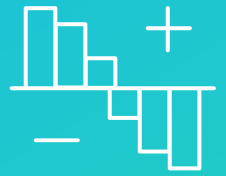
Greenhouse Gases Emissions Inventory 2022
ENGIE Brasil Energia



Institutional



Methodology



Results



Verification



ENGIE BRASIL ENERGIA

ENGIE Brazil Energy (EBE) is present in all regions of the country, with operations directed toward generating, commercializing, and transmitting electricity, transporting gas, and providing energy solutions. The company's installed capacity is approximately 10 GW, which is spread across 76 plants and represents close to 6% of the national capacity. Moreover, 96% of this installed capacity comes from renewable energy sources with low Greenhouse Gas (GHG) emissions, such as hydropower plants, wind farms, solar power stations, and biomass power plants.

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ENGIE Brasil Energia in numbers

10.2 GW
in Power Installed Capacity

10 projects
registered CDM Projects

267 thousand
seeds are annually donated and planted.

96%
of renewable energy

99,9%
of recovered waste

81,5%
of installed capacity has its management system certified by NBR ISO 14001 Environmental Management ; NBR ISO 9001 – Quality Management e ISO 45001 – Gestão de Saúde e Segurança do Trabalho

195 thousand
people in average are benefited by the environmental educational program

Our commitment to decarbonization

Engie Brasil Energia is engaged in the fight against climate change and has been fulfilling its purpose of acting to accelerate the transition to a carbon-neutral economy, aligned with the principles of the Paris Agreement and the Sustainable Development Goals (SDGs), as well as several initiatives such as Science Based Targets (SBT), TFCD (Task Force on Climate-related Financial Disclosures), World Alliance for Efficient Solutions, Caring for Climate, Hydrogen Council, Terrawatt Initiative and Business Leadership Criteria on Carbon Pricing.

As part of this movement, the Company has been investing in its Journey for the Climate in a consistent, transparent and science-aligned way, in order to prioritize the reduction of emissions throughout the value chain, identifying offset and carbon sequestration opportunities and joining efforts with the Global ENGIE program.

EBE has been rigorously controlling its own emissions since 2010, by evaluating the carbon footprint of its activities and implementing actions to reduce it. As part of its strategy to decarbonize the portfolio, in September 2022, a contract was signed to sell the Pampa Sul Thermoelectric Plant, the only remaining coal-fired power plant in the generation complex. When the transaction is completed in 2023, this move will elevate ENGIE Brasil Energia to the position of a 100% renewable energy generator, following the strategy of prioritizing investments in more assets of renewable energy sources, such as wind and solar plants.

Our commitment to decarbonization

The further studies of our Journey for the Climate generated a broad action plan focused on the decarbonization of our activities, with strategy, risk management, review of metrics and establishment of goals that include the engagement of our value chain. For the first time, the company answered the questionnaire of the Carbon Disclosure Project (CDP), a platform that increases the transparency of the performance and climate commitments of organizations around the world. ENGIE Brasil Energia's questionnaire received a "B" rating.

The Journey for the Climate is aligned with the science and goals developed within the ENGIE Group, which has its short-term trajectory certified by SBTi, considering goals related to climate change, including that "Greenhouse gas emissions from power generation must be reduced from 106 Mt in 2017 to 43 Mt by 2030". And as part of this journey, expand the share of renewable energy in the generation capacity mix which should reach 58% by 2030.

Besides the decarbonization of its portfolio, value chain engagement and investments in renewables, ENGIE also offers solutions for decarbonizing its customers, including: carbon credits, renewable energy contracts (ENGIE-REC) and renewable energy certificates (I-REC).

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Our Mitigation Actions

ENGIE Brasil Energia is guided by the ENGIE Group's purpose: to act to accelerate the transition to a carbon-neutral society through reduced energy consumption and more sustainable solutions.

The ENGIE Brasil Energia Policy on Climate Change provides for the adoption of measures to reduce fossil fuel consumption in our operations. In 2021, the sale of the Jorge Lacerda Thermoelectric Complex, in Santa Catarina, was completed and, with the contract already signed, the Pampa Sul Thermoelectric Plant will leave Engie Brasil Energia's energy generation portfolio still in 2023. At the end of the year, the renewable installed capacity was 95.9%, and is expected to reach 100% in 2023 - from the closing of the sale of Termelétrica Pampa Sul.

Among other measures, we highlight the preferential use of biofuels in automobiles, the contracting of collective transportation services for the employees of most of the plants, and the frequent use of tele and videoconferences, in order to avoid displacements, and the use of home office. For the second year now, Engie Brasil Energia is using a tool that allows it to automate the inventory of its emissions, bringing more robustness and transparency to the process.

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Our Mitigation Actions

ENGIE Brasil Energia's waste management is based on strict criteria and guidelines that are applicable to all of its projects and that aim to eliminate or reduce as much as possible the generation of waste in all its units. Thus, all business units have their own Solid Waste Management Plan (PGRS), compatible with their activities, duly updated and in compliance with the current legislation. As part of the commitments, the ash originated in the biomass power plants is used in agricultural activities.

Another important action is the conservation of permanent preservation areas, RPPNs (Conservation of Permanent Preservation Areas), remaining areas such as forests, besides the planting actions developed by the units. These green areas maintained by the company constitute GHG sinks, sequestering them from the atmosphere.

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Methodology

The inventory is calculated according to the concepts, principles and guidelines established by the Brazilian GHG Protocol Program's (PBGHGP) GHG Protocol methodology, disclosed by the Brazilian GHG Protocol Program (PBGHGP), which lays out specifications on how to account for, quantify and publish Corporate Greenhouse Gas Emission Inventories.

