/YY
<b>Section No.</b>				
5.5.2.2 Applicability				
<b>Description of finding</b>				
Clarify how the mitigation results were achieved as a consequence of the implementation of the project activities (application of the methodology).				
<b>Project holder response (dd/mm/yyyy)</b>				
31/01/2024				
<b>Documentation provided by the project holder</b>				
The updated PDD was reviewed: PDD-Worms-Solid V2.doc WORMS solid V2.xlsx				
<b>CAB assessment (dd/mm/yyyy)</b>				
The project holder conducted the evaluation of the proposed methodology for emission reduction (3.1.1 Applicability conditions of the methodology).				

### *Annex 3. Documentation review*

- /XXX/ Project Description Document version 1 (PDD-Worms-Solid V2.doc);
- /XXXI/ Emission Reduction Spreadsheet (WORMS solid V2.xlsx);
- /XXXII/ Sealing and verification report (OTN° 307-15719 y 28315) – 2019, 2021 y 2022;
- /XXXIII/ Fuel consumption billing records 2020;
- /XXXIV/ Fuel consumption billing records 2021;
- /XXXV/ Fuel consumption billing records 2022;
- /XXXVI/ Electricity consumption invoices, supplier Empresa Provincial de la Energía de Santa Fe (2018 - 2022);
- /XXXVII/ Annual revenue control (2018 - 2022);
- /XXXVIII/ Bitacoras of waste as raw material for composting 2018 (April to December);
- /XXXIX/ Bitacoras of waste as raw material for composting 2019 (January to December);
- /XL/ Bitacoras of waste as raw material for composting 2020 (January to December);
- /XLI/ Bitacoras of waste as raw material for composting 2021 (January to December);
- /XLII/ Bitacoras of waste as raw material for composting 2022 (January to December);
- /XLIII/ Calculation of the CO2 Emission Factor of the Argentine Electric Power Grid, Energy Data - Calculation of the CO2 Emission Factor of the Argentine Electric Power Grid (energia.gob.ar);
- /XLIV/ Records of Emission Factors of the Wholesale Electricity Market of Argentina, Emission Factor | CAMMESA;
- /XLV/ CO2 emissions calculated on the basis of retail sales of liquid fuels in EESS - año 2018. Government Secretary of Energy, Argentina;
- /XLVI/ Joint Resolution 1/2019, RESFC-2019-1-APN-SECCYMA#SGP;
- /XLVII/ Amendment record - compost - solids (Tramite en proceso, 2023)
- /XLVIII/ PE-8.2 Compost quality control (pdf)
- /XLIX/ PE-8.2-01 Effluent discharge procedure (.pdf)
- /L/ PE-8.2-02 Transport entry control instructions (.pdf)
- /LI/ PE-8.2-04 Instructions for waste acceptance for composting (.pdf)
- /LII/ Billing of electric energy consumption (01/04/2018 to 31/12/2022)

- /LIII/ Invoicing of diesel consumption (01/04/2018 to 31/12/2027)
- /LIV/ Monitoring Report Template (Version 2.0) of the Project Treatment of non-hazardous industrial waste to obtain Biocompost (BCR\_Monitoring-Report-solid2023.doc)
- /LV/ Diesel and Electric Energy Consumption File, Actual Fuel Used (xlsx)
- /LVI/ DGD Tool: SDG-Tool-2023-WORMS Solid (SDG-WORMS solid V2.xlsx)
- /LVII/ Decree (PEP) 2151/14. From 17/07/2014. B.O.: 05/08/2014. Non-Hazardous Waste.
- /LVIII/ LAW ON MINIMUM BUDGETS FOR ADAPTATION AND MITIGATION TO GLOBAL CLIMATE CHANGE, Law 27520.

**Methodologies reviewed;;**

- /j/ AMS-III.F., Small-scale methodology: Avoidance of methane emissions through composting. Version 12.0;
- /k/ Tool 04 - Methodological tool - CDM, Emissions from solid waste disposal sites. Version 08.1;
- /l/ Tool 13 - Methodological tool - CDM, Project and leakage emissions from composting. Version 02.0;
- /m/ Methodological tool, Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation, Version 03.;
- /n/ Methodological tool, Tool to calculate project or leakage CO2 emissions from fossil fuel combustion, Version 03.;
- /o/ Methodological tool - CDM, Demonstration of additionality of small scale project activities. Version 13.1;
- /p/ Methodological tool ,Tool for the demonstration and assessment of additionality Version 07.0;
- /q/ Annex 27 - CDM GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES. Version 09.0;
- /r/ Annex 7 - CDM GUIDELINES ON ADDITIONALITY OF FIRST-OF-ITS-KIND PROJECT ACTIVITIES. Version 02.0;

## *Annex 4. Abbreviations*

<b>ANCE</b>	Asociación de Normalización y Certificación, A.C.
<b>BCR</b>	BioCarbon Registry
<b>CAR</b>	Corrective action requirement
<b>CL</b>	Clarification request
<b>GHG</b>	Green house Gases
<b>VCC</b>	Verified Carbon Credits
<b>PDD</b>	Project Description Document
<b>CS</b>	Competency Standard
<b>FAR</b>	Additional measures
<b>CDM</b>	Clean Development Mechanism
<b>N.A.</b>	Not applicable
<b>SDG</b>	Sustainable Development Goals
<b>VVB</b>	Validation and Verification Body
<b>PP</b>	Project Proponent
<b>tCO<sub>2</sub>e</b>	Tons of carbon dioxide equivalent