Monitoring Report

CARBON OFFSET UNIT (CoU) PROJECT

Title: 132 MW Sugarcane Bagasse based co-generation Energy USINA CORURIPE

Version 1.0

Date August 6, 2025

First CoU Issuance Period: 12 years

Date: Jan 1, 2013 to Dec 31, 2024

Monitoring Report (MR)
CARBON OFFSET UNIT (CoU) PROJECT

Monitoring Report	
Title of the project activity	132 MW Sugarcane Bagasse based co-generation Energy USINA CORURIPE
UCR Project Registration Number	545
Version	Version 1
Completion date of the MR	August 6, 2025
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 1 Duration of this monitoring Period: (first and last days included (01/01/2013 to 31/12/2024)
Project participants	SA USINA CORURIPE AÇUCAR E ALCOOL (OWNER) FASTCARBON (AGGREGATOR)
Host Party	Brazil
Applied methodologies and standardized baselines	CDMUNFCCC Methodology ACM0006: Electricity and heat generation from biomass (Ver.16) &UCR Standard for Emission Factor
Sectoral scopes	01- Energy industries (renewable -/ non-renewable sources)
Estimated amount of GHG emission reductions for this monitoring period in the registered PCN	2013: 136,853 CoUs (136,853 tCO2eq)
	2014: 163,517 CoUs (163,517 tCO2eq)
	2015: 154,764 CoUs (154,764 tCO2eq)
	2016: 145,877 CoUs (145,877 tCO2eq)
	2017: 112,966 CoUs (112,966 tCO2eq)
	2018: 118,666 CoUs (118,666 tCO2eq)
	2019: 113,238 CoUs (113,238 tCO2eq)
	2020: 102,265 CoUs (102,265 tCO2eq)
	2021: 98,373 CoUs (98,373 tCO2eq)
	2022: 73,160 CoUs (73,160 tCO2eq)
	2023: 107,712 CoUs (107,712 tCO2eq)
	2024: 117,441 CoUs (117,441 tCO2eq)
Total:	1,444,832 CoUs (1,444,832 tCO2eq)

SECTION A. Description of project activity

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

a) Purpose of the project activity and the measures taken for GHG emission reductions >>

The project titled "132 MW Sugarcane Bagasse based co-generation Energy USINA CORURIPE" is a 100% Brazilian company headquartered in the city of Coruripe, Alagoas, with five production units: one located in Coruripe (AL), and four in the state of Minas Gerais, in the municipalities of Iturama, Campo Florido, Limeira do Oeste, and Carneirinho.

Altogether, the units have a combined crushing capacity of 16.2 million tons of sugarcane per harvest season.

Coruripe uses sugarcane bagasse as biomass for energy generation. The bagasse, which is rich in cellulose, is burned in boilers to produce steam, which is then converted into thermal energy and subsequently into renewable electricity through a cogeneration process.

The energy generated not only supplies the industrial units and administrative offices but also enables the surplus to be sold in both the regulated and free markets, contributing to a more sustainable energy system by replacing fossil-based energy sources.

Among all units, energy export is distributed as follows:

Carneirinho Unit (UTE Carneirinho): equipped with two 12 MW generators, totaling 24 MW of installed capacity, with an energy export contract of **13 MW**.

Iturama Unit: divided into two thermal power plants (UTEs):

- UTE Usina Iturama: has one 20 MW generator, with an export contract of **12 MW**;
- UTE Coruripe Energética Iturama: has two 12 MW generators, totaling 24 MW of installed capacity, with an energy export contract of **22 MW**.

Campo Florido Unit: divided into two thermal power plants (UTEs):

- UTE Usina Coruripe Campo Florido: equipped with one 30 MW generator, with an energy export contract of **15 MW**;
- UTE Coruripe Energética Campo Florido: equipped with one 30 MW generator, with an energy export contract of **30 MW**.

Coruripe Headquarters Unit: divided into two thermal power plants (UTEs):

- UTE COR: equipped with one 16 MW generator, with an energy export contract of **16 MW**;
- UTE CVW Energética: equipped with one 40 MW generator, with an energy export contract of **24 MW**.

Unit	Installed Capacity	Export Contract	Location	Commercial Operation Date
UTE COR	16 MW	**16 MW**	Coruripe, Alagoas	February 4, 2006 (16 MW) ANEEL Dispatch Nº 237
UTE CVW Energética	40 MW	**24 MW**	Coruripe, Alagoas	February 17, 2023 (40 MW) ANEEL Dispatch Nº 450
UTE Usina Iturama	20 MW	**12 MW**	Iturama, Minas Gerais	August 16, 2011 (20 MW) ANEEL Dispatch Nº 3321
UTE Coruripe Energética Iturama	24 MW	**22 MW**	Iturama, Minas Gerais	October 31, 2002 (24 MW) ANEEL Dispatch Nº 081/2003
UTE Usina Coruripe Campo Florido	30 MW	**15 MW**	Campo Florido, Minas Gerais	July 20, 2004 (12 MW) ANEEL Dispatch Nº 574
UTE Coruripe Energética Campo Florido	30 MW	**30 MW**	Campo Florido, Minas Gerais	July 23, 2008 (30 MW) ANEEL Dispatch Nº 2711
UTE Carneirinho	24 MW	**13 MW**	Carneirinho, Minas Gerais	July 24, 2008 (12 MW) ANEEL Dispatch Nº 3459 September 19, 2008 (12MW) ANEEL Dispatch Nº 2727
Total	184 MW	**132 MW**		

The details of the registered project are as follows:

Purpose of the project activity:

The purpose of the project activity is to generate electricity using renewable biomass, specifically sugarcane bagasse, a by-product of the juice extraction process during ethanol and sugar production and thereby reduce GHG emissions by displacing fossil fuel-based electricity from the grid.

The project consists of grid-connected biomass cogeneration power plants operating with high-pressure steam turbine configurations. Bagasse-fired high-pressure boilers generate steam, which drives the turbines to produce electricity. The power generated is used for the captive consumption of the sugar production units, with surplus electricity exported to the Brazilian grid.

By displacing electricity that would otherwise be generated from more greenhouse gas (GHG)-intensive sources, the project contributes to long-term climate change mitigation. It qualifies under the environmental positive list of pre-approved project types eligible for the issuance of voluntary carbon credits under the UCR carbon incentive model.

Usina Coruripe operates five industrial units:

1. Coruripe Unit (AL)

Located in Coruripe, Alagoas.
Headquarters of the company.
Crushing capacity: ~3.5 million tons of sugarcane per harvest.
Recently expanded with the CVW thermal power plant for additional electricity generation.

2. Iturama Unit (MG)

Located in Iturama, Minas Gerais.
Crushing capacity: ~3.5 million tons per harvest.
Hosts two power plants: UTE Usina Iturama and UTE Coruripe Energética Iturama.

3. Campo Florido Unit (MG)

Located in Campo Florido, Minas Gerais.
Crushing capacity: ~4.3 million tons per harvest.
Includes UTE Usina Coruripe Campo Florido and UTE Coruripe Energética Campo Florido.

4. Carneirinho Unit (MG)

Located in Carneirinho, Minas Gerais.
Crushing capacity: ~2.5 million tons per harvest.
Operates UTE Carneirinho with two 12 MW generators.

5. Limeira do Oeste Unit (MG)

Located in Limeira do Oeste, Minas Gerais.
Crushing capacity: ~2.5 million tons per harvest.
Recently received investments for a new sugar production facility.

It Generates electricity from biomass, using sugarcane bagasse as its primary fuel source. However, the energy generated by this unit is used exclusively for internal consumption at the industrial facility and is not exported to the National Interconnected System (SIN), and it will not be included in this report.

b) Brief description of the installed technology and equipment>>

1. Implementation Status of the Project Activity

The project is fully implemented and operational, supplying renewable electricity to the Brazilian national grid and for captive consumption within the industrial units.
The installed equipment includes biomass-fired boilers, steam turbines, generators, and auxiliary systems for biomass handling and energy distribution. The power generated in excess of the plant's internal demand is exported to the national grid (SIN – Sistema Interligado Nacional), displacing electricity that would otherwise be generated from fossil fuels.
The technology applied is well-established, reliable, and commonly used in the Brazilian sugar-energy sector, contributing to improved energy efficiency and sustainable use of agro-industrial residues.

2. Installed Technology and Equipment

The project activity is a grid-connected biomass cogeneration power plant, using high-pressure steam turbine technology. The process follows the Rankine cycle for efficient energy conversion, with the main steps as follows:

Combustion of Sugarcane Bagasse: Biomass residue from sugarcane processing is burned in high-pressure boilers.
Steam Generation: The combustion process generates steam at high temperatures and pressure.
Electricity Generation: The steam drives high-efficiency extraction-condensing steam turbines, which are connected to alternators to produce electricity.

Main Components:

Boilers:

Coruripe (COR) e Energética (CVW):
- 110 TPH (tons per hour), 20.5 kgf/cm², 300°C.
- 200 TPH (tons per hour), 45.0 kgf/cm², 470°C.
- 250 TPH (tons per hour), 45.0 kgf/cm², 450°C.

Iturama e Iturama Energética:
- 95 TPH (tons per hour), 29.0 kgf/cm², 350°C.
- 150 TPH (tons per hour), 45.0 kgf/cm², 455°C.
- 200 TPH (tons per hour), 45.0 kgf/cm², 455°C.

Campo Florido e Campo Florido Energética:
- 120 TPH (tons per hour), 45.0 kgf/cm², 415°C.
- 150 TPH (tons per hour), 45.0 kgf/cm², 460°C.
- 150 TPH (tons per hour), 45.0 kgf/cm², 460°C.

Carneirinho e Carneirinho Energética:
- 150 TPH (tons per hour), 45.0 kgf/cm², 470°C.
- 150 TPH (tons per hour), 67.0 kgf/cm², 520°C.

Turbines:

Coruripe (COR) e Energética (CVW):
- 16,000 kW, 21 bar, 300°C.
- 40,000 kW, 45 bar, 450°C.

Iturama e Iturama Energética:
- 12,000 kW, 45 bar, 450°C.
- 12,000 kW, 45 bar, 450°C.
- 20,000 kW, 42 bar, 450°C.

Campo Florido e Campo Florido Energética:
- 30,000 kW, 42 bar, 450°C.
- 30,000 kW, 42 bar, 450°C.

Carneirinho e Carneirinho Energética:
- 45,000 kW, 45 bar, 450°C.
- 40,000 kW, 40 bar, 420°C.

Alternators:

Coruripe (COR) e Energética (CVW):
- 20,000 kVA, 13,800 V, 60 Hz
- 50,000 kVA, 13,800 V, 60 Hz

Iturama e Iturama Energética:
- 15,000 kVA, 13,800 V, 60 Hz
- 15,000 kVA, 13,800 V, 60 Hz
- 25,000 kVA, 13,800 V, 60 Hz

Campo Florido e Campo Florido Energética:
- 37,500 kVA, 13,800 V, 60 Hz
- 37,500 kVA, 13,800 V, 60 Hz

Carneirinho e Carneirinho Energética:
- 15,000 kVA, 13,800 V, 60 Hz
- 15,000 kVA, 13,800 V, 60 Hz

Auxiliary Systems:
Fuel and ash handling equipment.
Water-cooled condenser system.
Electrical and automation systems.

c) Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.)>>

The USINA CORURIPE project consists of four biomass cogeneration plants that have been operational for several years, supplying renewable electricity to the Brazilian national grid and for captive consumption. The relevant dates for the project activity are as follows:

Unit	Location	Commercial Operation Date	ANEEL Dispatch	Resolution
UTE Carneirinho	Carneirinho, Minas Gerais	July 24, 2008 (12 MW)	ANEEL Dispatch Nº 3459	Authorizing Resolution No. 1,021, dated August 21, 2007 (12 MW)
		September 19, 2008 (12MW)	ANEEL Dispatch Nº 2727	Authorizing Resolution No. 1,309, dated March 25, 2008 (+12 MW)
UTE Usina Iturama	Iturama, Minas Gerais	August 16, 2011 (20 MW)	ANEEL Dispatch Nº 3321	Authorizing Resolution No. 2,889, dated May 10, 2011 (20 MW)
UTE Coruripe Energética Iturama	Iturama, Minas Gerais	October 31, 2002 (24 MW)	ANEEL Dispatch Nº 081/2003	Authorizing Resolution No. 11, dated January 11, 2002 (12MW+12MW, total 24 MW)
UTE Usina Coruripe Campo Florido	Campo Florido, Minas Gerais	July 20, 2004 (12 MW)	ANEEL Dispatch Nº 574	Authorizing Resolution No. 1.265, dated February 26, 2008 (30 MW)
UTE Coruripe Energética Campo Florido	Campo Florido, Minas Gerais	July 23, 2008 (30 MW)	ANEEL Dispatch Nº 2711	Authorizing Resolution No. 1,363, dated May 13, 2008 (30 MW)
UTE COR	Coruripe, Alagoas	February 4, 2006 (16 MW)	ANEEL Dispatch Nº 237	Authorizing Resolution Nº 228, May 5, 2004 (16 MW)
UTE CVW Energética	Coruripe, Alagoas	February 17, 2023 (40 MW)	ANEEL Dispatch Nº 450	Authorizing Resolution No. 10,649, dated September 28, 2021 (40 MW)

USINA CORURIPE - Environmental License – Nº 2024.04041505031.EXP.LON, Dated October 22, 2020, Expiration date October 22, 2026

UTE CVW ENERGÉTICA - Environmental License -Nº 2020.22101088267.EXP.LON, Dated April 4, 2024, Expiration date April 4, 2026

ITURAMA - Environmental License – Nº 211/2019, Dated July 23, 2019, Expiration date July 23, 2027

ITURAMA ENERGÉTICA - Environmental License – Nº 017/2022, Dated June 01, 2022, Expiration date December 21, 2026

CAMPO FLORIDO - Environmental License – Nº 095/2021, Dated November 24, 2021, Expiration date November 23, 2031

CAMPO FLORIDO ENERGÉTICA - Environmental License – Nº 019/2018, Dated February 07, 2018, Expiration date February 07, 2028

CARNEIRINHO - Environmental License – Nº 036/2023, Dated May 31, 2023, Expiration date December 21, 2027

UCR Project ID: UCR ID Number: 545
Start Date of Crediting Period: Jan 01, 2013.
End Date of Crediting Period: Dec 31, 2024.
Monitoring Period: Jan 01,2013 to Dec 31, 2024.

The project has been in continued operation since its commissioning, consistently generating renewable energy and contributing to greenhouse gas (GHG) emission reductions through the displacement of fossil fuel-based electricity.

d) Total GHG emission reductions achieved or net anthropogenic GHG removals by sinks achieved in this monitoring period>>

The total GHG emission reductions achieved in this monitoring period is as follows:

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	Jan 01, 2013
Carbon credits claimed up to	Dec 31, 2024
Total ERs generated (tCO_{2eq})	1,444,832 tCO_{2eq}
Leakage	0

e) Baseline Scenario>>

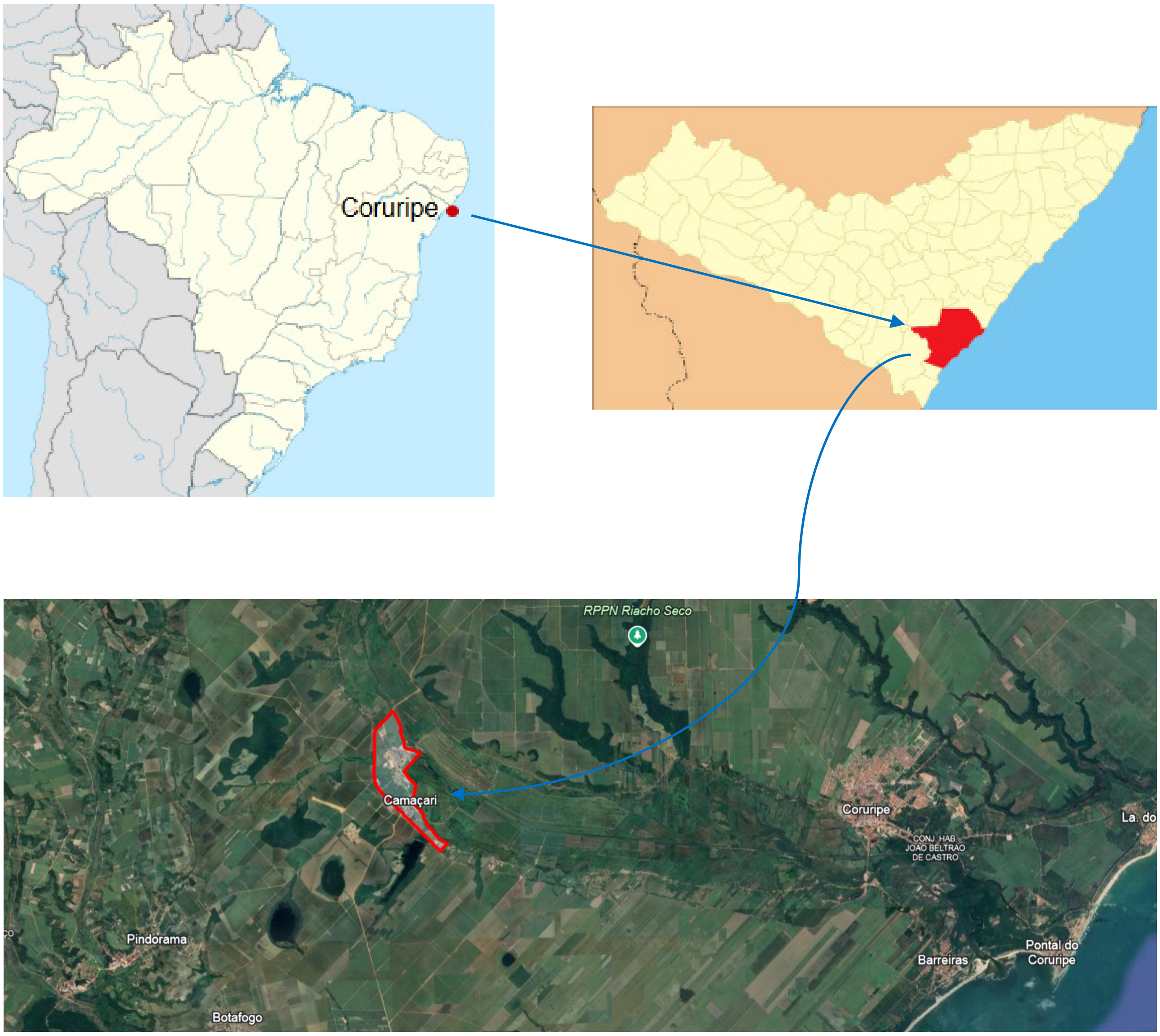
The electricity supplied to the grid by the USINA CORURIPE (project activity) that would have otherwise been generated by fossil-fuel-fed powerplants connected to the national grid, which are carbon intensive sources of electricity generation.