Furthermore, equations supplied by the Intergovernmental Panel on Climate Change (IPCC) are used to calculate emissions from specific sources and sinks (fertilizers and CO_2 removals by green areas).

The structure of the report follows the specifications of ISO 14.064:2007 - Greenhouse Gas Management System - International Organization for Standardization, 2007.

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Calculating Emissions

To digitalize and provide greater efficiency to its GHG emissions management system, 2022 EBE inventory emissions were calculated using the Cerensa software.

The emissions factors published by the GHG protocol Program were used by way of its most recent calculation tool: "ferramenta_ghg_protocol_v2023.0.1".

The global warming potential used for the calculations is the one released by the IPCC Fifth Assessment Report: Climate Change 2013 (AR5).

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Inventory Period

The present inventory covers emissions from activities carried out by Engie in the year 2022, including all direct emissions and part of the indirect ones, from all the companies in the group that maintain operations.

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Inventory Base Year

Engie's GHG emissions inventory uses 2010 as a base year, which is the first year that the group carried out a GHG emissions inventory.

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Operational Boundaries

EBE accounts for all its Scope 01 (direct), Scope 02 emissions, and the most important sources of scope 3 (indirect) emissions.

The following sources are considered in scope 1 emissions:

- Stationary: Stationary combustion to generate electricity, steam, heat, or energy using equipment at a fixed location.
- Mobile: Mobile combustion from transportation in general, either from its own vehicles or those controlled by the company.
- Fugitive: Unintentional releases of substances such as sulfur hexafluoride (SF_6) in electrical equipment, hydrofluorocarbons (HFCs) in refrigeration and air conditioning equipment, and CO_2 in cylinders;
- Agricultural Activities: Use of fertilizers in agricultural activities;
- Industrial Processes: CO_2 emissions from gas desulfurization in the burning of coal at UTPS;
- Solid Waste: Treatment of waste in landfills, and incineration or composting at disposal sites controlled by the company;
- Effluents: From anaerobic treatment of liquid effluents treated within the organization's boundaries.
- Change in Land Use: Emissions from licensed plant suppression of native forest.

In scope 02, accounts for emissions from:

- Electricity Acquisition;
- Losses of Electric Energy in Transmission.

Scope 3 accounts for:

- Transportation and distribution (upstream): Vehicles controlled by third parties that are either rented or contracted to transport people, raw materials and/or products/subproducts funded by the company (cars, vessels, and locomotives) ;
- Displacement of employees (commuting): Chartered transport used to transport people between their homes and work.
- Solid waste: Waste either disposed of in landfills or composted or incinerated in disposal areas that are not controlled by the company;
- Business travel: Air travel and occasional employee travel in rented vehicles;
- Stationary: Stationary combustion to generate electricity, steam, heat or power with the use of equipment not controlled by the company.

The inventory also accounts for biogenic CO_2 emissions generated from the combustion of biomass in stationary equipment, such as wood chips and sugarcane bagasse, and in vehicles, such as ethanol and biodiesel.

In addition, the inventory accounts for avoided emissions, carbon removals from green areas maintained by the company and biogenic emissions/removals, from any land use conversions that lead to either increased or decreased carbon stocks.

Organizational Boundaries

The EBE emissions inventory follows the two accounting approaches provided by the GHG Protocol methodology.

The operational control approach maintains that 100% of emissions from projects with operations controlled by the Group be accounted for, regardless of shareholding at source. The equity interest approach maintains that GHG emissions are accounted for according to their percentage involvement in the projects.

Power Plants /Offices	Institution with Operational Control	Equity Share Engie
Headquarter - Engie (Florianópolis - Office)	Engie	100%
Engie – Office SP	Engie	100%
Projects in Implementation	Engie	100%
STGA – Gralha Azul Transmission System	Engie	100%
STNE – Novo Estado Transmission System	Engie	100%
PHJG - Small Hydropower Plant José Gelazio da Rocha	Engie	100%
PHRO - Small Hydropower Plant Rondonópolis	Engie	100%
UHJA - Hydropower Plant Jaguara	Engie	100%
UHMI - Hydropower Plant Miranda	Engie	100%
UHPP - Hydropower Plant Ponte de Pedra	Engie	100%
UHSO - Hydropower Plant Salto Osório	Engie	100%
UHSS - Hydropower Plant Salto Santiago	Engie	100%
UHCB - Hydropower Plant Cana Brava	Engie	100%
UHET - Hydropower Plant Estreito	Consórcio Estreito	40,07%
UHSA - Hydropower Plant São Salvador	Engie	100%
UHIT - Hydropower Plant Itá	Consórcio Itá	68,99%
UHMA - Hydropower Plant Machadinho	Consórcio Machadinho	19,29%
UHPF - Hydropower Plant Passo Fundo	Engie	100%
CECL - Wind Power Plant Campo Largo	Engie	100%
CEUR - Wind Power Plant Umburanas	Engie	100%
CETR - Wind Power Plant Trairi	Engie	100%
FVAE - Photovoltaic Plant Assú V	Engie	100%
CFFL – Photovoltaic Plant Floresta	Engie	100%
UCLA - Cogeneration Unit Lages	Engie	100%
UETB - Wind Power Plant Tubarão	Engie	100%
UFCA - Photovoltaic Plant Cidade Azul	Engie	100%
UTFE - Thermal Plant Ferrari	Engie	100%
UTIB - Thermal Plant Ibitiúva	Engie	69,26%
CFPA –Paracatu Power Plant	Engie	100%
UTPS - Thermal Plant Pampa Sul	Engie	100%

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Excluded Sources

GHG emissions from hydroelectric reservoirs were not considered. According to ELETROBRÁS (2012), there is no “international scientific consensus on a methodology to estimate GHG emissions in these reservoirs, nor how to calculate the balance of emissions (or net emissions) from water bodies”.