A.2. Location of project activity>>

1. Coruripe Unit (AL)

Country: Brazil
District: Coruripe
State: Alagoas
Zip Code: 57230-000

- **Latitude:** 10° 7' 24.24" S
- **Longitude:** 36° 16' 27.12" W



2. Iturama Unit (MG)

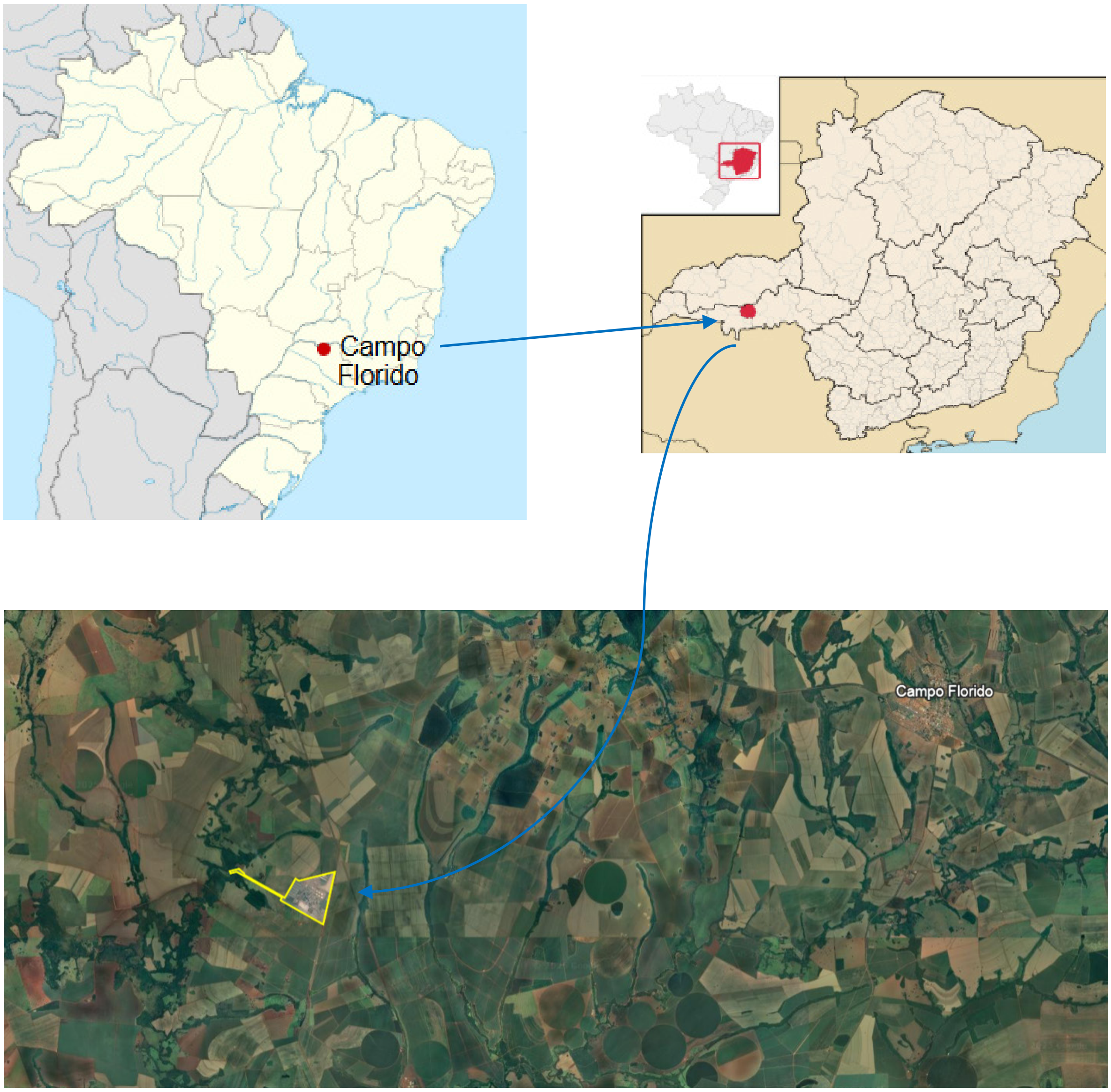
Country: Brazil
District: Iturama
State: Minas Grais
Zip Code: 38280-971

- **Latitude:** 19°43' 41.02" S
- **Longitude:** 50°11' 44.02" W

3. Campo Florido Unit (MG)

Country: Brazil
District: Campo Florido
State: Minas Grais
Zip Code: 38130-000

- **Latitude:** 19°46' 51" S
- **Longitude:** 48°43'56" W



4. Carneirinho Unit (MG)

Country: Brazil
District: Carneirinho
State: Minas Grais
Zip Code: 38290-000

- **Latitude:** 20° 4' 11.02" S
- **Longitude:** 50° 59' 57.60" W

A.3. Parties and project participants >>

Party (Host)	Participants
Brazil	**Owner:** SA USINA CORURIPE AÇUCAR E ALCOOL Fazenda Triunfo S/N, Zona Rural, municipality of Coruripe, State of Alagoas, Zip Code: 5723-000 https://www.usinacoruripe.com.br/ **Aggregator:** FastCarbon Consultoria e Negócios Ltda Rua Viradouro, 63, conjunto 61, Itaim Bibi São Paulo/SP Zip Code: 04538-110 https://fastcarbon.com.br

A.4. References to methodologies and standardized baselines >>

SECTORAL SCOPE: 01 – Energy industries (Renewable/Non-renewable sources)
TYPE: I - Larger renewable energy or energy efficiency projects. (Biomass Energy)
CATEGORY: CDMUNFCCC Methodology ACM0006: Electricity and heat generation from biomass (Ver.16) &UCR Standard for Emission Factor

Applied Standardized Baselines:
The project follows the UCR Standard for Emission Factor, using the combined margin emission factor for the Brazilian electricity grid, as defined by the UNFCCC methodology:

Tool to calculate the emission factor for an electricity system (Version 7.0)
The grid emission factor is calculated as per the methodology defined in this tool.
Reference: UNFCCC CDM Tool.
(https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf)

Applicability of Methodologies and Standardized Baselines
The project meets all applicability conditions of the selected methodology.
The project activity is a biomass (bagasse)-based cogeneration system, generating both electricity and process heat, and exporting surplus electricity to the grid.
The biomass used (sugarcane bagasse) is a residue from the sugar and ethanol production process and does not come from dedicated plantations.
The project does not involve co-firing of fossil fuels beyond the allowed limit (≤25%) as per UCR protocol.

The project displaces grid electricity that would otherwise be generated using fossil fuels, thus contributing to GHG emission reductions.
The total installed capacity of 132 MW qualifies under the large-scale methodology ACM0006, and the emissions are capped accordingly.
The project fully complies with UCR and UNFCCC methodologies, ensuring robust and transparent emission reduction calculations.

A.5. Crediting period of project activity >>

Length of the crediting period corresponding to this monitoring period: 12 years – Jan 01, 2013 to Dec 31, 2024

A.6. Contact information of responsible persons/entities >>

Name: Fábio Bressani Ribeiro
Company (Aggregator): FastCarbon
Mobile: +55 11 99884 6428
E-mail: fabio.bressani@fastcarbon.com.br

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity >>

a) Provide information on the implementation status of the project activity during this monitoring period in accordance with UCR PCN>>

The registered project activity consists of the generation of renewable electricity from biomass residues (mainly sugarcane bagasse) in high-efficiency cogeneration systems installed at Usina Coruripe's industrial facilities. The electricity generated is partially consumed on-site to support the plant's operations, while the surplus is exported to the Brazilian National Grid (SIN).

During this monitoring period, the project activity remained fully operational, with no changes in the installed capacity, project boundaries, or applied technologies, as outlined in the latest version of the Project Concept Note (PCN). The cogeneration units continued to operate in compliance with the applicable environmental and operational licenses. The monitoring systems and metering equipment functioned as planned, ensuring the accuracy and reliability of the collected data.

The implementation of the project continues to achieve its intended emission reductions by displacing grid electricity that would otherwise be generated from fossil-fuel-based sources, thereby contributing to climate change mitigation.

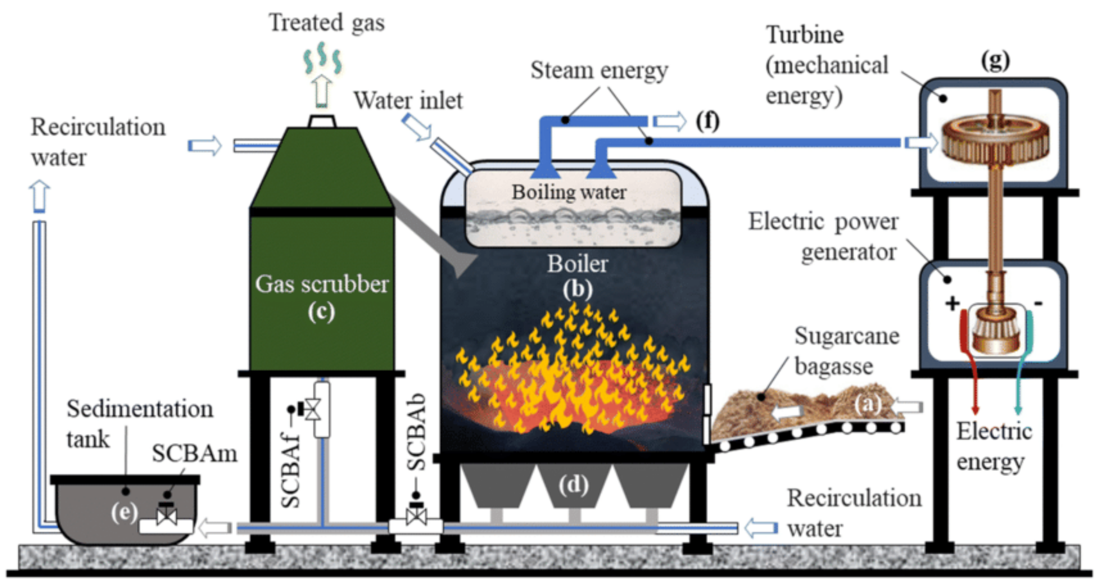
b) For the description of the installed technology(ies), technical process and equipment, include diagrams, where appropriate>>

The UCR project activity is a grid-connected bagasse-based cogeneration power plant with a high-pressure steam-turbine configuration. The UCR project activity is the electricity generation capacity and the installation of facilities for allowing captive use and export of electricity to the electricity grid.

The primary technology for the project activity is direct combustion of biomass residues, and power generation using the Rankine cycle technology. Power generation through this method involves combustion of biomass residues directly in the boiler, which is capable to generate high-pressure high-temperature steam, which is fed to a steam turbine that drives a generator.

The main elements of the power plant are as follows.
- A boiler unit which converts the energy available in the fuels into thermal energy;
- A steam turbine unit which converts thermal energy into mechanical energy;
- An alternator unit, which converts mechanical energy into electrical power.

A number of other equipment components, as listed below, also form part of the biomass power plant.
- Fuel and ash handling equipment
- Water cooled condenser system for cooling the exhaust steam
- DM Water system and Air Compressor Plant
- Electrical systems and Automation system



1. Coruripe Unit (AL)

The system consists of one energy generating unit of 16 MW, supplied by two boilers (boilers number 4 and 7) for UTE Coruripe Usina (COR).
And one energy generating unit (40 MW), supplied by one boiler (boiler number 8) for UTE CVW Coruripe Energética.

Alternator/ Generator nº 5
(UTE Coruripe Usina COR)

Nameplate data: Alternator/ Generator nº 5
(UTE Coruripe Usina COR)

Alternator/ Generator nº 6
(UTE Coruripe CVW Energética)

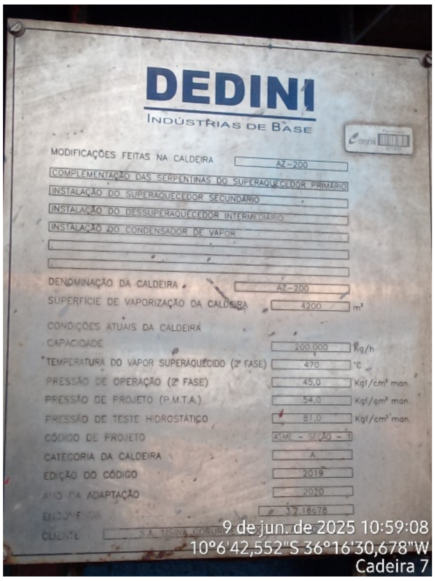
Nameplate data: Alternator/ Generator nº 6
(UTE Coruripe CVW Energética)

Alternator/ Generator	Nº 5	Nº 6
Year of manufacturer	April 2004	November 2021
Manufacturer	GE - Gevisa	WEG
Power Rated (kVA)	20	50
Serial Number	RWH 227001365	1061128808
Voltage (V)	13,800	13,800
Current (Amps)	837	2,092
Power Factor (cos φ)	0.8	0.80
Efficiency (75%, 100% of load)	98.1%	97.6%, 97.7%
Generator Rated Speed (rpm)	1,800	1,800
Frequency (Hz)	60	60
Generator Model	271R524G1	ST41-1120

Boiler nº 4 Coruripe Usina (COR)

Nameplate data: Boiler nº 4 Coruripe Usina (COR)

Boiler nº 7 Coruripe Usina (COR)



Nameplate data: Boiler nº 7 Coruripe Usina (COR)

Boiler nº 8 Coruripe Energética (CVW)

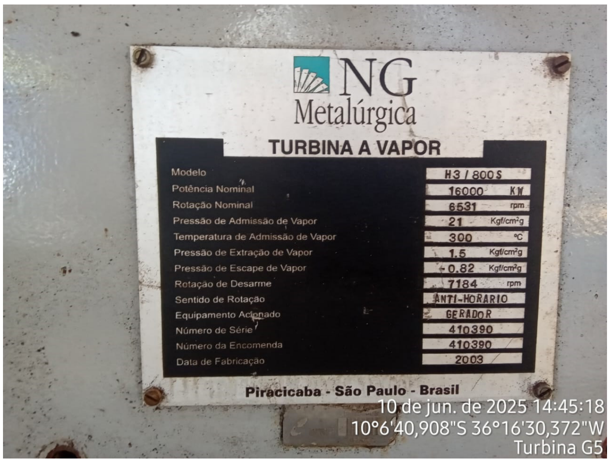
Nameplate data: Boiler nº 8 Coruripe Energética (CVW)

Boiler	Nº 4 (COR S.A.)	Nº 7 (COR S.A.)	Nº 8 (CVW)
Manufacturer	M. Dedini	Dedini	Triniton
Capacity (Tons/h)	110	200	250
Model	V 2 / 4 GB Aumentada	AZ-200	TSG-250
Year of manufacturer / Refurbished	1974 / 2009	2019 / 2020	2020 / 2021
Maximum allowable working pressure (kgf/cm^2g)	23.0	54.0	54.0
Hydrostatic Test Pressure (kgf/cm^2g)	34.5	81.0	80
Pressure (kgf/cm^2)	20.5	45.0	45.0
Degree of super heat °C (Steam)	300	470	450
Heating surface area (m^2)	2,500	4,200	5,100
Design Standard	ASME Section 1	ASME Section 1	ASME Section 1 / 2019
category	A	A	A

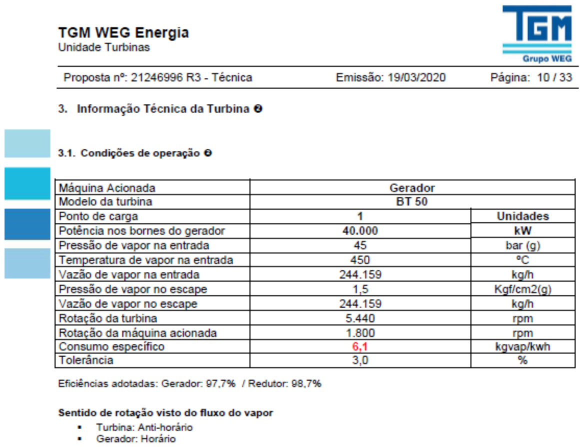
Turbines No. 6 does not have the nameplate data affixed. However, below is the screenshots of the turbine technical data extracted from its manual.