With respect to gases not listed in the Kyoto Protocol, yet regulated by the Montreal Protocol, only HCFC-22 (R-22) gases were identified and were duly accounted for and reported in a specific section.

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Results



Corporate



Business Units

Results



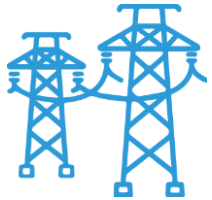
Offices



Renewable



Thermal

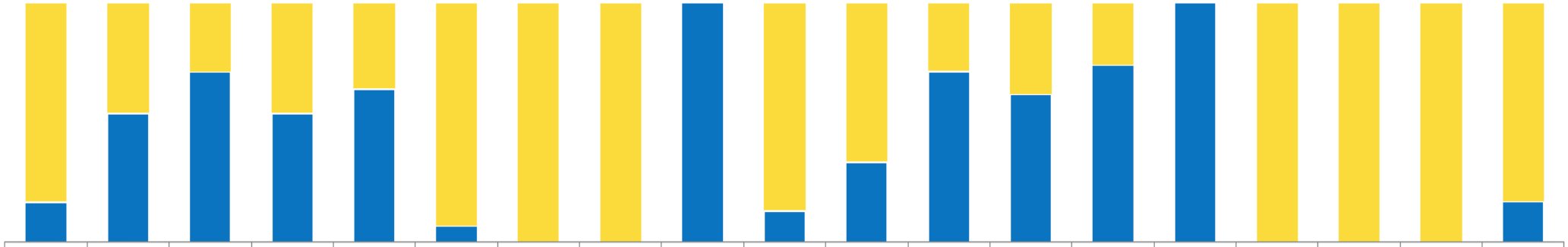


Networks

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Emissions Comparison – Operational Control 2022 x 2021 (tCO_2e)



	Stationary Combustion	Industrial Processes	Mobile Combustion	Fugitive Emissions	Wastewater Treatment	Agricultural Activities	Waste	Land Use Change	Transmission and Distribution Losses	Electricity Acquisition	Transport & Distribution (upstream)	Business Travel	Commuting	Waste - Scope 03	Indirect Stationary Combustion	Wastewater Treatment - Scope 03	Transport and Distribution downstream	Indirect Fugitive Emissions	Total
2021	5.416.296	13.020	372	752	23	8	9	0,14	-	11.992	9.141	381	395	49	-	8,20	6.188	0,03	5.458.635
2022	1.077.011	15.076	911	870	40	1	0,003	-	6.138	1.800	4.586	941	632	139	3	-	-	-	1.108.148

Analysis

The sale of the coal-fired power generation asset, CTJL (in Oct/2021), directly impacted the variation of EBE's emissions between 2021 and 2022. Corporate emissions reduced by 80% compared to 2021. This reduction is mainly associated with lower emissions from stationary combustion (-80%), distribution and transport upstream (-50%) and downstream (-100%), which were fundamentally associated with the operation of the CTJL coal-fired power plant.

In 2022, EBE started reporting data from two new projects of the group, the Gralha Azul Transmission System (STGA) and the Novo Estado Transmission System (STNE). Even with the accounting of energy losses in transmission, the scope 02 emissions reduced significantly, due to the lower emission factor of the National Interconnected System - SIN (-66%).

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Emissions Comparison - Equity Interest 2022 x 2021 (tCO_2e)



	Stationary Combustion	Industrial Processes	Mobile Combustion	Fugitive Emissions	Wastewater Treatment	Agricultural Activities	Waste	Land Use Change	Transmission and Distribution Losses	Electricity Acquisition	Transport & Distribution (upstream)	Business Travel	Commuting	Waste - Scope 03	Indirect Stationary Combustion	Wastewater Treatment - Scope 03	Transport and Distribution downstream	Indirect Fugitive Emissions	Total
2021	5.415.38	13.020	379	768	23	22	9	0,1	-	12.171	9.116	391	451	49	-	8	6.188	0,03	5.457.98
2022	1.075.69	15.076	912	885	41	13	0,004	-	6.138	1.836	4.503	958	639	139	3	-	-	-	1.106.84

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Analysis

EBE's 2022 GHG emissions are 97% concentrated in stationary combustion (98% in UTPS and 2% in biomass plants). Desulfurization of gases in coal combustion is the second most relevant source (1.4%).

In 2022, with the implementation of the energy transmission assets, emissions from electricity losses in transmission are accounted in scope 02 and present a relevance of 0.6% of the organization's total emissions.

With the sale of UTPS, the 2023 inventory will present a change in the emissions profile currently concentrated in the operation of this thermoelectric plant.

Total Emissions by Source and Scope (tCO_2e/%) - 2022

Emission Sources	Operational Control		Equity Share	
	Total Emissions (tCO_2e)	%	Total Emissions (tCO_2e)	%
Scopo 1	**1.093.909,41**	**98,7%**	**1.092.626,20**	**98,7%**
Stationary Combustion	1.077.011,08	97,2%	1.075.698,64	97,2%
Industrial Processes	15.076,36	1,4%	15.076,36	1,4%
Mobile Combustion	911,03	0,1%	912,28	0,1%
Fugitive Emissions	870,45	0,1%	884,67	0,1%
Wastewater Treatment	39,91	0,004%	41,12	0,004%
Agricultural Activities	0,59	0,0001%	13,14	0,001%
Waste	0,003	0,0000003%	0,004	0,0000004%
Scopo 2	**7.937,57**	**0,7%**	**7.973,87**	**0,7%**
Transmission and Distribution Losses	6.138,04	0,6%	6.138,04	0,6%
Electricity Acquisition	1.799,53	0,2%	1.835,82	0,2%
Scopo 3	**6.301,30**	**0,6%**	**6.241,64**	**0,6%**
Transport & Distribution (upstream)	4.585,83	0,4%	4.503,29	0,4%
Business Travel	941,11	0,1%	958,02	0,1%
Commuting	632,45	0,1%	638,70	0,1%
Waste - Scope 03	139,28	0,01%	139,02	0,01%
Indirect Stationary Combustion	2,63	0,0002%	2,63	0,000%
Total	**1.108.148,29**	**100,0%**	**1.106.841,71**	**100,0%**

Units	Total Emissions tCO_2e - Operational Control					Total Emissions tCO_2e - Equity Share				
	Scope 1	Scope 2	Scope 3	Total	%	Scope 1	Scope 2	Scope 3	Total	%
UTPS	1.072.277,86	886,46	3.344,85	**1.076.509,18**	**97,14%**	1.072.277,86	886,46	3.344,85	**1.076.509,18**	**97,26%**
UTFE	12.159,01	67,34	482,07	**12.708,41**	**1,1%**	12.159,01	67,34	482,07	**12.708,41**	**1,1%**
STGA	29,25	4.899,46	140,92	**5.069,64**	**0,5%**	29,25	4.899,46	140,92	**5.069,64**	**0,5%**
UCLA	3.932,36	29,02	377,08	**4.338,45**	**0,4%**	3.932,36	29,02	377,08	**4.338,45**	**0,4%**
UTIB	4.291,39	25,89	389,32	**4.706,60**	**0,4%**	2.972,22	17,93	269,64	**3.259,79**	**0,3%**
STNE	226,76	1.564,27	66,59	**1.857,62**	**0,2%**	226,76	1.564,27	66,59	**1.857,62**	**0,2%**
SEDE	513,43	80,61	736,19	**1.330,23**	**0,1%**	513,43	80,61	736,19	**1.330,23**	**0,1%**
UHSO	59,59	13,36	278,26	**351,21**	**0,0%**	59,59	13,36	278,26	**351,21**	**0,0%**
UHSS	106,27	95,65	69,49	**271,41**	**0,0%**	106,27	95,65	69,49	**271,41**	**0,0%**
CECL	104,95	19,89	42,50	**167,34**	**0,0%**	104,95	19,89	42,50	**167,34**	**0,0%**
CFPA	0,22	66,74	43,38	**110,34**	**0,0%**	0,22	66,74	43,38	**110,34**	**0,0%**
CFFL	28,22	34,47	46,03	**108,72**	**0,0%**	28,22	34,47	46,03	**108,72**	**0,0%**
CEUR	30,43	20,99	35,66	**87,09**	**0,0%**	30,43	20,99	35,66	**87,09**	**0,0%**
UHJA	39,25	42,09	23,67	**105,02**	**0,0%**	39,25	42,09	23,67	**105,02**	**0,0%**
UHPP	47,99	0,01	55,63	**103,63**	**0,0%**	47,99	0,01	55,63	**103,63**	**0,0%**
UHET	-	-	-	**-**	**0,0%**	33,60	4,12	37,57	**75,29**	**0,0%**
UHIT	-	-	-	**-**	**0,0%**	1,60	40,13	21,85	**63,59**	**0,0%**
CETR	15,41	17,34	26,28	**59,04**	**0,0%**	15,41	17,34	26,28	**59,04**	**0,0%**
UHPF	5,96	13,80	35,86	**55,62**	**0,0%**	5,96	13,80	35,86	**55,62**	**0,0%**
UHMI	10,37	0,17	39,73	**50,27**	**0,0%**	10,37	0,17	39,73	**50,27**	**0,0%**
UHSA	12,27	0,00	32,95	**45,22**	**0,0%**	12,27	0,00	32,95	**45,22**	**0,0%**
FVAE	7,23	28,54	1,78	**37,55**	**0,0%**	7,23	28,54	1,78	**37,55**	**0,0%**
UHCB	1,36	11,23	23,20	**35,79**	**0,0%**	1,36	11,23	23,20	**35,79**	**0,0%**
PHJG	8,97	1,36	5,65	**15,98**	**0,0%**	8,97	1,36	5,65	**15,98**	**0,0%**
UFCA	0,00	11,74	2,30	**14,04**	**0,0%**	0,00	11,74	2,30	**14,04**	**0,0%**
Office SP	0,01	2,70	1,68	**4,39**	**0,0%**	0,01	2,70	1,68	**4,39**	**0,0%**
UETB	-	3,34	-	**3,34**	**0,0%**	-	3,34	-	**3,34**	**0,0%**
PHRO	0,84	1,11	0,21	**2,15**	**0,0%**	0,84	1,11	0,21	**2,15**	**0,0%**
UHMA	-	-	-	**-**	**0,0%**	0,76	-	0,60	**1,36**	**0,0%**
Total	**1.093.909,41**	**7.937,57**	**6.301,30**	**1.108.148,29**	**100,0%**	**1.092.626,20**	**7.973,87**	**6.241,64**	**1.106.841,71**	**100%**