Turbine 5
UTE Coruripe Usina COR

Turbine 6
Coruripe Energética (CVW)



Nameplate data: Turbine nº 5
(UTE Coruripe Usina COR)



TGM WEG Energia
Unidade Turbinas

Proposta nº: 21246996 R3 - Técnica   Emissão: 19/03/2020   Página: 10 / 33

3. Informação Técnica da Turbina ❷

3.1. Condições de operação ❷

Máquina Acionada	Gerador	
Modelo da turbina	BT 50	
Ponto de carga	1	Unidades
Potência nos bornes do gerador	40.000	kW
Pressão de vapor na entrada	45	bar (g)
Temperatura de vapor na entrada	450	ºC
Vazão de vapor na entrada	244.159	kg/h
Pressão de vapor no escape	1,5	Kgf/cm2(g)
Vazão de vapor no escape	244.159	kg/h
Rotação da turbina	5.440	rpm
Rotação da máquina acionada	1.800	rpm
Consumo específico	6,1	kgvap/kwh
Tolerância	3,0	%

Eficiências adotadas: Gerador: 97,7% / Redutor: 98,7%

Sentido de rotação visto do fluxo do vapor
- Turbina: Anti-horário
- Gerador: Horário

Nameplate data: Turbine nº 6
(UTE Coruripe Usina COR)

Turbine	Nº 5	Nº 6
Year of manufacturer or Retrofit	2003	2000
Manufacturer	NG Metalúrgica	TGM Weg
Power Rated (kW)	16,000	40,000
Live Steam Pressure (Bar)	21	45
Live Steam Temperature (ºC)	300	450
Steam Exhaust Pressure (Bar)	1.5	1.5
Turbine Rated Speed (rpm)	6,531	5,440
Turbine Disarm Speed (rpm)	7,184	Not Available
Turbine Model	H3 / 800 S	BT 50

2. Iturama Unit (MG)

The system consists of two energy generating units, supplied by one boiler for UTE Coruripe Energética Iturama and one energy generating unit, supplied by one boiler for UTE Usina Iturama.

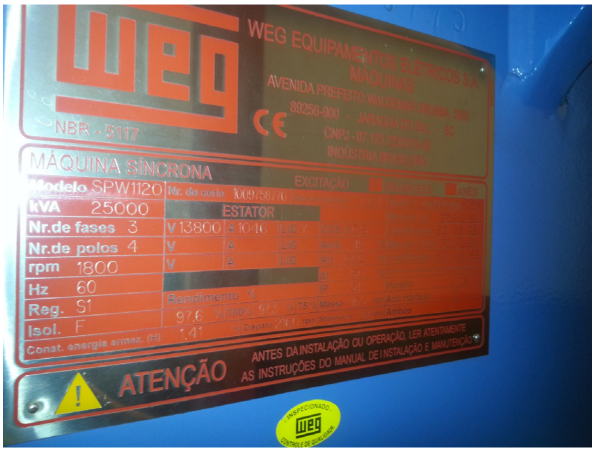
Alternator/ Generator nº 1
(UTE Coruripe Energética Iturama)

Nameplate data: Alternator/ Generator nº 1
(UTE Coruripe Energética Iturama)

Alternator/ Generator nº 2
(UTE Coruripe Energética Iturama)

Nameplate data: Alternator/ Generator nº 2
(UTE Coruripe Energética Iturama)

Alternator/ Generator nº 3
(UTE Coruripe Iturama)



Nameplate data: Alternator/ Generator nº 3
(UTE Coruripe Iturama)

Nameplate data: Alternator/ Generator nº 3
(UTE Coruripe Iturama)

Alternator/ Generator	**Nº 1**	**Nº 2**	**Nº 3**
Year of manufacturer	February 2002	January 2002	February 2011
Manufacturer	WEG	WEG	WEG
Power Rated (kVA)	15	15	25
Serial Number	104603	89006	1009758770
Voltage (V)	13,800	13,800	13,800
Current (Amps)	627.6	627.6	1046
Power Factor (cos φ)	0.80	0.80	0.80
Efficiency (75%, 100% of load)	Not available	Not available	97.3 / 97.6
Generator Rated Speed (rpm)	1,800	1,800	1,800
Frequency (Hz)	60	60	60
Generator Model	SSW900	SSW900	SPW1120

Boiler nº 1 Iturama

Nameplate data: Boiler nº 1 Iturama

Boiler nº 2 Iturama

Nameplate data: Boiler nº 2 Iturama

Boiler nº 2 Iturama

Boiler nº 3 Energética Iturama

Boiler nº 3 Energética Iturama

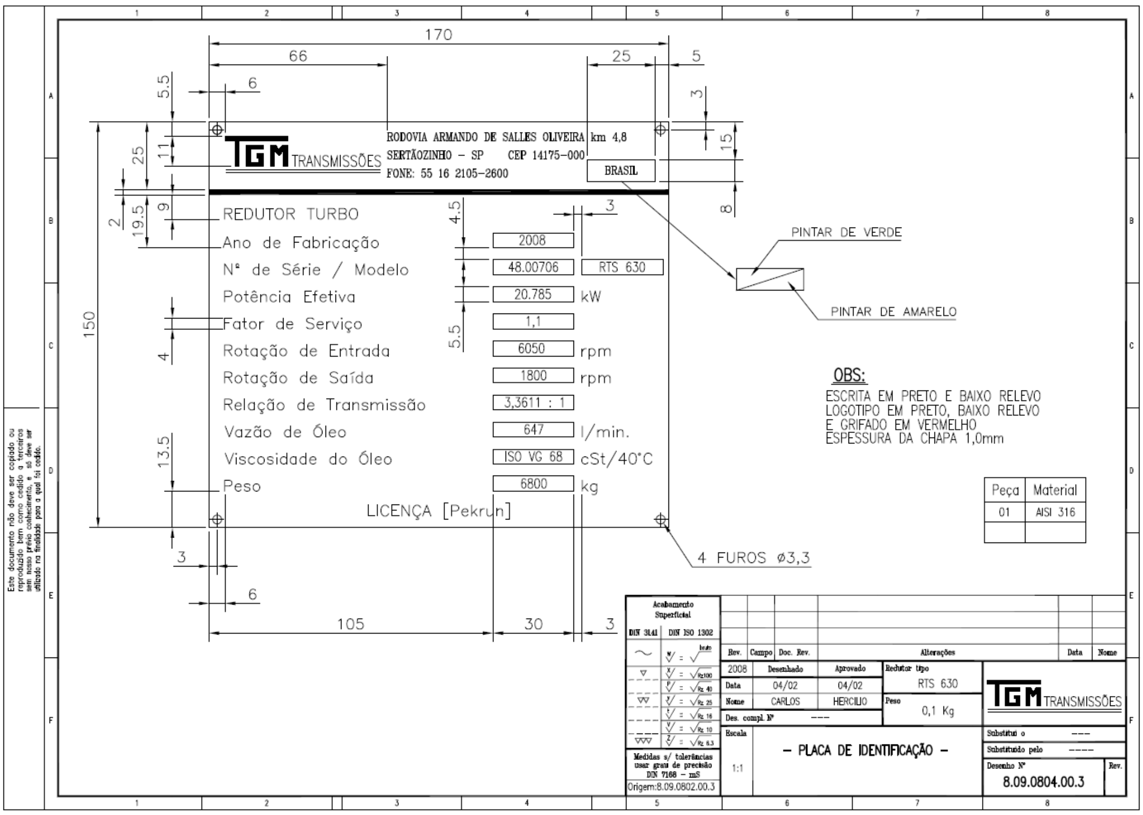
Nameplate data: Boiler nº 3 Energética Iturama

Boiler	**Nº 01 (ITU S.A.)**	**Nº 02 (ITU S.A.)**	**Nº 03 (ITU ENE)**
Manufacturer	Sermatec	Equipalcool	Sermatec
Capacity (Tons/h)	95	150	200
Serial number	21-25	174/12	52002
Year of manufacturer	2001	2010	2002
Maximum allowable working pressure (kgf/cm^{2}g)	33	54	53
Hydrostatic Test Pressure (kgf/cm^{2}g)	49	81	79,5
Pressure (kgf/cm^2)	29	45	45
Degree of super heat ºC (Steam)	350	455	455
Heating surface area (m^2)	2245	2010	4620
Design Standard	ASME Section I / 1995	ASME Section I / 2007	ASME -98
category	A	A	A

Nameplate data: Turbine nº 1
(UTE Coruripe Energética Iturama)

Nameplate data: Turbine nº 2
(UTE Coruripe Energética Iturama)

Turbine nº 3 does not have the nameplate data affixed. However, below are some screenshots of the technical data extracted from its manual.



Máquina acionada	Gerador	
Potência nos bornes do gerador	20000	kW
Pressão do vapor de entrada	42	Kgf/cm²
Temperatura do vapor de entrada	450	° C
Vazão do vapor de entrada	137.000	Kg/h
Pressão do vapor de saída	1,5	Kgf/cm²
Consumo específico	6,85	Kg/kWh
Rotação da turbina	6000	Rpm
Rotação do gerador	1800	Rpm
Tolerância	3	%

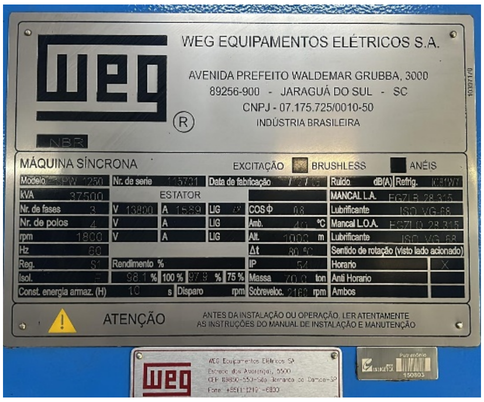
Critério	Tag TGM	Alarme	Desarme de Emergência	Intertravamento	Unidade
Sobrevelocidade (mecânico)	20.10	----	6600	----	rpm
Sobrevelocidade (eletrônico)	20.42	----	----	Trip por sobrevelocidade	----
	53.08	----	----	Turbina armada	----
Deslocamento axial do eixo da turbina	39.21.3/39.22.3	≤-0,34/ ≥0,34	≤-0,54/ ≥0,54	----	mm
Vibração dos mancais da turbina	37.00.3/37.01.3	≥89	≥116	----	µm
Vibração dos mancais do eixo do redutor	37.10.3/37.11.3	≥89	≥116	----	µm
	37.12.3/37.13.3	≥162	≥212	----	µm
Vibração dos mancais do eixo do gerador	37.20.3/37.21.3	≥162	≥212	----	µm
Pressão do óleo de lubrificação	31.10.4	≤4	----	Trip turbina	Kgf/cm^2g
	51.30	≤2	----	Desarma turbina	Kgf/cm^2g
	51.35	≤1,5	----	Desarma baixa pressão e aciona bomba emergência	Kgf/cm^2g
Pressão do óleo de impulso (P1)	31.00.4	≤6	----	----	Kgf/cm^2g
	51.40	≤6	----	Aciona bomba auxiliar	Kgf/cm^2g
Pressão de elevação do rotor	51.32	≤3	----	Bloqueia giro lento	Kgf/cm^2g
Pressão diferencial do filtro de óleo	31.01.4	≤0,8	----	----	Kgf/cm^2g
Nível de óleo no tanque	35.00.4	92	----	----	%
Pressão do vapor escape	30.10.4	≥1,5	----	----	Kgf/cm^2g
	51.00	≥2,25		Trip turbina	Kgf/cm^2g
Turbina desarmada	53.00	----	----	Válvula F.R. Admissão - Aberta	----
Alavanca de giro lento	53.02	----	----	Intertravamento Giro lento	----

Turbine	**Nº 1**	**Nº 2**	**Nº 3**
Year of manufacturer	2001	2001	2008
Manufacturer	TGM Turbinas	TGM Turbinas	TGM Turbinas
Power Rated (kW)	12,000	12,000	20,000
Live Steam Pressure (Bar)	45	45	42
Live Steam Temperature (ºC)	450	450	450
Steam Exhaust Pressure (Bar)	1.5	1.5	1.5
Turbine Rated Speed (rpm)	6,500	6,500	6,000
Turbine Disarm Speed (rpm)	7,150	7,150	6,600
Turbine Model	TM 12000 A	TM 12000 A	RTS 630

3. Campo Florido Unit (MG)

The system consists of one energy generating unit, supplied by two boilers for UTE Coruripe Campo Florido, and another energy generating unit, supplied by one boiler for UTE Coruripe Energética Campo Florido

Alternator/ Generator nº 1
(UTE Coruripe Energética Campo Florido)



Nameplate data: Alternator/ Generator nº 1
(UTE Coruripe Energética Campo Florido)

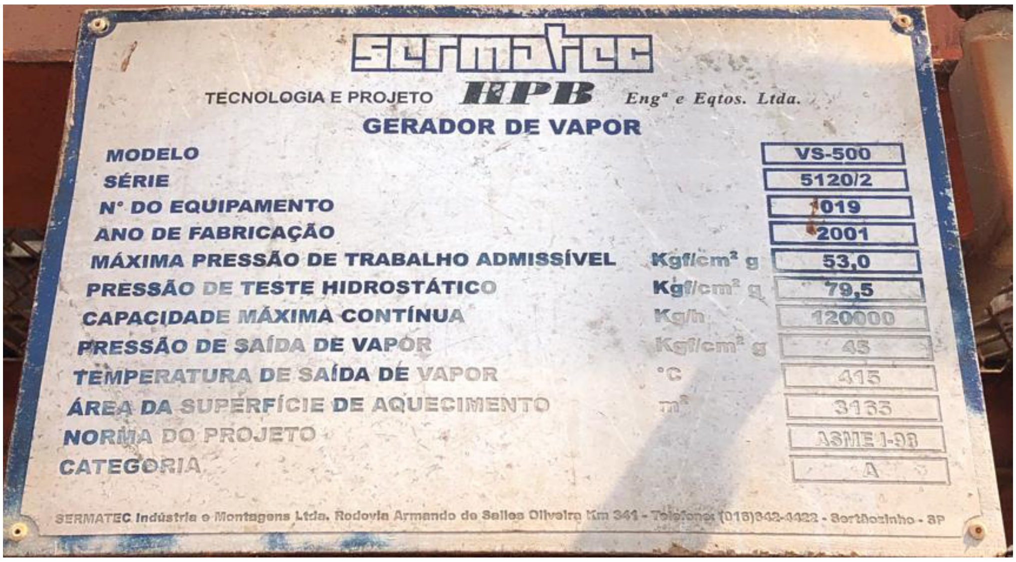
Alternator/ Generator nº 2
(UTE Coruripe Campo Florido)

Nameplate data: Alternator/ Generator nº 2
(UTE Coruripe Campo Florido)

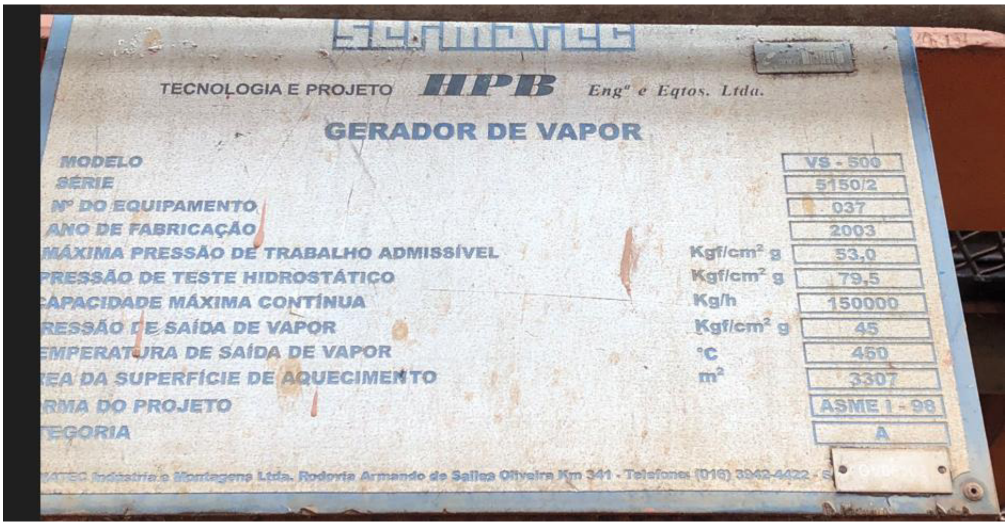
Alternator/ Generator	Nº 1	Nº 2
Year of manufacturer	December 2006	March 2012
Manufacturer	WEG	WEG
Power Rated (kVA)	37,5	37,5
Serial Number	115701	1013725100
Voltage (V)	13,800	13,800
Current (Amps)	1,569	1,569
Power Factor (cos φ)	0.80	0.80
Efficiency (75%, 100% of load)	97.9%, 98.1%	97.8%, 97.9%
Generator Rated Speed (rpm)	1,800	1,800
Frequency (Hz)	60	60
Generator Model	SPW 1250	SPW 1120