ENGIE

Greenhouse Gases Emissions Inventory 2022

Institutional

Methodology

Results

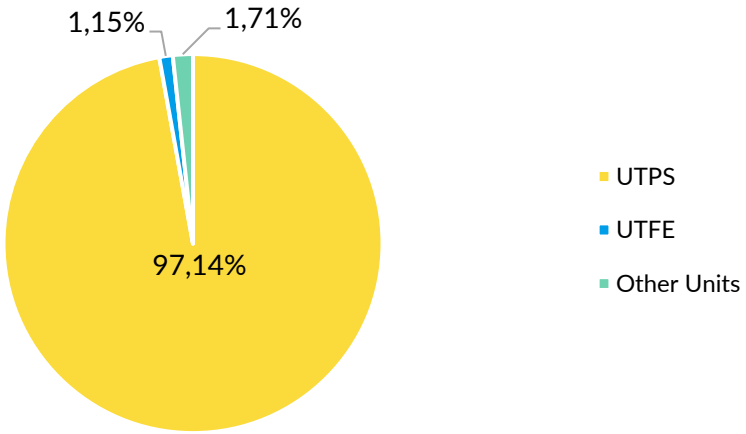
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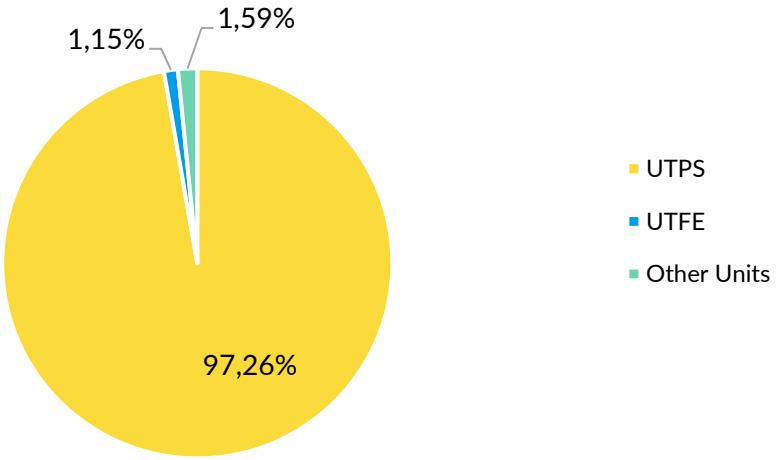
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Business Units Relevance - Operational Control (%)



Business Units Relevance - Equity Share (%)

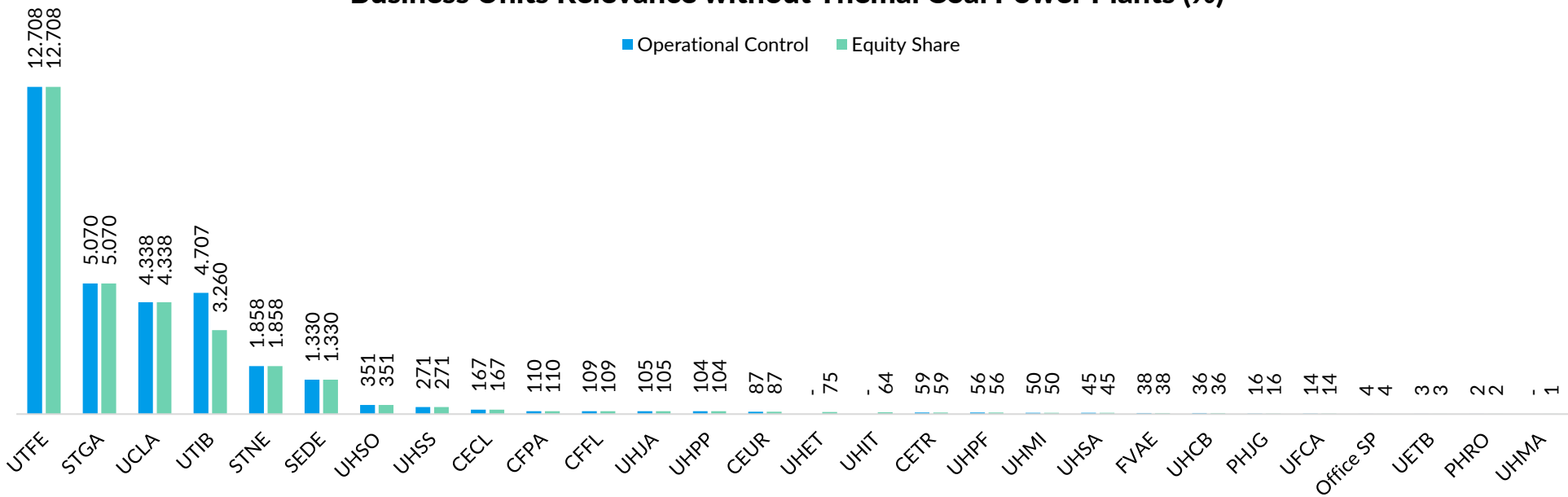


Analysis

UTPS presents the most relevant volume of GHG emissions in EBE (97%). The second unit with the highest concentration of emissions was UTFE, representing 1.15% of total emissions.

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Business Units Relevance without Themal Coal Power Plants (%)

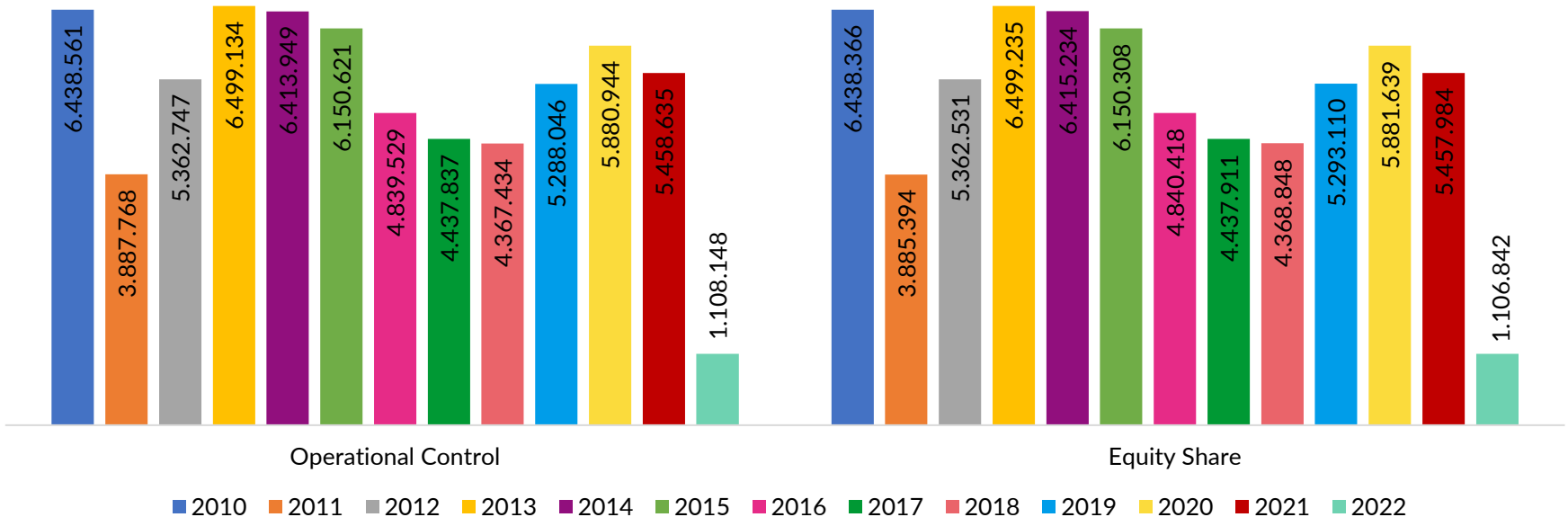


Analysis

Without considering UTPS, the biomass power plants (UTFE, UCLA and UTIB) and the transmission lines (STGA and STNE) assume the greatest relevance of the organization's emissions, for the CH_4 and N_2O emissions caused by the burning of biomass for energy generation and electricity losses in transmission, respectively.

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EBE Emissions Evolution - from 2010 to 2022 (tCO_2e)



Analysis

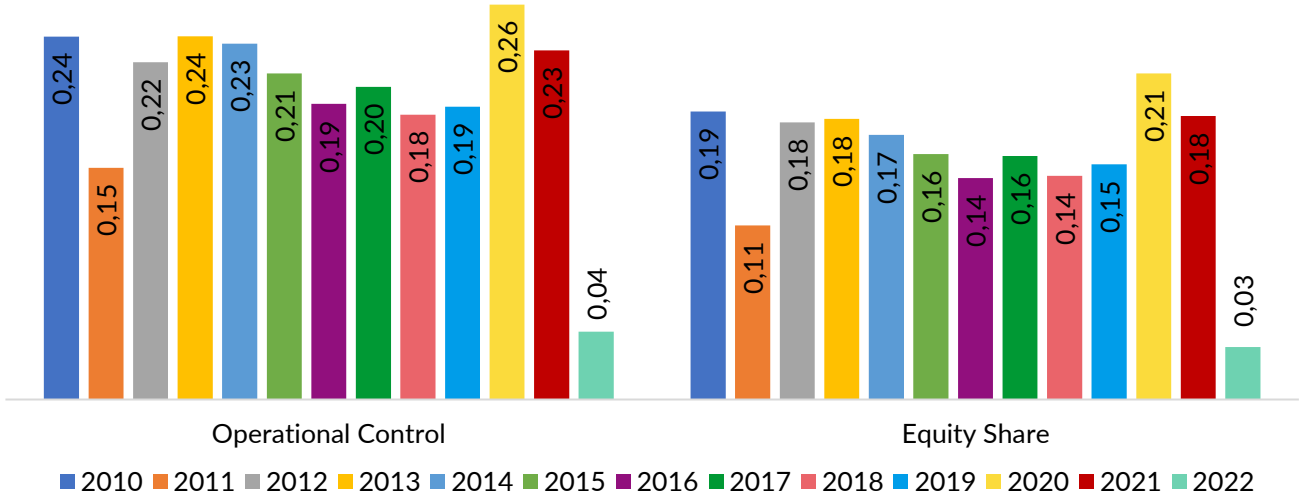
In addtion to the 80% decrease in emissions since 2021, EBE's emissions decreased by 83% relative to its baseline year (2010) as a result of lower coal and gas-fired thermal power generation, due to the sale of CTJL and de decomissioning of UTCH and UTWS, which were accounted for in the baseline year.