Boilers nº 1, 2 and 3

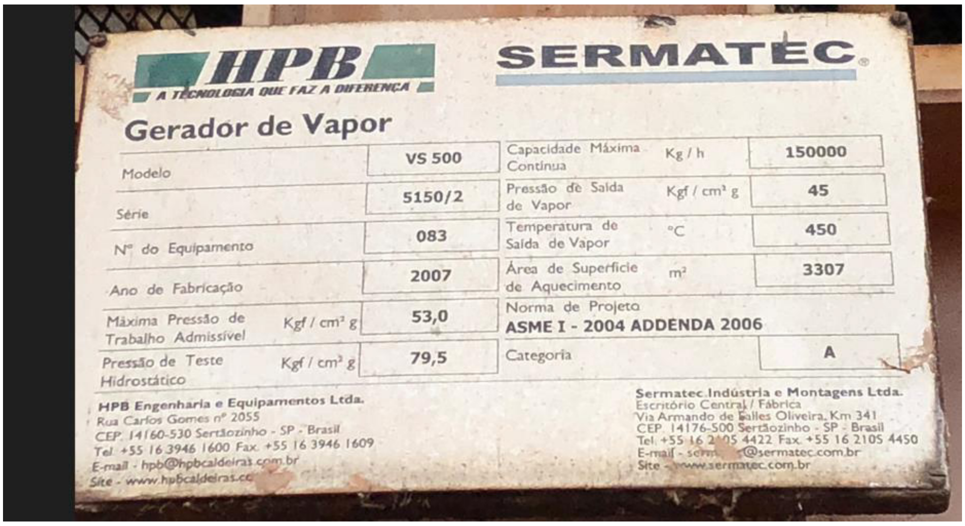
Aerial view of boilers nº 1, 2 and 3



Nameplate data: Boiler nº 1

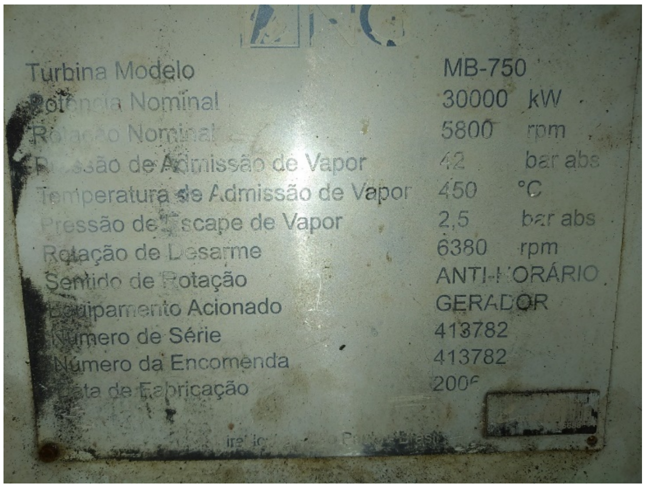


Nameplate data: Boiler nº 2



Nameplate data: Boiler nº 3

Boiler	**Nº 01 (CF S.A.)**	**Nº 02 (CF S.A.)**	**Nº 03 (CF ENE)**
Manufacturer	Sermatec	Sermatec	Sermatec
Capacity (Tons/h)	120	150	150
Serial number	5120/2 - 1019	5150/2	5150/2 - 83
Year of manufacturer	2001	2003	2003
Maximum allowable working pressure (kgf/cm^2g)	53	53	53
Hydrostatic Test Pressure (kgf/cm^2g)	79,5	Sermatec	Sermatec
Pressure (kgf/cm^2)	45	45	45
Degree of super heat ºC (Steam)	415	460	460
Heating surface area (m^2)	3165	3307	3307
Design Standard	ASME I / 98	ASME I / 98	ASME I / 2004 Addenda 2006
category	A	A	A



Nameplate data: Turbine nº 1

Nameplate data: Turbine nº 2

Turbine	**Nº 1**	**Nº 2**
Year of manufacturer	2008	2006
Manufacturer	NG Metalúrgica	NG Metalúrgica
Power Rated (kW)	30,000	30,000
Live Steam Pressure (Bar)	42	42
Live Steam Temperature (ºC)	450	450
Steam Exhaust Pressure (Bar)	2.5	2.5
Turbine Rated Speed (rpm)	5,800	5,800
Turbine Disarm Speed (rpm)	6,380	6,380
Turbine Model	MB - 750	MB - 750

4. Carneirinho Unit (MG)

The system consists of two energy generating units, which are supplied by two boilers:

Alternator/ Generator nº 1

Nameplate data: Alternator/ Generator nº 1

Alternator/ Generator nº 2

Nameplate data: Alternator/ Generator nº 2

Alternator/ Generator	**Nº 1**	**Nº 2**
Year of manufacturer	November 2003	February 2002
Manufacturer	WEG	WEG
Power Rated (kVA)	15	15
Serial Number	118278	104604
Voltage (V)	13,800	13,800
Current (Amps)	627.6	627.6
Power Factor (cos φ)	0.80	0.80
Efficiency (75%, 100% of load)	97.4%, 97.6%	97.4%, 97.6%
Generator Rated Speed (rpm)	1,800	1,800
Frequency (Hz)	60	60
Generator Model	SSW 900	SSW 900

Boilers nº 1 and 2

Aerial view of boilers 1 and 2

Boiler nº 1

Nameplate data: Boiler nº 1

Nameplate data: Boiler nº 2

Boiler	Nº 01	Nº 02
Manufacturer	Equipalcool	Equipalcool
Capacity (Tons/h)	150	150
Serial number	106/06	174/12
Year of manufacturer	2006	2012
Maximum allowable working pressure (kgf/cm^2g)	52	76
Hydrostatic Test Pressure (kgf/cm^2g)	78	114
Pressure (kgf/cm^2)	45	67
Degree of super heat ºC (Steam)	470	520
Heating surface area (m^2)	4200	4900
Design Standard	ASME Section I / 2001	ASME I / 2010
category	A	A

Turbine nº 1

Turbine nº 2

The turbines are coupled to the generator and are covered with insulation, making it impossible to access the nameplate data. However, below is a screenshot of the technical data extracted from their manuals.

The turbines were originally purchased for the Campo Florido unit, but were later transferred to the Carneirinho unit.

1.2 – CONDIÇÕES DE OPERAÇÃO DA TURBINA

Condições de Operação	Pontos de Carga A	B	C	Unidade
Vapor vivo				
Pressão (man)	45,0			Kgf/cm².g
Temperatura	450			°C
Vapor de saída				
Pressão (man)	1,5			Kgf/cm².g
Vazão	84,2			T / h
Consumo específico	7,02			Kg / Kwh
Rotação Nominal				
Turbina	6500			rpm
Máquina Acionada	1800			rpm
Potência				
Acoplamento da turbina	12.240			kW
Rotação do Fecho Rápido (Trip)				
Turbina	7150			rpm
Máquina Acionada	1800			rpm
Ponto de Garantia	X			
Conexão de vapor de admissão ANSI B 16,5	10" 600 lb			
Conexão de vapor de escape ANSI 16,5	24" 150 lb			
Sentido de Rotação da Turbina Visto da turbina para máquina acionada	Anti-Horário			
Suavidade de Operação – Corpo de mancal Norma: VDI 2056 Grupo de avaliação: T Velocidade efetiva de vibração (máx): 2,8 m/ s				

1.2 – CONDIÇÕES DE OPERAÇÃO DA TURBINA

Condições de Operação	Pontos de Carga			Unidade
	A	B	C	
Vapor vivo				
Pressão (man)	40,0			Kgf / cm²
Temperatura	420			ºC
Vapor de saída				
Pressão (man)	1,5			Kgf / cm²
Vazão	88,2			T / h
Consumo específico	7,35			Kg / Kwh
Rotação Nominal				
Turbina	6500			rpm
Máquina Acionada	1800			rpm
Potência				
Acoplamento da turbina	12000			kW
Rotação do Fecho Rápido (Trip)				
Turbina	7150			rpm
Máquina Acionada	1980			rpm
Ponto de Garantia	X			
Conexão de vapor de admissão ANSI B 16,5	10" 600 lb			
Conexão de vapor de escape ANSI 16,5	24" 150 lb			
Sentido de Rotação da Turbina Visto da turbina para máquina acionada	Anti-horário			
Suavidade de Operação – Corpo de mancal Norma: VDI 2056 Grupo de avaliação: T Velocidade efetiva de vibração (máx): 2,8 m/ s				

Turbine	**Nº 1**	**Nº 2**
Manufacturer	TGM Turbinas	TGM Turbinas
Power Rated (kW)	12,240	12,000
Live Steam Pressure (Bar)	45	40
Live Steam Temperature (ºC)	450	420
Steam Exhaust Pressure (Bar)	1.5	1.5
Turbine Rated Speed (rpm)	6,500	6,500
Turbine Disarm Speed (rpm)	7,150	7,150
Turbine Model	TM 12000	TM 12000

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

There are social, environmental, economic and technological benefits which contribute to sustainable development.

Social benefits:

- The Coruripe sugar and ethanol plants provide significant employment opportunities in Alagoas and Minas Gerais, engaging aproximately 8,000 direct employees work across its five industrial units. Additionally, the company generates around 25,000 indirect jobs per year, significantly contributing to the local and regional economy. The company promotes a strong culture of safety, ethics, and continuous professional development for all its entire workforce.

- Coruripe is committed to workplace safety and invests in initiatives that improve employee well-being, alongside programs supporting community development and education in its area of influence.

- The company also maintains transparent data privacy and protection policies for all stakeholders interacting with its operations.

Environmental benefits:

- The project displaces fossil fuel-based electricity generation by producing renewable electricity from sugarcane bagasse, significantly reducing greenhouse gas (GHG) emissions and local air pollution.

- Coruripe engages in sustainable agriculture practices, including reusing sugarcane ash as fertilizer to improve soil health and reduce chemical fertilizer use.

- The company implements waste management techniques such as composting organic residues and fertigation by recycling vinasse and treated wastewater, further promoting circular economy principles.

- Coruripe holds certifications and recognition for its renewable electricity energy generation, including the “Energia Verde” seal awarded to units such as Limeira do Oeste, highlighting its commitment to renewable energy.

- The company’s renewable energy generation supports the Brazilian grid with cleaner power, contributing to national climate goals and energy transition.
- Preservation of Natural Areas: Usina Coruripe maintains over 28,000 hectares of preserved areas, including seven Private Natural Heritage Reserves (RPPNs) such as Porto Cajueiro in Januária (MG) and Mutum de Alagoas in Coruripe (AL). These reserves protect approximately 7,000 hectares of original Atlantic Forest, contributing to biodiversity conservation and ecological balance.
- Native Seedling Production: The company operates a nursery in Alagoas capable of producing up to 80,000 native Atlantic Forest seedlings annually. These seedlings are utilized for reforestation, forest restoration, and ecological corridor formation in partnership with municipal and environmental agencies.

- Water Resource Management: Coruripe monitors springs, stream margins, and riverbanks to ensure sustainable water use. This includes partnerships for the release of animals rescued from illegal captivity, promoting ecological balance and wildlife protection.
- Waste Management and Fertilization: The company employs sustainable practices such as composting organic waste from cafeterias and fertigation using vinasse and treated wastewater. These methods reduce chemical fertilizer use and minimize water consumption, enhancing soil health and crop productivity.

Economic benefits:

- The project provides reliable, low-cost renewable energy that supports local industrial and residential consumers, fostering regional economic growth.
- By generating renewable electricity and biofuels, Coruripe contributes to energy security and diversification of the Brazilian energy matrix.
- The project encourages technological development and investments in modern cogeneration and bioenergy facilities, strengthening local economies and creating job opportunities.

Through these positive impacts, the project activity clearly supports sustainable development without causing harm to social, environmental, or economic systems in its operational regions.

Coruripe contribute significantly to economic, environmental and social matters, however, stands out as it contributed to all 17 SDG's.

SDG	Target	How was it achieved?
1 NO POVERTY	1.2 - By 2030, reduce at least by half the proportion of men, women and children living in poverty in all its dimensions according to national definitions.	Projects like "Barriga Cheia" and the territorial strengthening of the Pontes community have increased household income by over 1000%.
2 ZERO HUNGER	2.1 - By 2030, end hunger and ensure access by all people to safe, nutritious and sufficient food all year round.	Donation of food and support for family farming in neighboring communities demonstrate action against hunger.
3 GOOD HEALTH AND WELL-BEING	3.8 - Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all	Implementation of occupational health and safety programs and the "Programa Acolher" for emotional support during and after the pandemic.

4 QUALITY EDUCATION	4.4 - By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship	Investments in early childhood education and socio-environmental education programs in municipal schools.
5 GENDER EQUALITY	5.5 - Ensure women’s full and effective participation and equal opportunities for leadership at all levels of decisionmaking in political, economic and public life	Creation of a Women's Committee, executive bonus tied to hiring women, and adherence to UN Women Empowerment Principles.
6 CLEAN WATER AND SANITATION	6.3 - By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials.	Monitoring of water resources and reuse of treated effluents (vinasse and wastewater) via fertigation in sugarcane crops.
7 AFFORDABLE AND CLEAN ENERGY	7.2 - By 2030, increase substantially the share of renewable energy in the global energy mix.	100% of the energy consumed in operations is self-generated from renewable sources.
8 DECENT WORK AND ECONOMIC GROWTH	8.8 - Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment	Job creation, prohibition of child labor, emphasis on safety, and support for local suppliers in a responsible value chain.
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9.1 - Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	Expansion of production units, investment in transport infrastructure, and development of the Conecta innovation program.
10 REDUCED INEQUALITIES	10.2 - By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status	Internal inclusion policies, support for diverse supplier hiring, and social projects to empower vulnerable communities.
11 SUSTAINABLE CITIES AND COMMUNITIES	11.5 – By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.	Built urban infrastructure, such as an airstrip to support firefighting efforts in the Januária region (MG).

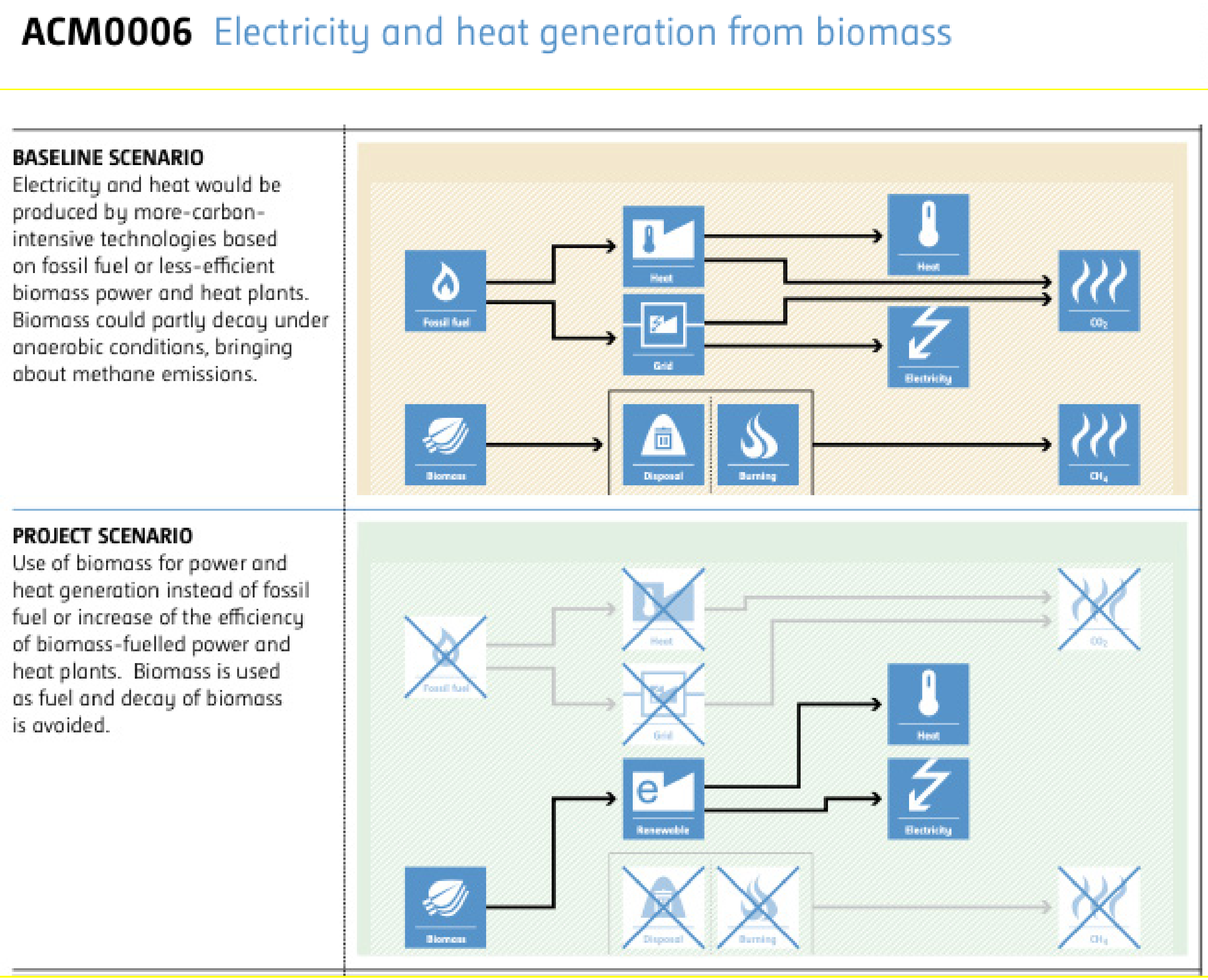
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	12.2 - By 2030, achieve the sustainable management and efficient use of natural resources 12.5 - By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	Adoption of circular economy principles, full reuse of waste, Bonsucro and RenovaBio certifications.
13 CLIMATE ACTION	13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.	Annual GHG inventories, investments in logistics to reduce emissions, and compliance with sustainability-linked bonds.
14 LIFE BELOW WATER	14.2 – Sustainably manage and protect marine and coastal ecosystems 14.4 – Effectively regulate harvesting and end overfishing 14.a – Increase scientific knowledge, develop research capacity and transfer marine technology	Promotes the sustainable management and protection of aquatic ecosystems by restoring native fish populations, thereby improving biodiversity and the resilience of freshwater habitats. Contributes to the recovery of native fish stocks, supporting small-scale artisanal fisheries and enhancing food security in local communities. Supports the generation and dissemination of scientific and technical knowledge for the effective management of aquatic ecosystems through community engagement, environmental education, and ecosystem monitoring.
15 LIFE ON LAND	15.1 - By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements. 15.a - Mobilize significant resources from all sources to conserve and sustainably use biodiversity and ecosystems.	Conservation of over 23,000 hectares of native vegetation, flora and fauna monitoring, and active management of RPPNs.