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Emissions indicator (tCO2e)/ Net Energy Generation (DEL-REC) (MWh) by Project – Year 2022

Units	tCO_2e/ MWh - OC	tCO_2e/ MWh - ES
UTPS	1,0534	1,0534
UTFE	0,0541	0,0541
UCLA	0,0400	0,0400
UTIB	0,0373	0,0373
UHSO	0,0001	0,0001
UHSS	0,00004	0,00004
CECL	0,0001	0,0001
CFPA	0,0005	0,0005
CFFL	0,0007	0,0007
CEUR	0,0001	0,0001
UHJA	0,00005	0,00005
UHPP	0,0001	0,0001
UHET	-	0,00005
UHIT	-	0,00001
CETR	0,0001	0,0001
UHPF	0,0001	0,0001
UHMI	0,00004	0,00004
UHSA	0,00005	0,00005
FVAE	0,0005	0,0005
UHCB	0,00002	0,00002
PHJG	0,0003	0,0003
UFCA	0,0095	0,0095
UETB	0,0007	0,0007
PHRO	0,00004	0,00004
UHMA	-	0,000001

EBE GHG Indicator: GHG emissions (tCO_2e)/ Net Electricity Generation (DEL-REC) (MWh)

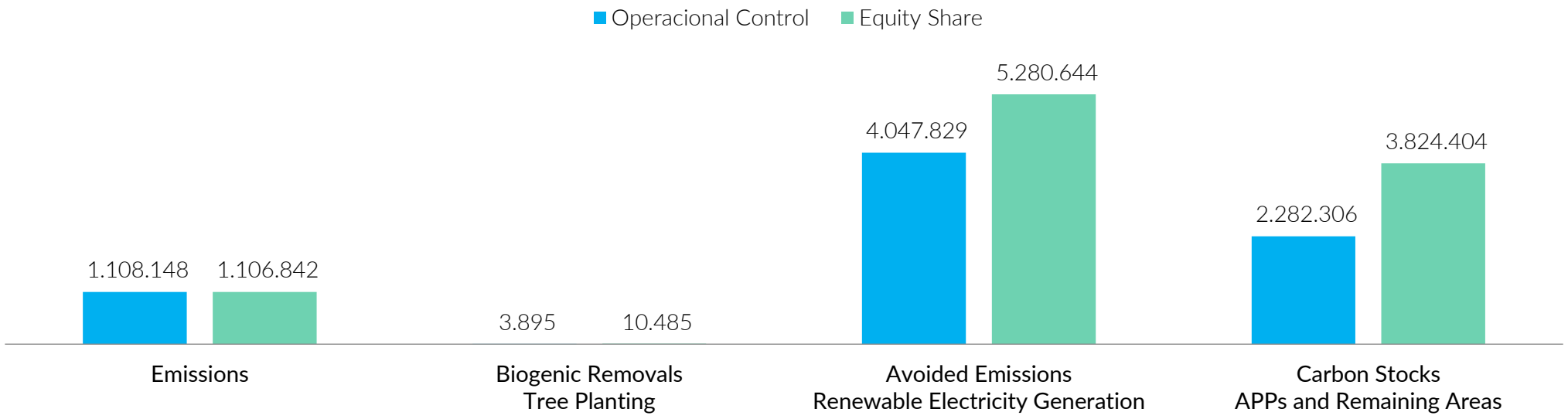


Analysis

Relative to 2021 and to the bese year, the emissions per NET Generation indicator decreased significantly, due to the decarbonization process of the portfolio and the increase in installed capacity in renewable sources.. The was of 81%, by the operational control approach, and 82% by the equity share approach.

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Emissions Balance (tCO_2e)



Analysis

The avoided emissions provided by clean generation from EBE's renewable enterprises exceed the company's emissions. Furthermore, the company has a relevant biogenic carbon stock in both permanent preservation and remaining areas and also provides biogenic removals through tree planting.

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Emissions per GHG (Metric Tonnes) - Operational Control

Units	Scope 1 (tGHG)							Scope 2 (tGHG)	Scope 3 (tGHG)		
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-32	SF_6	CO_2	CO_2	CH_4	N_2O
CECL	39,29	0,31	0,04	0,01	-	0,01	0,00	19,89	39,79	0,08	0,00
CETR	13,36	0,01	0,00	0,00	-	0,00	-	17,34	25,83	0,00	0,00
CEUR	0,04	0,25	0,03	0,00	-	0,00	-	20,99	24,14	0,40	0,00
CFFL	8,11	0,00	0,00	0,01	-	0,01	-	34,47	44,31	0,02	0,00
CFPA	0,18	0,00	0,00	-	-	-	-	66,74	42,06	0,01	0,00
Office SP	0,01	-	-	-	-	-	-	2,70	1,67	0,00	0,00
FVAE	6,35	0,01	0,00	-	-	-	-	28,54	1,76	0,00	0,00
PHJG	0,45	0,00	0,00	-	-	-	0,00	1,36	5,44	0,00	0,00
PHRO	0,78	0,00	0,00	-	-	-	-	1,11	0,20	0,00	0,00
SEDE	220,39	1.639,96	2.072,01	-	-	-	-	3.932,36	32,35	365,33	6,24
STGA	28,32	0,01	0,00	-	-	-	-	4.899,46	129,43	0,29	0,01
STNE	204,17	0,02	0,01	0,00	-	0,00	-	1.564,27	64,44	0,03	0,01
UCLA	220,39	58,57	7,82	-	-	-	-	29,02	365,33	0,22	0,02
UETB	-	-	-	-	-	-	-	3,34	-	-	-
UFCA	-	0,00	-	-	-	-	-	11,74	2,20	0,00	0,00
UHCB	0,83	0,01	0,00	-	-	-	-	11,23	22,56	0,01	0,00
UHET	-	-	-	-	-	-	-	-	-	-	-
UHIT	-	-	-	-	-	-	-	-	-	-	-
UHJA	3,35	0,07	0,00	0,01	-	0,01	-	42,09	21,87	0,05	0,00
UHMA	-	-	-	-	-	-	-	-	-	-	-
UHMI	10,14	0,00	0,00	-	-	-	-	0,17	38,36	0,02	0,00
UHPF	5,45	0,01	0,00	-	-	-	-	13,80	34,82	0,01	0,00
UHPP	14,47	0,01	0,00	0,00	-	0,00	0,00	0,01	53,88	0,02	0,00
UHSA	4,65	0,02	0,00	0,00	-	0,00	-	0,00	31,90	0,01	0,00
UHSO	12,00	0,02	0,00	0,01	0,01	0,01	-	13,36	163,96	3,97	0,01
UHSS	10,53	0,01	0,00	0,02	-	0,02	-	95,65	67,96	0,01	0,00
UTFE	2,57	191,95	25,59	-	-	-	-	67,34	474,38	0,03	0,03
UTIB	9,22	67,61	9,02	-	-	-	-	25,89	382,25	0,06	0,02
UTPS	1.067.492,87	10,60	15,59	0,02	0,04	0,02	0,01	886,46	3.289,26	0,25	0,18
Total	**1.068.409,07**	**329,56**	**58,13**	**0,14**	**0,05**	**0,14**	**0,01**	**7.937,57**	**6.053,76**	**5,55**	**0,35**