16 PEACE, JUSTICE AND STRONG INSTITUTIONS	16.6 - Develop effective, accountable and transparent institutions at all levels	Presence of ethics code, whistleblower channels, anti-corruption policies, and certified governance practices.
17 PARTNERSHIPS FOR THE GOALS	17.17 - Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships	Signatory to the UN Global Compact and UN Women, and active collaboration with stakeholders through sustainability forums.

B.3. Baseline Emissions>>

The baseline scenario identified in this Monitoring Report of the project activity is:

• The project activity involves generating clean energy from biomass source and supply it to the national grid. In the absence of the project activity, the equivalent amount of power would have been supplied by national grid-connected power plants and by the addition of other-more-GHG-intensive generation sources.



Thus, this project activity was a voluntary investment which replaced equivalent amount of electricity from the Brazilian grid. The project proponent was not bound to incur this investment as it was not mandatory by national and sectoral policies. Thus, the continued operation of the project activity would continue to replace fossil fuel-based power plants and fight against the impacts of climate change. The Project Proponent hopes that carbon revenues from 2013-2024 accumulated as a result of carbon credits generated will help repay the investments and help in the continued maintenance of this project activity.

B.4. Debundling>>

This “132 MW Sugarcane Bagasse based co-generation Energy USINA CORURIPE” project is not a debundled component of a larger project activity.
There is no registered large-scale UCR project activity or a request for registration by another small-scale project activity:

- By the same project participants;
- In the same project category and technology/measure; and
- Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.

SECTION B. Application of methodologies and standardized baselines

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

SECTORAL SCOPE - 01 Energy industries (Renewable/Non-renewable sources)

TYPE I - Larger renewable energy or energy efficiency projects. (Biomass Energy)

CATEGORY - ACM0006: “Electricity and heat generation from biomass” Version 16.0 & UCR Standard for Emission Factor

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

This methodology is applicable to project activities that operate biomass (co-gen) fired power and heat plants.

The project activity is a power generation project using a biomass (bagasse) and displaces CO2 emissions from electricity generation in power plants that are displaced due to the project activity. Since the project activity utilizes biomass (bagasse) for the generation of power and supplies it to the local grid, it displaces fossil fuel, and hence it meets the primary applicability criteria of the methodology.
The project activity is a power plant that encompasses cogeneration plants, i.e. power plant in which at least one heat engine simultaneously generates both process heat and power. The total installed capacity of project activity is 132 MW which is acceptable as per the applied large scale methodology.

The installation of a new biomass residue fired power generation unit, which are places existing power generation capacity fired with fossil fuel as in the project plant (power capacity expansion projects) is also included in this methodology.
For the purposes of this methodology, heat does not include waste heat, i.e. heat that is transferred to the environment without utilization, for example, heating flue gas, heat transferred to cooling towers or any other heat losses.
The biomass used by the project plant is not stored for more than one year. The biomass used by the project plant is not processed chemically or biologically (e.g. through esterification, fermentation, hydrolysis, pyrolysis, bio-or chemical degradation, etc.) prior to combustion.
The Project Activity uses biomass residues from a production process (e.g. production of sugar and ethanol), and the implementation of the project does not result in an increase of the processing capacity of (the industrial facility generating the residues) raw input (e.g. sugar and ethanol) or in other substantial changes (e.g. product change) in this process.
The project activity unit does not co-fire fossil fuel and/or does not exceed the limit of 25% co-firing fossil fuel criteria as per the UCR Protocol for such projects.
Bio-mass generated power is used for direct grid supply and for meeting the captive need facility. The project activity is involving the grid-connected bagasse based electricity generation capacity involving the installation of facilities for all owing the export of electricity to the regional grid.
Bio-mass is not sourced from dedicated plantations. The existing installed turbo-generators are fired by bagasse, a by-product of the sugarcane processing and ethanol, a biomass residue
Bagasse is burnt in boilers as generated from the sugar mill and does not require any specific technology for its preparation before combustion. No fuel preparation equipment has been installed at site for preparation of bagasse. Hence no significant energy quantities are required to prepare the biomass residues for fuel combustion.
The project activity also does not include any GHG emissions related to the decomposition or burning of biomass. The baseline heat emissions for the project activity are not included in the project boundary nor does it claim for emission reductions from heat.

C.3 Applicability of double counting emission reductions >>

The project is not registered in any other GHG mechanism. Hence, there will not be any double counting possibility.

The biomass-based boiler and turbine have unique serial numbers which are visible on the units. The generated electricity is measured using energy meters who also has unique serial numbers. The Monitoring Report will have the details of the same and will be provided to the UCR verifier during the verification process.

CORURIPE is not certified for i-RECs generation.

USINA CORURIPE is also certified by Renovabio, which is the Brazilian National Biofuels Program, created to encourage the production and use of sustainable biofuels, such as ethanol and biodiesel, replacing gasoline and diesel, which are more polluting fossil fuels. The lower the carbon intensity of the biofuel, the greater the difference in relation to fossil fuels, resulting in certificates called CBIOs, which can be traded. The impact of exported energy on the number of CBIOs is very small compared to other factors such as agricultural and industrial efficiency, and it's not the focus of Renovabio certification. Exported energy is just one of many factors considered.

Although RenovaBio and the carbon credit certification system have similar objectives with regard to decarbonization, they are different programs and work in different ways, with their own regulations and mechanisms. However, to adopt a conservative position and avoid double counting, the percentage of Carbon Credits will be deducted here in this program, in the same proportion in which the exported energy boosted the generation of CBIOs, in the respective periods in which they were generated:

- UTE **Coruripe** Usina COR: May, 2020 to December, 2024: resulting in a reduction of 623 CoUs

- UTE **Coruripe** Usina CVW Energética: January, 2023 to December, 2024: resulting in a reduction of 350 CoUs

- UTE **Coruripe** Usina CVW Complexo: January, 2023 to December, 2024: resulting in a reduction of 306 CoUs

- UTE Coruripe **Iturama**: May, 2020 to December, 2024: resulting in a reduction of 2,703 CoUs

- UTE Coruripe Energética **Iturama**: May, 2020 to December, 2024: resulting in a reduction of 6,067 CoUs

- UTE Coruripe **Campo Florido**: May, 2020 to December, 2024: resulting in a reduction of 2,478 CoUs

- UTE Coruripe Energética **Campo Florido**: May, 2020 to December, 2024: resulting in a reduction of 5,118 CoUs

Total: 17,645 CoUs

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

The project boundary includes the physical, geographical site(s) of:

- All plants generation power located at the project site.
- All power plants connected physically to the electricity system (grid) that the projects plant is connected to.
- The means of transportation of biomass to the project site if the feedstock is biomass residues, the site where the biomass residues would have been left for or dumped.

Leakage Emissions (LE_y)

Leakage emissions is not applicable as the project activity does not use technology or equipment transferred from another activity.

Hence $LE_y = 0$

Scenario	Source	GHG	Included?	Justification/Explanation
Baseline	Grid Connected Electricity Generation	CO_2	Yes	Main emission source
		CH_4	No	Not identified in the baseline methodology
		N_2O	No	Not identified in the baseline methodology
Project Activity	Sugarcane Bagasse based co-generation Activity	CO_2	No	Zero-emissions grid connected electricity generation from renewable energy
		CH_4	No	Zero-emissions grid connected electricity generation from renewable energy
		N_2O	No	Zero-emissions grid connected electricity generation from renewable energy

Project Emissions (PE_y)
The project emissions (PEy) under the methodology may include;

N_2O Excluded simplification. conservative

This is

- CO_2 emissions from transportation of biomass residue to the project site
- CO_2 emissions from on-site consumption of fossil fuels due to project activity
- CO_2 emissions from electricity consumption at the project site that is attributable to the project activity and
- CH_4 emissions from combustion of biomass.

Where,

PET_y = are the CO_2 emissions during the year y due to transport of the biomass to the project plant in tons of CO_2,

$PEFF_{CO2,y}$ = are the CO_2 emissions during the year y due to fossil fuels co-fired by the generation facility in tons of CO_2,

PEEC,y = are the CO_2 emissions during the year y due to electricity consumption at the project site that is attributable to the project activity in tons of CO2,

GWPCH4 = is the Global Warming Potential for methane valid for the relevant commitment period and,

$PE_{Biomass,CH_4,y}$ = are the CH_4 emissions from the combustion of biomass during the year y. The proposed project activity does not have any CO_2 emissions due to off-site transportation of biomass, or from fossil fuel co-firing and from electricity consumption at site. The project activity also doesn't include CH_4 emissions from the combustion of biomass.

Hence,
$PET_y = 0$, $PEFF_{CO2,y} = 0$, $PEEC,y = 0$ and, $PE_{Biomass},CH4,y = 0$.

Therefore, $PE_y = 0$.

C.5. Establishment and description of baseline scenario (UCR Protocol) >>

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

Renewable energy technology that displaces technology using fossil fuels, wherein the simplified baseline is the fuel consumption of the technology that would have been used in the absence of the project activity, times an emission factor for the fossil fuel displaced.

The baseline emissions due to displacement of electricity are determined by net quantity of electricity generation as a result of the project activity (incremental to baseline generation) during the year y in MWh times the CO_2 emission factor for the electricity displaced due to the project activity during the year y in tCO_2/MWh.

Given that power generation for internal consumption is part of the present project activity, emission reductions are only claimed from on-site incremental power generation that is injected to the grid. Therefore, the baseline scenario is the emission of GHG from the present electricity generation mix of the electricity grid.

The actual emission reduction achieved during the first issuing period shall be submitted as a part of monitoring and verification. For an ex-ante estimation for the period from 2014 to 2024, the following calculation has been submitted:

Emission Reductions are calculated as follows:

ERy = BEy – PEy – LEy Where:
ERy = Emission reductions in year y (tCO_2/y)
BEy = Baseline Emissions in year y ($t\ CO_2/y$)
PEy = Project emissions in year y (tCO_2/y)
LEy = Leakage emissions in year y (tCO_2/y)

Estimated Annual Baseline Emission Reduction: $BEy = EG_{PJ,y} \times EF_{grid,y}$

BEy = Baseline emissions in year y ($t\ CO_2$)

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{grid,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" ($t\ CO_2/MWh$)

As determined by "Tool to calculate the emission factor for an electricity system – Version 7.0" for Brazil (am-tool-07-v7.0), the combined margin should be calculated using the "Weighted average CM", as it follows:

$EF_{grid,CM,y} = EF_{grid,OM,y} \times wOM + EF_{grid,BM,y} \times wBM$ Equation (16)

Where:

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year y (t CO_2/MWh)
$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year y (t CO_2/MWh)
wOM = Weighting of operating margin emissions factor (per cent)
wBM = Weighting of build margin emissions factor (per cent)

Since the project is a biomass co-generation project:

wOM = 0.5
wBM = 0.5

Since the project is a biomass co-generation project:

PEy = 0
LEy = 0

So as result *ERy* = *BEy*

For the Build and Operation margin emission factor, was considered the public data for the years from 2013 to 2024 available in the Ministry of Science, Technology and Innovation website: (https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/dados-e-ferramentas/fatores-de-emissao).

EMISSION FACTOR OF THE MONITORING PERIOD - EFgrid,CM						
Month	2013	2014	2015	2016	2017	2018
	tCO2eq/MWh	tCO2eq/MWh	tCO2eq/MWh	tCO2eq/MWh	tCO2eq/MWh	tCO2eq/MWh
January	0.439600	0.455900	0.425300	0.376700	0.272350	0.351100
February	0.433550	0.447600	0.416850	0.380650	0.258800	0.346450
March	0.430450	0.433100	0.416000	0.393100	0.294750	0.356000
April	0.436150	0.436750	0.400900	0.393600	0.296650	0.321400
May	0.427150	0.428400	0.401100	0.396850	0.305700	0.341550
June	0.439650	0.432050	0.416900	0.397450	0.293700	0.403050
July	0.424500	0.431850	0.411950	0.393450	0.304000	0.367950
August	0.414050	0.441250	0.404900	0.396250	0.306500	0.365900
September	0.431150	0.447850	0.393050	0.399150	0.304400	0.354400
October	0.430200	0.443200	0.399350	0.388050	0.301250	0.357600
November	0.439750	0.442400	0.403300	0.389900	0.302350	0.251200
December	0.440750	0.439400	0.400150	0.380150	0.305300	0.239650

EMISSION FACTOR OF THE MONITORING PERIOD - EFgrid,CM						
Month	2019	2020	2021	2022	2023	2024
	tCO2eq/MWh	tCO2eq/MWh	tCO2eq/MWh	tCO2eq/MWh	tCO2eq/MWh	tCO2eq/MWh
January	0.228000	0.330300	0.327047	0.274800	0.169218	0.234330
February	0.329650	0.311850	0.328147	0.257638	0.142219	0.213642
March	0.304750	0.241100	0.309847	0.216516	0.171215	0.165105
April	0.305750	0.197150	0.303097	0.121441	0.193484	0.123467
May	0.290700	0.227700	0.322447	0.153626	0.170904	0.167863
June	0.259750	0.286850	0.323997	0.233720	0.284879	0.208541
July	0.346700	0.245550	0.318197	0.222800	0.270277	0.301296
August	0.316600	0.248650	0.337697	0.241800	0.232837	0.326885
September	0.331300	0.213300	0.344547	0.258218	0.195022	0.328852
October	0.319500	0.335100	0.338797	0.246976	0.216998	0.349990
November	0.337000	0.319000	0.343568	0.215184	0.267454	0.302327
December	0.350850	0.354250	0.317738	0.160342	0.236986	0.275043

The official power generation data of the CORURIPE during the Monitoring Period, was informed by CCEE (Electric Energy Trading Chamber) digitally through their website/system:

ELECTRICITY GENERATED IN THE MONITORING PERIOD
UTE Coruripe Usina COR:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG						
Month	2013	2014	2015	2016	2017	2018
	MWh	MWh	MWh	MWh	MWh	MWh
January	6,184	5,317	6,202	3,127	6,349	7,209
February	7,771	6,367	4,659	2,220	4,607	3,122
March	8,952	6,520	3,131	3,312	3,552	3,348
April	1,071	24	2,443	468	661	828
May	0	0	0	0	0	0
June	0	0	0	0	0	0
July	0	0	0	0	0	0
August	0	0	0	0	0	0
September	1,162	1,210	827	1,307	0	1,844
October	3,985	4,567	4,214	6,029	1,591	6,431
November	4,829	3,045	3,749	5,006	4,923	4,444
December	6,451	4,078	4,431	3,710	6,644	4,584
Total	40,404	31,129	29,656	25,178	28,327	31,810

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG						
Month	2019	2020	2021	2022	2023	2024
	MWh	MWh	MWh	MWh	MWh	MWh
January	3,409	4,330	5,065	6,502	4,811	4,177
February	2,182	3,276	4,914	3,533	3,352	4,336
March	2,367	1,821	5,955	2,846	5,083	1,289
April	1,359	456	0	0	99	0
May	0	246	0	0	0	0
June	0	0	0	0	0	0
July	0	0	0	0	0	0
August	0	0	0	0	0	11
September	3,699	411	1,702	4	436	4,149
October	3,459	2,428	6,588	744	4,373	7,432
November	4,063	5,195	6,072	3,795	5,818	7,491
December	3,416	6,301	4,690	4,294	6,399	5,474
Total	23,954	24,465	34,987	21,718	30,372	34,360

The impact of exported energy on the amount of CBIOs UTE Coruripe Usina COR:

		2020 - 2023		2023-2024		2024-2026	
		Anhydrous	Hydrated	Anhydrous	Hydrated	Anhydrous	Hydrated
CBIOs	NEEA with exported eletricity	51,50	51,10	49,74	49,39	49,39	49,04
	NEEA without exported eletricity	50,40	50,00	49,15	48,80	48,76	48,40
	Increase	2,183%	2,200%	1,200%	1,209%	1,292%	1,322%
	Average	2,191%		1,205%		1,307%	
	Factor	0,97809		0,98795		0,98693	

Exported Eletricity less proportion of CBIOs:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG					
Month	2020	2021	2022	2023	2024
	MWh	MWh	MWh	MWh	MWh
January	4,330	4,954	6,360	4,706	4,127
February	3,276	4,806	3,456	3,278	4,284
March	1,821	5,825	2,784	4,971	1,273
April	456	0	0	97	0
May	240	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	11
September	402	1,665	4	431	4,095
October	2,375	6,444	728	4,320	7,335
November	5,081	5,939	3,712	5,748	7,393
December	6,163	4,587	4,200	6,322	5,403
Total	24,145	34,220	21,242	29,874	33,921

Since ERy = BEy = EG x EFgrid, it is achieved the following results for the emissions reductions ERy:

EMISSION REDUCTION - ERy						
Month	2013	2014	2015	2016	2017	2018
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	2,718	2,424	2,638	1,178	1,729	2,531
February	3,369	2,850	1,942	845	1,192	1,082
March	3,853	2,824	1,302	1,302	1,047	1,192
April	467	11	980	184	196	266
May	0	0	0	0	0	0
June	0	0	0	0	0	0
July	0	0	0	0	0	0
August	0	0	0	0	0	0
September	501	542	325	522	0	654
October	1,714	2,024	1,683	2,339	479	2,300
November	2,123	1,347	1,512	1,952	1,488	1,116
December	2,843	1,792	1,773	1,410	2,029	1,099
Total	17,590	13,813	12,155	9,732	8,161	10,239

EMISSION REDUCTION - ERy						
Month	2019	2020	2021	2022	2023	2024
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	777	1,430	1,620	1,748	796	967
February	719	1,022	1,577	890	466	915
March	721	439	1,805	603	851	210
April	415	90	0	0	19	0
May	0	55	0	0	0	0
June	0	0	0	0	0	0
July	0	0	0	0	0	0
August	0	0	0	0	0	4
September	1,225	86	574	1	84	1,347
October	1,105	796	2,183	180	937	2,567
November	1,369	1,621	2,040	799	1,537	2,235
December	1,199	2,183	1,457	673	1,498	1,486
Total	7,532	7,721	11,257	4,893	6,190	9,731

ELECTRICITY GENERATED IN THE MONITORING PERIOD
UTE Coruripe Usina CVW Energética:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG		
Month	2023	2024
	MWh	MWh
January	0	8,401
February	1,261	8,870
March	8,160	8,382
April	2,050	0
May	1,445	0
June	0	0
July	0	0
August	0	24
September	4,447	11,177
October	9,075	12,266
November	9,773	10,821
December	9,723	10,968
Total	45,934	70,908

The impact of exported energy on the amount of CBIOs UTE Coruripe Usina CVW Energética:

		2020 - 2023		2023-2024		2024-2026	
		Anhydrous	Hydrated	Anhydrous	Hydrated	Anhydrous	Hydrated
CBIOs	NEEA with exported eletricity	51,50	51,10	49,74	49,39	49,39	49,04
	NEEA without exported eletricity	50,40	50,00	49,15	48,80	48,76	48,40
	Increase	2,183%	2,200%	1,200%	1,209%	1,292%	1,322%
	Average	2,191%		1,205%		1,307%	
	Factor	0,97809		0,98795		0,98693	

Exported Eletricity less proportion of CBIOs:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG		
Month	2023	2024
	MWh	MWh
January	0	8,300
February	1,234	8,763
March	7,981	8,281
April	2,005	0
May	1,428	0
June	0	0
July	0	0
August	0	24
September	4,393	11,031
October	8,966	12,105
November	9,655	10,679
December	9,606	10,824
Total	45,268	70,007

Since ERy = BEy = EG x EFgrid, it is achieved the following results for the emissions reductions ERy:

EMISSION REDUCTION - ERy		
Month	2023	2024
	tCO2eq	tCO2eq
January	0	1,945
February	175	1,872
March	1,366	1,367
April	388	0
May	244	0
June	0	0
July	0	0
August	0	8
September	857	3,628
October	1,946	4,237
November	2,582	3,229
December	2,276	2,977
Total	9,835	19,262

ELECTRICITY GENERATED IN THE MONITORING PERIOD
UTE Coruripe Usina CVW Complexo:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG		
Month	2023	2024
	MWh	MWh
January	0	7,968
February	1,704	7,942
March	7,821	7,038
April	5,787	244
May	3,967	358
June	226	371
July	280	417
August	404	540
September	3,792	6,938
October	8,257	8,625
November	8,067	8,273
December	8,150	6,782
Total	48,456	55,495

The impact of exported energy on the amount of CBIOs UTE Coruripe Usina CVW Complexo:

		2020 - 2023		2023-2024		2024-2026	
		Anhydrous	Hydrated	Anhydrous	Hydrated	Anhydrous	Hydrated
CBIOs	NEEA with exported eletricity	51,50	51,10	49,74	49,39	49,39	49,04
	NEEA without exported eletricity	50,40	50,00	49,15	48,80	48,76	48,40
	Increase	2,183%	2,200%	1,200%	1,209%	1,292%	1,322%
	Average	2,191%		1,205%		1,307%	
	Factor	0,97809		0,98795		0,98693	

Exported Eletricity less proportion of CBIOs:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG		
Month	2023	2024
	MWh	MWh
January	0	7,872
February	1,667	7,847
March	7,650	6,953
April	5,660	241
May	3,919	353
June	223	366
July	277	412
August	399	533
September	3,747	6,847
October	8,157	8,512
November	7,969	8,164
December	8,052	6,693
Total	47,721	54,794

Since ERy = BEy = EG x EFgrid, it is achieved the following results for the emissions reductions ERy:

EMISSION REDUCTION - ERy		
Month	2023	2024
	tCO2eq	tCO2eq
January	0	1,845
February	237	1,676
March	1,310	1,148
April	1,095	30
May	670	59
June	64	76
July	75	124
August	93	174
September	731	2,252
October	1,770	2,979
November	2,131	2,468
December	1,908	1,841
Total	10,084	14,673

ELECTRICITY GENERATED IN THE MONITORING PERIOD
UTE Coruripe Iturama:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG						
Month	2013	2014	2015	2016	2017	2018
	MWh	MWh	MWh	MWh	MWh	MWh
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	0	1	3,459	352	1,995	0
April	53	86	2,451	5,037	5,585	3,845
May	0	3,061	7,726	4,943	6,655	2,941
June	0	3,238	7,085	2,273	6,814	3,674
July	0	4,507	6,305	7,075	7,026	6,774
August	17	4,799	6,260	7,525	5,679	7,429
September	0	4,091	4,871	6,991	5,451	7,351
October	0	3,993	5,310	7,405	5,653	7,810
November	0	3,026	3,641	7,402	5,404	7,777
December	0	3,201	3,741	7,222	2,059	3,560
Total	70	30,002	50,848	56,224	52,322	51,161

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG						
Month	2019	2020	2021	2022	2023	2024
	MWh	MWh	MWh	MWh	MWh	MWh
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	2,614	5,822	2,257	573	412	1,023
April	6,429	3,274	1,396	2,813	3,887	1,245
May	7,749	7,177	4,762	3,958	5,385	6,581
June	4,149	6,119	5,768	4,091	4,978	5,978
July	7,159	5,483	6,250	7,275	6,209	6,647
August	4,388	5,397	5,950	7,719	6,756	6,536
September	4,992	3,555	6,680	6,594	7,135	6,028
October	5,638	2,701	4,230	6,788	7,499	6,416
November	7,898	5,929	0	5,898	6,826	2,804
December	2,230	3,657	0	1,587	5,412	3,579
Total	53,246	49,115	37,293	47,296	54,499	46,836

The impact of exported energy on the amount of CBIOs UTE Coruripe Iturama:

		2020 - 2023		2023-2024		2024-2026	
		Anhydrous	Hydrated	Anhydrous	Hydrated	Anhydrous	Hydrated
CBIOs	NEEA with exported eletricity	55,70	55,40	55,41	55,01	60,10	59,72
	NEEA without exported eletricity	52,60	52,30	52,97	52,58	58,19	57,81
	Increase	5,894%	5,927%	4,606%	4,622%	3,282%	3,304%
	Average	5,910%		4,614%		3,293%	
	Factor	0,94090		0,95386		0,96707	

Exported Eletricity less proportion of CBIOs:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG					
Month	2020	2021	2022	2023	2024
	MWh	MWh	MWh	MWh	MWh
January	0	0	0	0	0
February	0	0	0	0	0
March	5,822	2,124	539	387	975
April	3,274	1,313	2,647	3,657	1,187
May	6,753	4,481	3,724	5,137	6,364
June	5,757	5,427	3,849	4,748	5,781
July	5,159	5,881	6,845	5,922	6,428
August	5,078	5,599	7,263	6,444	6,321
September	3,345	6,285	6,205	6,806	5,829
October	2,542	3,980	6,387	7,153	6,205
November	5,579	0	5,549	6,511	2,712
December	3,441	0	1,493	5,162	3,461
Total	46,750	35,089	44,501	51,929	45,264

Since ERy = BEy = EG x EFgrid, it is achieved the following results for the emissions reductions ERy:

EMISSION REDUCTION - ERy						
Month	2013	2014	2015	2016	2017	2018
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	0	0	1,439	138	588	0
April	23	38	982	1,982	1,657	1,236
May	0	1,311	3,099	1,962	2,034	1,005
June	0	1,399	2,954	903	2,001	1,481
July	0	1,946	2,597	2,784	2,136	2,493
August	7	2,117	2,535	2,982	1,741	2,718
September	0	1,832	1,914	2,790	1,659	2,605
October	0	1,770	2,121	2,873	1,703	2,793
November	0	1,339	1,468	2,886	1,634	1,954
December	0	1,407	1,497	2,745	629	853
Total	30	13,159	20,606	22,046	15,782	17,137

EMISSION REDUCTION - ERy						
Month	2019	2020	2021	2022	2023	2024
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	797	1,404	658	117	66	161
April	1,966	645	398	321	708	147
May	2,253	1,538	1,445	572	878	1,068
June	1,078	1,652	1,758	900	1,353	1,206
July	2,482	1,267	1,871	1,525	1,601	1,937
August	1,389	1,263	1,891	1,756	1,500	2,066
September	1,654	714	2,165	1,602	1,327	1,917
October	1,801	852	1,348	1,577	1,552	2,172
November	2,662	1,780	0	1,194	1,741	820
December	782	1,219	0	239	1,223	952
Total	16,863	12,331	11,535	9,804	11,950	12,445

ELECTRICITY GENERATED IN THE MONITORING PERIOD
UTE Coruripe Energética Iturama:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG						
Month	2013	2014	2015	2016	2017	2018
	MWh	MWh	MWh	MWh	MWh	MWh
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	0	3,059	111	113	163	0
April	4,283	15,140	9,663	10,413	9,020	5,722
May	15,908	14,871	10,754	14,891	11,531	14,509
June	14,870	14,530	11,764	12,220	14,026	14,535
July	17,053	13,840	15,409	13,948	13,821	14,515
August	15,228	13,439	15,230	14,485	15,163	15,164
September	16,624	13,181	15,797	12,829	14,737	10,199
October	16,860	13,324	15,096	12,148	12,717	8,163
November	16,950	12,826	14,669	13,704	15,138	6,402
December	11,222	6,749	9,432	7,635	5,954	4,869
Total	128,997	120,959	117,924	112,385	112,271	94,078

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG						
Month	2019	2020	2021	2022	2023	2024
	MWh	MWh	MWh	MWh	MWh	MWh
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	1,536	7,389	9,365	306	938	1,116
April	11,387	11,083	12,840	11,817	10,572	12,404
May	9,245	12,164	12,799	14,124	14,559	15,213
June	12,061	12,882	12,609	13,700	14,634	14,600
July	13,188	14,247	12,416	12,678	15,035	15,116
August	13,388	13,957	10,329	11,681	14,977	15,024
September	10,052	14,465	9,057	10,343	15,013	14,575
October	6,577	14,179	2,876	12,056	14,628	14,113
November	8,076	9,961	0	9,903	14,046	11,242
December	2,233	5,392	0	2,972	10,174	2,884
Total	87,744	115,721	82,292	99,581	124,575	116,286

The impact of exported energy on the amount of CBIOs UTE Coruripe Energética Iturama:

		2020 - 2023		2023-2024		2024-2026	
		Anhydrous	Hydrated	Anhydrous	Hydrated	Anhydrous	Hydrated
CBIOs	NEEA with exported eletricity	55,70	55,40	55,41	55,01	60,10	59,72
	NEEA without exported eletricity	52,60	52,30	52,97	52,58	58,19	57,81
	Increase	5,894%	5,927%	4,606%	4,622%	3,282%	3,304%
	Average	5,910%		4,614%		3,293%	
	Factor	0,94090		0,95386		0,96707	

Exported Eletricity less proportion of CBIOs:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG					
Month	2020	2021	2022	2023	2024
	MWh	MWh	MWh	MWh	MWh
January	0	0	0	0	0
February	0	0	0	0	0
March	7,389	8,812	288	883	1,064
April	11,083	12,081	11,119	9,947	11,831
May	11,445	12,042	13,289	13,887	14,712
June	12,121	11,864	12,891	13,959	14,119
July	13,405	11,682	11,929	14,341	14,618
August	13,132	9,718	10,991	14,286	14,529
September	13,610	8,522	9,731	14,321	14,095
October	13,341	2,706	11,344	13,953	13,648
November	9,372	0	9,317	13,398	10,871
December	5,074	0	2,796	9,705	2,789
Total	109,973	77,428	93,695	118,678	112,278

Since ERy = BEy = EG x EFgrid, it is achieved the following results for the emissions reductions ERy:

EMISSION REDUCTION - ERy						
Month	2013	2014	2015	2016	2017	2018
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	0	1,325	46	44	48	0
April	1,868	6,612	3,874	4,099	2,676	1,839
May	6,795	6,371	4,313	5,910	3,525	4,955
June	6,537	6,278	4,904	4,857	4,119	5,858
July	7,239	5,977	6,348	5,488	4,202	5,341
August	6,305	5,930	6,167	5,740	4,647	5,549
September	7,167	5,903	6,209	5,121	4,486	3,614
October	7,253	5,905	6,029	4,714	3,831	2,919
November	7,454	5,674	5,916	5,343	4,577	1,608
December	4,946	2,965	3,774	2,902	1,818	1,167
Total	55,565	52,940	47,580	44,217	33,929	32,851

EMISSION REDUCTION - ERy						
Month	2019	2020	2021	2022	2023	2024
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	468	1,781	2,730	62	151	176
April	3,482	2,185	3,662	1,350	1,925	1,461
May	2,688	2,606	3,883	2,042	2,373	2,470
June	3,133	3,477	3,844	3,013	3,977	2,944
July	4,572	3,292	3,717	2,658	3,876	4,404
August	4,239	3,265	3,282	2,658	3,326	4,749
September	3,330	2,903	2,936	2,513	2,793	4,635
October	2,101	4,471	917	2,802	3,028	4,777
November	2,722	2,990	0	2,005	3,583	3,287
December	784	1,797	0	448	2,300	767
Total	27,518	28,767	24,971	19,550	27,332	29,670

ELECTRICITY GENERATED IN THE MONITORING PERIOD
UTE Coruripe Campo Florido:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG						
Month	2013	2014	2015	2016	2017	2018
	MWh	MWh	MWh	MWh	MWh	MWh
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	0	0	0	46	1,181	1,498
April	16	1,557	2,889	5,850	5,451	7,379
May	3	3,578	1,578	4,293	7,340	4,327
June	98	3,229	136	3,105	9,327	6,111
July	1,267	2,530	9,234	6,019	9,135	4,056
August	356	5,329	6,061	5,077	6,977	4,293
September	274	4,563	2,980	3,965	7,261	4,377
October	96	4,807	3,991	4,423	5,827	4,820
November	0	4,016	1,136	3,207	4,094	5,027
December	0	1	3	1,537	2,098	1,082
Total	2,111	29,611	28,007	37,520	58,691	42,970

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG						
Month	2019	2020	2021	2022	2023	2024
	MWh	MWh	MWh	MWh	MWh	MWh
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	35	670	900	321	569	2,897
April	2,104	5,544	508	4,465	3,192	6,782
May	5,148	7,049	8,041	6,282	6,826	8,561
June	6,892	6,631	6,112	5,005	6,531	7,840
July	7,331	6,580	6,244	4,321	7,445	6,956
August	8,363	6,847	6,943	3,983	7,028	6,559
September	5,646	5,933	5,486	4,700	6,536	7,206
October	5,902	6,799	6,246	4,879	6,127	6,925
November	4,929	6,086	741	6,511	5,414	3,066
December	7,274	5,211	52	135	2,739	4,664
Total	53,626	57,352	41,274	40,601	52,407	61,456

The impact of exported energy on the amount of CBIOs UTE Coruripe Campo Florido:

		2020 - 2023		2023-2024		2024-2026	
		Anhydrous	Hydrated	Anhydrous	Hydrated	Anhydrous	Hydrated
CBIOs	NEEA with exported eletricity	52,20	51,70	54,50	54,18	56,28	55,95
	NEEA without exported eletricity	49,80	49,30	52,54	52,22	54,44	54,11
	Increase	4,819%	4,868%	3,730%	3,753%	3,380%	3,400%
	Average	4,844%		3,742%		3,390%	
	Factor	0,95156		0,96258		0,96610	

Exported Eletricity less proportion of CBIOs:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG					
Month	2020	2021	2022	2023	2024
	MWh	MWh	MWh	MWh	MWh
January	0	0	0	0	0
February	0	0	0	0	0
March	670	857	305	541	2,789
April	5,544	484	4,249	3,038	6,528
May	6,708	7,651	5,978	6,570	8,271
June	6,309	5,816	4,762	6,287	7,574
July	6,261	5,942	4,112	7,167	6,720
August	6,516	6,607	3,790	6,765	6,336
September	5,646	5,220	4,473	6,291	6,962
October	6,470	5,943	4,642	5,898	6,690
November	5,792	705	6,195	5,211	2,962
December	4,959	50	128	2,637	4,506
Total	54,875	39,275	38,635	50,405	59,338

Since ERy = BEy = EG x EFgrid, it is achieved the following results for the emissions reductions ERy:

EMISSION REDUCTION - ERy						
Month	2013	2014	2015	2016	2017	2018
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	0	0	0	18	348	533
April	7	680	1,158	2,303	1,617	2,372
May	1	1,533	633	1,704	2,244	1,478
June	43	1,395	57	1,234	2,739	2,463
July	538	1,093	3,804	2,368	2,777	1,492
August	148	2,352	2,454	2,012	2,138	1,571
September	118	2,044	1,171	1,582	2,210	1,551
October	41	2,130	1,594	1,716	1,755	1,724
November	0	1,776	458	1,250	1,238	1,263
December	0	0	1	584	640	259
Total	897	13,003	11,330	14,771	17,708	14,706

EMISSION REDUCTION - ERy						
Month	2019	2020	2021	2022	2023	2024
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	11	162	265	66	93	460
April	643	1,093	147	516	588	806
May	1,497	1,527	2,467	918	1,123	1,388
June	1,790	1,810	1,884	1,113	1,791	1,580
July	2,542	1,538	1,891	916	1,937	2,025
August	2,648	1,620	2,231	917	1,575	2,071
September	1,871	1,204	1,799	1,155	1,227	2,289
October	1,886	2,168	2,014	1,147	1,280	2,341
November	1,661	1,847	242	1,333	1,394	896
December	2,552	1,757	16	21	625	1,239
Total	17,100	14,726	12,956	8,101	11,632	15,096

ELECTRICITY GENERATED IN THE MONITORING PERIOD
UTE Coruripe Energética Campo Florido:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG						
Month	2013	2014	2015	2016	2017	2018
	MWh	MWh	MWh	MWh	MWh	MWh
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	0	0	28	18	11	39
April	5,644	7,320	7,358	8,236	9,447	9,930
May	17,832	19,210	16,863	12,933	9,198	12,409
June	17,628	17,131	18,639	11,187	10,330	13,601
July	21,440	16,990	10,923	11,316	10,094	15,466
August	19,841	17,055	14,614	12,381	10,224	11,449
September	17,700	17,044	14,019	14,661	9,080	12,416
October	16,755	17,003	14,795	10,918	9,682	12,881
November	11,576	16,695	13,433	6,435	12,307	6,309
December	3,768	4,989	3,803	1,264	1,357	0
Total	132,184	133,437	114,474	89,350	81,730	94,501

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG						
Month	2019	2020	2021	2022	2023	2024
	MWh	MWh	MWh	MWh	MWh	MWh
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	10	4,000	3,793	3,521	116	291
April	3,619	11,475	4,148	12,463	3,870	12,414
May	13,993	12,670	11,806	13,081	13,239	12,708
June	12,181	12,249	12,059	11,593	13,558	12,500
July	13,732	12,685	12,964	14,610	14,799	13,798
August	12,651	12,762	12,901	16,285	15,731	14,855
September	11,578	12,373	11,842	13,221	14,220	13,581
October	14,744	12,813	11,954	15,042	13,925	12,976
November	13,532	11,827	4,363	11,475	13,456	10,912
December	9,013	4,429	141	0	5,829	6,056
Total	105,054	107,283	85,970	111,292	108,744	110,093

The impact of exported energy on the amount of CBIOs UTE Coruripe Energética Campo Florido:

		2020 - 2023		2023-2024		2024-2026	
		Anhydrous	Hydrated	Anhydrous	Hydrated	Anhydrous	Hydrated
CBIOs	NEEA with exported eletricity	52,20	51,70	54,50	54,18	56,28	55,95
	NEEA without exported eletricity	49,80	49,30	52,54	52,22	54,44	54,11
	Increase	4,819%	4,868%	3,730%	3,753%	3,380%	3,400%
	Average	4,844%		3,742%		3,390%	
	Factor	0,95156		0,96258		0,96610	

Exported Eletricity less proportion of CBIOs:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG					
Month	2020	2021	2022	2023	2024
	MWh	MWh	MWh	MWh	MWh
January	0	0	0	0	0
February	0	0	0	0	0
March	4,000	3,609	3,350	110	281
April	11,475	3,947	11,860	3,683	11,950
May	12,056	11,234	12,447	12,743	12,277
June	11,656	11,475	11,032	13,051	12,077
July	12,071	12,336	13,902	14,246	13,331
August	12,144	12,276	15,496	15,143	14,351
September	11,774	11,269	12,581	13,688	13,120
October	12,192	11,375	14,314	13,404	12,536
November	11,254	4,152	10,919	12,952	10,542
December	4,214	134	0	5,611	5,851
Total	102,836	81,806	105,901	104,631	106,316

Since ERy = BEy = EG x EFgrid, it is achieved the following results for the emissions reductions ERy:

EMISSION REDUCTION - ERy						
Month	2013	2014	2015	2016	2017	2018
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	0	0	12	7	3	14
April	2,462	3,197	2,950	3,242	2,803	3,191
May	7,617	8,229	6,764	5,132	2,812	4,238
June	7,750	7,401	7,771	4,446	3,034	5,482
July	9,101	7,337	4,500	4,452	3,069	5,691
August	8,215	7,526	5,917	4,906	3,134	4,189
September	7,631	7,633	5,510	5,852	2,764	4,400
October	7,208	7,536	5,908	4,237	2,917	4,606
November	5,091	7,386	5,417	2,509	3,721	1,585
December	1,661	2,192	1,522	481	414	0
Total	56,736	58,437	46,270	35,264	24,670	33,397

EMISSION REDUCTION - ERy						
Month	2019	2020	2021	2022	2023	2024
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	3	964	1,118	725	19	46
April	1,107	2,262	1,196	1,440	713	1,475
May	4,068	2,745	3,622	1,912	2,178	2,061
June	3,164	3,344	3,718	2,578	3,718	2,518
July	4,761	2,964	3,925	3,097	3,850	4,016
August	4,005	3,020	4,146	3,747	3,526	4,691
September	3,836	2,511	3,883	3,249	2,669	4,315
October	4,711	4,086	3,854	3,535	2,909	4,388
November	4,560	3,590	1,426	2,350	3,464	3,187
December	3,162	1,493	43	0	1,330	1,609
Total	33,377	26,979	26,931	22,634	24,375	28,307

ELECTRICITY GENERATED IN THE MONITORING PERIOD
UTE Coruripe Carneirinho:

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG						
Month	2013	2014	2015	2016	2017	2018
	MWh	MWh	MWh	MWh	MWh	MWh
January	0	0	7,741	3,023	0	0
February	0	0	74	0	0	0
March	0	917	73	6,480	5,997	0
April	2,918	7,510	7,637	9,016	8,527	6,013
May	6,342	8,606	7,370	9,371	8,811	8,776
June	6,784	8,162	7,444	8,780	9,077	9,174
July	5,938	7,220	8,773	9,442	9,304	9,465
August	5,567	7,071	8,750	9,405	9,213	9,315
September	5,424	7,221	8,915	9,000	8,615	8,856
October	6,215	5,832	8,972	9,188	8,294	9,358
November	6,060	8,325	8,873	9,179	7,717	6,049
December	4,026	8,428	9,303	9,034	8,211	0
Total	49,274	69,292	83,926	91,918	83,765	67,006

ELECTRICITY GENERATED IN THE MONITORING PERIOD - EG						
Month	2019	2020	2021	2022	2023	2024
	MWh	MWh	MWh	MWh	MWh	MWh
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	4,331	7,535	7,736	780	2,679	1,745
April	8,148	9,163	9,086	8,601	8,661	8,253
May	9,421	9,499	9,025	9,138	8,838	8,732
June	9,180	9,499	8,815	8,916	8,378	8,579
July	6,891	9,079	9,252	9,223	8,441	9,046
August	9,229	9,079	9,425	9,068	8,593	8,797
September	8,957	9,070	8,981	8,932	8,460	8,732
October	8,670	9,465	4,478	8,972	8,748	9,350
November	7,753	8,265	0	9,000	8,779	9,055
December	2,381	6,960	0	5,527	8,751	4,619
Total	74,960	87,614	66,798	78,156	80,328	76,908

Carneirinho is not covered by RenovaBio as it does not produce ethanol, only VHP sugar.

Since ERy = BEy = EG x EFgrid, it is achieved the following results for the emissions reductions ERy:

EMISSION REDUCTION - ERy						
Month	2013	2014	2015	2016	2017	2018
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	0	0	3,292	1,139	0	0
February	0	0	31	0	0	0
March	0	397	31	2,547	1,767	0
April	1,273	3,280	3,062	3,549	2,529	1,932
May	2,709	3,687	2,956	3,719	2,694	2,997
June	2,983	3,526	3,104	3,490	2,666	3,697
July	2,521	3,118	3,614	3,715	2,828	3,483
August	2,305	3,120	3,543	3,727	2,824	3,409
September	2,339	3,234	3,504	3,592	2,622	3,139
October	2,673	2,585	3,583	3,565	2,499	3,347
November	2,665	3,683	3,579	3,579	2,333	1,519
December	1,774	3,703	3,722	3,434	2,507	0
Total	21,242	30,333	34,020	36,056	25,270	23,523

EMISSION REDUCTION - ERy						
Month	2019	2020	2021	2022	2023	2024
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	0	0	0	0	0	0
February	0	0	0	0	0	0
March	1,320	1,817	2,397	169	459	288
April	2,491	1,806	2,754	1,044	1,676	1,019
May	2,739	2,163	2,910	1,404	1,511	0
June	2,384	2,725	2,856	2,084	2,387	0
July	2,389	2,229	2,944	2,055	2,281	0
August	2,922	2,258	3,183	2,193	2,001	0
September	2,967	1,935	3,094	2,306	1,650	0
October	2,770	3,172	1,517	2,216	1,898	0
November	2,613	2,636	0	1,937	2,348	0
December	835	2,465	0	886	2,074	0
Total	23,431	23,206	21,655	16,294	18,284	1,307

EMISSION REDUCTION – Ery:

UTE Coruripe Usina COR + UTE Coruripe Usina CVW Energética + UTE Coruripe Usina CVW Complexo + UTE Coruripe Iturama + UTE Coruripe Energética Iturama + UTE Coruripe Campo Florido + UTE Coruripe Energética Campo Florido + UTE Coruripe Carneirinho:

EMISSION REDUCTION - ERy						
Month	2013	2014	2015	2016	2017	2018
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	2,719	2,424	5,930	2,317	1,729	2,531
February	3,369	2,850	1,973	845	1,192	1,082
March	3,853	4,546	2,830	4,057	3,802	1,739
April	6,099	13,818	13,006	15,358	11,478	10,837
May	17,123	21,131	17,765	18,426	13,309	14,674
June	17,314	20,000	18,789	14,930	14,560	18,982
July	19,399	19,471	20,863	18,807	15,012	18,499
August	16,980	21,045	20,615	19,366	14,484	17,435
September	17,757	21,188	18,633	19,459	13,742	15,963
October	18,890	21,950	20,917	19,445	13,184	17,688
November	17,333	21,205	18,350	17,519	14,992	9,045
December	11,224	12,059	12,289	11,558	8,036	3,378
Total	152,059	181,686	171,961	162,086	125,518	131,852

EMISSION REDUCTION - ERy						
Month	2019	2020	2021	2022	2023	2024
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
January	777	1,430	1,620	1,748	796	4,757
February	719	1,022	1,577	890	879	4,464
March	3,319	6,567	8,974	1,742	4,315	3,857
April	10,104	8,082	8,157	4,672	7,110	4,938
May	13,244	10,634	14,327	6,848	8,976	7,046
June	11,549	12,906	14,060	9,688	13,288	8,324
July	16,746	11,289	14,348	10,264	13,620	12,506
August	15,203	11,423	14,732	11,270	12,021	13,764
September	14,884	9,353	14,451	10,826	11,338	20,382
October	14,375	15,544	11,833	11,456	15,320	23,460
November	15,586	14,464	3,709	9,617	18,782	16,121
December	9,314	10,914	1,516	2,268	13,235	10,871
Total	125,820	113,628	109,304	81,289	119,680	130,491

For the current monitoring period no biomass residue was collected from outside, thus for this monitoring period, the value of this parameter is zero (*PEy*), however, using the UCR principles of conservativeness in emission reductions quantification, prevention of over-generation of credits and based on stakeholder comments on project emissions, transport emissions are calculated by applying a net-to-gross adjustment of 10%, i.e. multiply the emission reductions determined based on the applied methodology by 0.9 to determine the final amount of emission reductions.

	2013	2014	2015	2016	2017	2018
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
Total	136,853	163,517	154,764	145,877	112,966	118,666

	2019	2020	2021	2022	2023	2024
	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq	tCO2eq
Total	113,238	102,265	98,373	73,160	107,712	117,441

Total amount of emission reductions was 1,444,832 tCO2eq for the monitoring period, **already considering the deduction the proportion of CBIOs.**

Total emission reductions: *ERy* = 1,444,832 tCO_2 / year (1,444,832 CoUs /year)

C.6. Prior History>>

The project activity has not applied to any other GHG program for generation or issuance of carbon offsets or credits for the said crediting period.

CORURIPE is also certified by Renovabio, which is Brazilian National Biofuels Program, created to encourage the production and use of sustainable biofuels, such as ethanol and biodiesel, replacing gasoline and diesel, which are more polluting fossil fuels. It certifies companies based on the environmental efficiency of production, allowing them to issue CBIOs (Decarbonization Credits), which can be sold. Although RenovaBio and the carbon credit certification system have similar objectives when it comes to decarbonization, they are different programs and work in different ways, with their own regulations and mechanisms.

CBIOs are financial instruments issued **exclusively** from the certified production of **biofuels**, in this case, **ethanol**. On the other hand, the carbon credits proposed in this project are generated by surplus **renewable energy exported** to the electricity grid.

- Law No. 13,576/2017 (RenovaBio Law, https://www.planalto.gov.br/ccivil_03/_ato2015-2018/2017/lei/l13576.htm): Establishes the National Biofuels Policy, **focusing on the production and use of biofuels**, without mentioning the generation of carbon credits for surplus energy.

- ANP Resolution No. 758/2018 (https://atosoficiais.com.br/anp/resolucao-n-758-2018-regulamenta-a-certificacao-da-producao-ou-importacao-eficiente-de-biocombustiveis-de-que-tratao-art-18-da-lei-no-13-576-de-26-de-dezembro-de-2017-e-o-credenciamento-de-firmas-inspetoras?origin=instituicao&q=Resolu%C3%A7%C3%A3o%20ANP%20n%C2%BA%20758/2018): Regulates the certification of efficient production of biofuels, treating electrical energy as a co-product, **but not as a direct source of CBIOs**.

- Technical Note nº 62/2018/SBQ/ANP: Details the methodology for calculating CBIOs, reaffirming that exported electrical energy is considered only as a co-product.

In the Renovabio program, the RenovaCalc tool is used, which uses exported energy as one of the factors to calculate the plant's Energy-Environmental Efficiency Rating (NEEA), that is an indicator of the efficiency of the production process, specifically in the industrial phase. A higher NEEA indicates a more efficient process, which generally results in a lower carbon intensity. Impact on CBIOs: the amount of CBIOs generated is based on the difference between the carbon intensity of the biofuel and that of the equivalent fossil fuel. The lower the carbon intensity of the biofuel, the greater the difference compared to fossil fuel, resulting in more CBIOs generated.

Role of Exported Energy in generating CBIOs:

Exported electrical energy is considered a beneficial co-product. It "credits" the process, effectively reducing the carbon intensity attributed to the biofuel. This is because exported renewable energy replaces potentially more carbon-intensive energy on the grid.

If a plant exports more renewable energy, its NEEA tends to improve. A better NEEA generally results in a lower carbon intensity for the ethanol produced. With lower carbon intensity, the gap with fossil fuel increases. Consequently, more CBIOs are generated per unit of biofuel produced.

Whereas the impact of exported energy on the amount of CBIOs is generally marginal compared to other factors such as agricultural and industrial efficiency, exported energy is just one of the many factors considered in the NEEA calculation. However, to adopt a conservative position and avoid double counting, percentage of Carbon Credits will be deducted here in this program, in the same proportion in which the exported energy boosted the generation of CBIOs, in the respective periods in which they were generated:

$$NEEA = \left(\frac{EF_{fossil} - EF_{bio}}{EF_{fossil}} \right) \times 100$$

Where:

- EF_{fossil} = **Emission Factor of the reference fossil fuel** (gCO_2eq/MJ)
- EF_{bio} = **Emission Factor of the assessed biofuel** (gCO_2eq/MJ)

The $\boldsymbol{EF_{bio}}$ is obtained by considering all emissions from the biofuel’s life cycle, including:

- Biomass production
- Transportation
- Industrial processing
- Distribution

Since the NEEA formula depends on the difference between EF_{fossil} and EF_{bio}, any reduction in EF_{bio} (through fossil fuel replacement or renewable electricity energy exports) boosts the efficiency score and allows for the issuance of more CBIOs per liter of ethanol.

The number of CBIOs (Decarbonization Credits) generated by a biofuel producer is calculated using the following formula:

$$CBIOs = \frac{V_{bio} \times \text{LCV} \times \text{NEEA} \times D}{10^3}$$

Where:

- V_{bio} = **Volume of biofuel** produced and sold (in cubic meters, m^3)
- **LCV** = **Lower Calorific Value** of the biofuel (MJ/L)
- **NEEA** = **Energy-Environmental Efficiency Score** (%)
- **D** = **Density** of the biofuel (kg/L)

So, we can conclude that NEEA is directly proportional to the generation of CBIOs. Since exported energy is one of the factors that improves the NEEA score, to be conservative, we will calculate how much the exported energy contributes to the increase in the NEEA score. Then, we will deduct this percentage from the Carbon Credits that will be generated here in this program, during the same period in which CBIOs were generated, for the issuance of carbon credits.

NEEA with exported eletricity	X
NEEA without exported eletricity	Y
Increase (%)	$\frac{(X - Y)}{Y}$
Adjustment Factor	$1 - \frac{(X - Y)}{Y}$

The table shows the calculation of the adjustment factor to account for the impact of exported electricity on the NEEA score and, consequently, on CBIOs.

- **NEEA with exported electricity (X)** → Efficiency score considering exported electricity.

- **NEEA without exported electricity (Y)** → Efficiency score without considering exported electricity.

- **Increase (%)** → The impact of exported electricity on NEEA is given by:

$$\frac{(X - Y)}{Y}$$

This represents **how much the exported electricity increased the NEEA score**.

Adjustment Factor → To adjust the exported electricity for carbon credit generation without double counting with CBIOs, we apply the factor:

$$1 - \frac{(X - Y)}{Y}$$

This factor can be used to **discount the fraction of Carbon Credits,** regarding exported energy that has already contributed to increasing NEEA, and respectively the CBIOs.

This percentage calculation will be applied in the specific period of issuance of the CBIO and credit year.

C.7. Monitoring period number and duration>>

First Monitoring Period: 12 years – Jan 01, 2013 to Dec 31, 2024

C.8. Changes to start date of crediting period >>

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

C.9. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

There are no permanent changes from registered PCN monitoring plan and applied methodology.

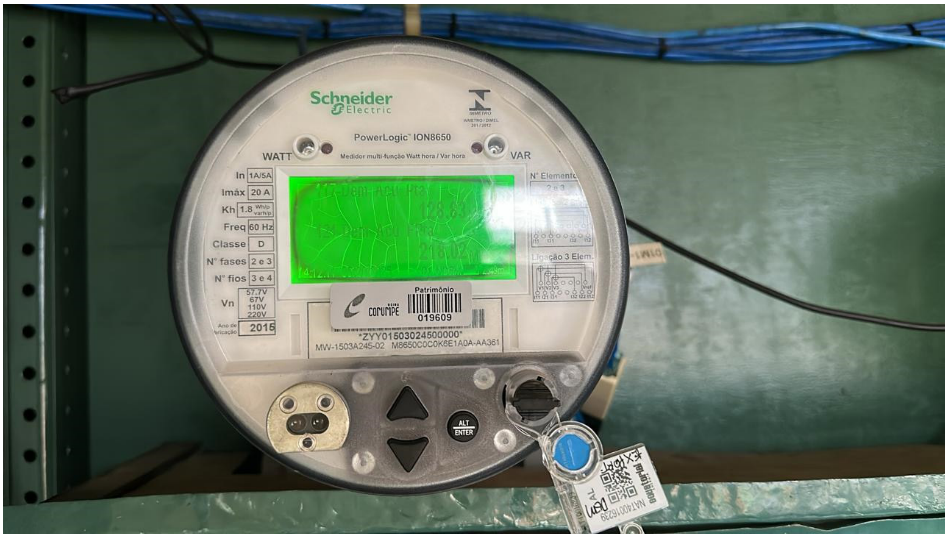
C.10. Monitoring plan>>

All energy generation data is acquired through CCEE meters installed in CORURIPE substation.

Meter	Serial Number	Specification
1	UTE CORURIPE Headquarters (COR) MW-1503A245-02 (Main) Metering point: ALCORUGER--03P	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2015 Last Calibration: 12/02/2025
2	UTE CORURIPE Headquarters (COR) MW-2103A627-02 (Check) Metering point: ALCORUGER--03R	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2021 Last Calibration: 13/02/2025
3	UTE CVW ENERGÉTICA MW-2206A933-02 (Main) Metering point: ALCRRPUSINA01P	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2021 Last Calibration: 13/02/2025
4	UTE CVW ENERGÉTICA MW-2103A825-02 (Check) Metering point: ALCRRPUSINA01R	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2022 Last Calibration: 13/02/2025
5	UTE CVW ENERGÉTICA Complexo Industrial MW-1908B196-02 (Main) Metering point: ALCVWEALCCR01P	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2019 Last Calibration: 13/02/2025

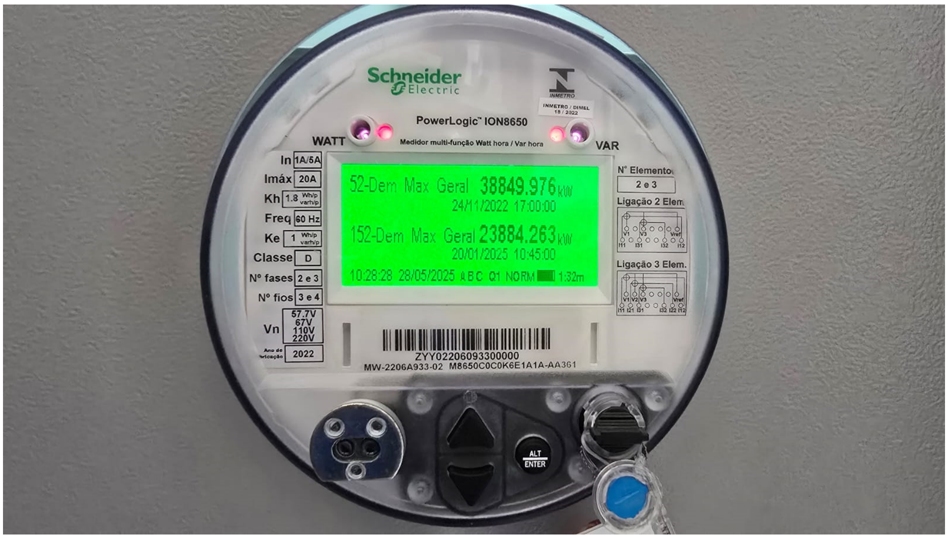
6	UTE CVW ENERGÉTICA Complexo Industrial MW-2206B012-02 (Check) Metering point: ALCVWEALCCR01R	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2022 Last Calibration: 13/02/2025
7	UTE CORURIPE ITURAMA MW1908A567-02 (Main) Metering point: MGKCK-USCAA03P	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2019 Last Calibration: 05/02/2024
8	UTE CORURIPE ITURAMA MW1908A733-02 (Check) Metering point: MGKCK-USCAA03R	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2019 Last Calibration: 05/02/2024
9	UTE ENERGÉTICA ITURAMA MW1907A125-02 (Main) Metering point: MGKCK-USCIT02P	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2019 Last Calibration: 05/02/2024
10	UTE ENERGÉTICA ITURAMA MW1908A451-02 (Check) Metering point: MGKCK-USCIT02R	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2019 Last Calibration: 05/02/2024
11	UTE CORURIPE CAMPO FLORIDO MW-2302B246-02 (Main) Metering point: MGCFLOUCFLO01P	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2023 Last Calibration: 15/02/2024

12	UTE CORURIPE CAMPO FLORIDO MW-2011A793-02 (Check) Metering point: MGCFLOUCFLO01R	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2020 Last Calibration: 15/02/2024
13	UTE CORURIPE ENERGÉTICA CAMPO FLORIDO MW-2207A088-02 (Main) Metering point: MGCFLOUCOCF02P	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2022 Last Calibration: 15/02/2024
14	UTE CORURIPE ENERGÉTICA CAMPO FLORIDO MW-2302B232-02 (Check) Metering point: MGCFLOUCOCF02R	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2023 Last Calibration: 15/02/2024
15	UTE CORURIPE CANEIRINHO MW1908B167-02 (Main) Metering point: MGCARNUCARN01P	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2019 Last Calibration: 06/02/2024
16	UTE CORURIPE CARNEIRINHO MW-1908B183-02 (Check) Metering point: MGCARNUCARN01R	Schneider Power Logic ION8650 3 Phases 57.7 ~ 220 V 1.0 / 5.0 A (max 20 A) 60 Hz Class D kh 1,8 Wh-varh/pulse Year of manufacturer: 2019 Last Calibration: 06/02/2024

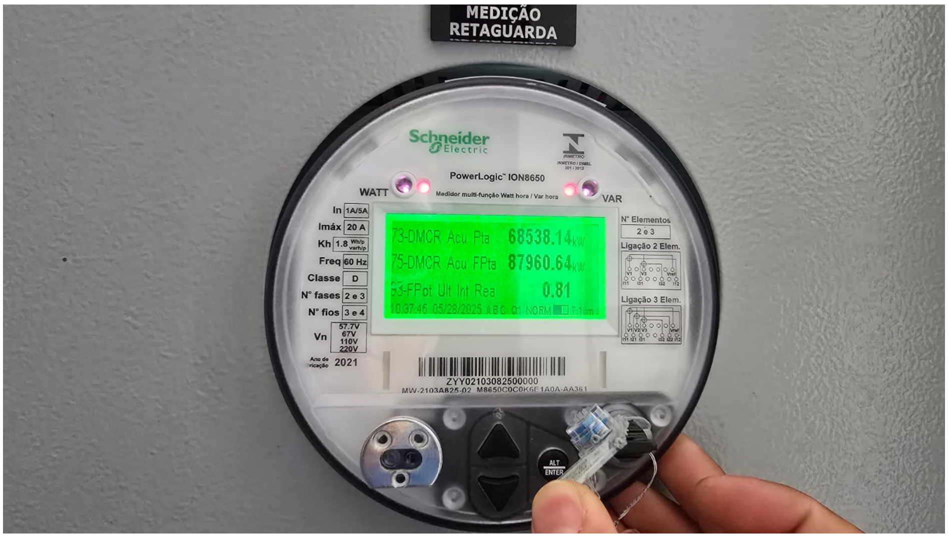


Meter UTE CORURIPE Headquarters (COR) - MAIN - MW-1503A245-02

Meter UTE CORURIPE Headquarters (COR) - CHECK - MW-2103A627-02



Meter UTE CORURIPE CVW ENERGÉTICA - MAIN - MW-2206A933-02



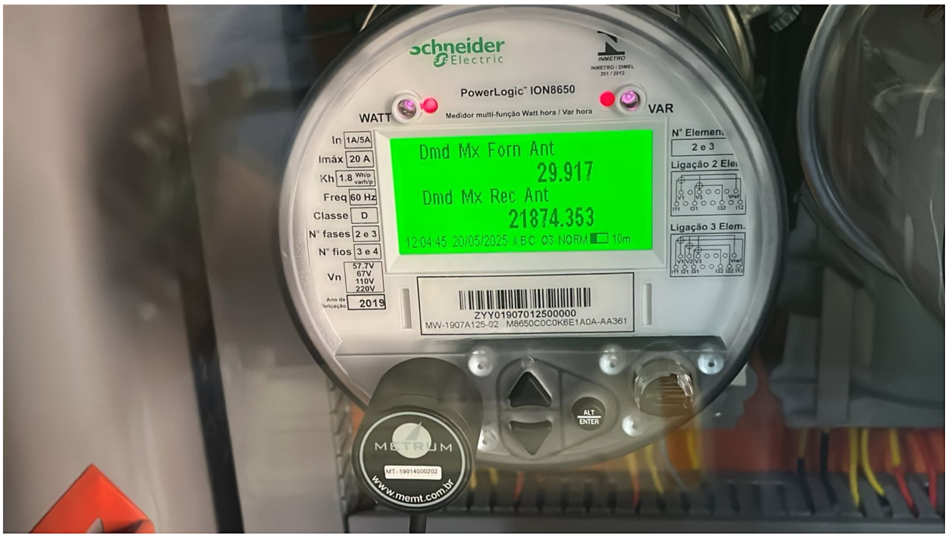
Meter UTE CORURIPE CVW ENERGÉTICA - CHECK- MW-2103A825-02

Meter UTE CORURIPE CVW ENERGÉTICA Complexo Industrial - MAIN - MW-1908B196-02

Meter UTE CORURIPE CVW ENERGÉTICA Complexo Industrial - CHECK - MW-2206B012-02

Meter UTE CORURIPE ITURAMA - MAIN - MW1908A567-02

Meter UTE CORURIPE ITURAMA - CHECK - MW1908A733-02



Meter UTE CORURIPE ENERGÉTICA ITURAMA - MAIN - MW1907A125-02

Meter UTE CORURIPE ENERGÉTICA ITURAMA - CHECK - MW1908A451-02

Meter UTE CORURIPE CAMPO FLORIDO - MAIN - MW-2302B246-02

Meter UTE CORURIPE CAMPO FLORIDO - CHECK - MW-2011A793-02

Meter UTE CORURIPE ENERGÉTICA CAMPO FLORIDO - MAIN - MW-2207A088-02

Meter UTE CORURIPE ENERGÉTICA CAMPO FLORIDO - CHECK - MW-2302B232-02

Meter UTE CORURIPE CARNEIRINHO - MAIN - MW1908B167-02

Meter UTE CORURIPE CARNEIRINHO - CHECK - MW-1908B183-02

The meters are locked and can be manipulated only under CCEE or ONS authorization. All generation data is available digitally and can be checked by the Coruripe personnel through CCEE system at CCEE website.

Parameters being monitored or used in emission reductions determination:

Data/Parameter	$EF_{grid,y}$
Data unit	tCO_2e/MWh
Description	CO_2 emission factor of the grid electricity in year y
Source of data Value(s) applied	https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/dados-e-ferramentas/fatores-de-emissao
Measurement methods and procedures	As per the requirements in “Tool to calculate the emission factor for an electricity system”
Monitoring frequency	Monthly
Purpose of data	To estimate baseline emissions

Data / Parameter:	$EG_{pj,y}$
Data unit:	MWh
Description:	Quantity of net electricity generation and export supplied by the project plant/unit to the grid in year y
Source of data:	The data provided by the Câmara de Comercialização de Energia Elétrica – CCEE (Electric Energy Trading Chamber)
Measurement procedures (if any):	This parameter is monitored using bidirectional energy meter
Monitoring frequency:	Continuous monitoring, hourly measurement and at least monthly recording
QA/QC procedures:	The meters and current transformers will be subjected to periodic calibrations/audits from ANEEL and CCEE to certify that electric energy injected in the grid data is reliable and precise, in a way to guarantee the reliability of the national grid and energy supply. As determined by government entity ONS (National Electric System Operator), in the "Submodule 6.16 - Maintenance of the billing measurement system" item 1.1.2, the calibration of the meters must occur every 5 years.

ANNEX I – Emission Factor

CONSTRUCTION MARGIN

	Average Emission Factor (tCO_2/MWh) - **ANNUAL**											
2013	0.2713											
OPERATION MARGIN												
	Average Emission Factor (tCO_2/MWh) - **MONTHLY**											
2013	MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
	0.6079	0.5958	0.5896	0.6010	0.5830	0.6080	0.5777	0.5568	0.5910	0.5891	0.6082	0.6102

CONSTRUCTION MARGIN

	Average Emission Factor (tCO_2/MWh) - **ANNUAL**											
2014	0.2963											
OPERATION MARGIN												
	Average Emission Factor (tCO_2/MWh) - **MONTHLY**											
2014	MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
	0.6155	0.5989	0.5699	0.5772	0.5605	0.5678	0.5674	0.5862	0.5994	0.5901	0.5885	0.5825

CONSTRUCTION MARGIN

	Average Emission Factor (tCO_2/MWh) - **ANNUAL**											
2015	0.2553											
OPERATION MARGIN												
	Average Emission Factor (tCO_2/MWh) - **MONTHLY**											
2015	MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
	0.5953	0.5784	0.5767	0.5465	0.5469	0.5785	0.5686	0.5545	0.5308	0.5434	0.5513	0.5450

CONSTRUCTION MARGIN

	Average Emission Factor (tCO_2/MWh) - **ANNUAL**											
2016	0.1581											
OPERATION MARGIN												
	Average Emission Factor (tCO_2/MWh) - **MONTHLY**											
2016	MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
	0.5953	0.6032	0.6281	0.6291	0.6356	0.6368	0.6288	0.6344	0.6402	0.6180	0.6217	0.6022

CONSTRUCTION MARGIN

	Average Emission Factor (tCO_2/MWh) - **ANNUAL**											
2017	0.0028											
OPERATION MARGIN												
	Average Emission Factor (tCO_2/MWh) - **MONTHLY**											
2017	MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
	0.5419	0.5148	0.5867	0.5905	0.6086	0.5846	0.6052	0.6102	0.6060	0.5997	0.6019	0.6078

CONSTRUCTION MARGIN

	Average Emission Factor (tCO_2/MWh) - **ANNUAL**
2018	0.1370

OPERATION MARGIN

	Average Emission Factor (tCO_2/MWh) - **MONTHLY**											
2018	MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
	0.5652	0.5559	0.5750	0.5058	0.5461	0.6691	0.5989	0.5948	0.5718	0.5782	0.3654	0.3423

CONSTRUCTION MARGIN

	Average Emission Factor (tCO_2/MWh) - **ANNUAL**
2019	0.1020

OPERATION MARGIN

	Average Emission Factor (tCO_2/MWh) - **MONTHLY**											
2019	MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
	0.3540	0.5573	0.5075	0.5095	0.4794	0.4175	0.5914	0.5312	0.5606	0.5370	0.5720	0.5997

CONSTRUCTION MARGIN

	Average Emission Factor (tCO_2/MWh) - **ANNUAL**
2020	0.0979

OPERATION MARGIN

	Average Emission Factor (tCO_2/MWh) - **MONTHLY**											
2020	MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
	0.5627	0.5258	0.3843	0.2964	0.3575	0.4758	0.3932	0.3994	0.3287	0.5723	0.5401	0.6106

CONSTRUCTION MARGIN

	Average Emission Factor (tCO_2/MWh) - **ANNUAL**
2021	0.0540

OPERATION MARGIN

	Average Emission Factor (tCO_2/MWh) - **MONTHLY**											
2021	MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
	0.6001	0.6023	0.5657	0.5522	0.5909	0.5940	0.5824	0.6214	0.6351	0.6236	0.6331	0.5815

CONSTRUCTION MARGIN

	Average Emission Factor (tCO_2/MWh) - **ANNUAL**
2022	0.0270

OPERATION MARGIN

	Average Emission Factor (tCO_2/MWh) - **MONTHLY**											
2022	MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
	0.5226	0.4883	0.4060	0.2159	0.2803	0.4404	0.0419	0.4566	0.4894	0.4670	0.4034	0.2937

CONSTRUCTION MARGIN

	Average Emission Factor (tCO_2/MWh) - **ANNUAL**											
2023	0.0467											
OPERATION MARGIN												
	Average Emission Factor (tCO_2/MWh) - **MONTHLY**											
2023	MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
	0.2917	0.2377	0.2957	0.3403	0.2951	0.5231	0.4939	0.4190	0.3433	0.3873	0.4882	0.4273

CONSTRUCTION MARGIN

	Average Emission Factor (tCO_2/MWh) - **ANNUAL**											
2024	0.0523											
OPERATION MARGIN												
	Average Emission Factor (tCO_2/MWh) - **MONTHLY**											
2024	MONTH											
	January	February	March	April	May	June	July	August	September	October	November	December
	0.4164	0.3750	0.2779	0.1946	0.2834	0.3648	0.5503	0.6015	0.6054	0.6477	0.5524	0.4978