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Emissions per GHG (Metric Tonnes) - Equity Share

Units	Scope 1 (tGHG)							Scope 2 (tGHG)	Scope 3 (tGHG)		
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-32	SF_6	CO_2	CO_2	CH_4	N_2O
CECL	39,29	0,31	0,04	0,01	-	0,01	0,00	19,89	39,79	0,08	0,00
CETR	13,36	0,01	0,00	0,00	-	0,00	-	17,34	25,83	0,00	0,00
CEUR	0,04	0,25	0,03	0,00	-	0,00	-	20,99	24,14	0,40	0,00
CFFL	8,11	0,00	0,00	0,01	-	0,01	-	34,47	44,31	0,02	0,00
CFPA	0,18	0,00	0,00	-	-	-	-	66,74	42,06	0,01	0,00
Office SP	0,01	-	-	-	-	-	-	2,70	1,67	0,00	0,00
FVAE	6,35	0,01	0,00	-	-	-	-	28,54	1,76	0,00	0,00
PHJG	0,45	0,00	0,00	-	-	-	0,00	1,36	5,44	0,00	0,00
PHRO	0,78	0,00	0,00	-	-	-	-	1,11	0,20	0,00	0,00
SEDE	220,39	1.639,96	2.072,01	-	-	-	-	3.932,36	32,35	365,33	6,24
STGA	28,32	0,01	0,00	-	-	-	-	4.899,46	129,43	0,29	0,01
STNE	204,17	0,02	0,01	0,00	-	0,00	-	1.564,27	64,44	0,03	0,01
UCLA	220,39	58,57	7,82	-	-	-	-	29,02	365,33	0,22	0,02
UETB	-	-	-	-	-	-	-	3,34	-	-	-
UFCA	-	0,00	-	-	-	-	-	11,74	2,20	0,00	0,00
UHCB	0,83	0,01	0,00	-	-	-	-	11,23	22,56	0,01	0,00
UHET	6,41	0,02	0,05	-	-	-	0,00	4,12	36,65	0,01	0,00
UHIT	0,68	0,03	0,00	-	-	-	-	40,13	21,35	0,00	0,00
UHJA	3,35	0,07	0,00	0,01	-	0,01	-	42,09	21,87	0,05	0,00
UHMA	0,71	0,00	0,00	-	-	-	-	-	0,59	0,00	0,00
UHMI	10,14	0,00	0,00	-	-	-	-	0,17	38,36	0,02	0,00
UHPF	5,45	0,01	0,00	-	-	-	-	13,80	34,82	0,01	0,00
UHPP	14,47	0,01	0,00	0,00	-	0,00	0,00	0,01	53,88	0,02	0,00
UHSA	4,65	0,02	0,00	0,00	-	0,00	-	0,00	31,90	0,01	0,00
UHSO	12,00	0,02	0,00	0,01	0,01	0,01	-	13,36	163,96	3,97	0,01
UHSS	10,53	0,01	0,00	0,02	-	0,02	-	95,65	67,96	0,01	0,00
UTFE	2,57	191,95	25,59	-	-	-	-	67,34	474,38	0,03	0,03
UTIB	6,39	46,83	6,24	-	-	-	-	17,93	264,75	0,04	0,01
UTPS	1.067.492,87	10,60	15,59	0,02	0,04	0,02	0,01	886,46	3.289,26	0,25	0,18
Total	**1.068.414,03**	**308,83**	**55,41**	**0,14**	**0,05**	**0,14**	**0,01**	**7.973,87**	**5.994,84**	**5,54**	**0,35**

Biogenic Emissions by Source and Scope (tCO_2e/ %)

Emission Souces	Operational Control		Equity Share	
	Total Emissions (tCO2e)	%	tCO2e	%
Escopo 1	**1.084.805,70**	**99,9%**	**1.015.545,66**	**99,9%**
Stationary Combustion	1.084.407,82	99,9%	1.015.128,67	99,9%
Mobile Combustion	397,88	0,04%	416,99	0,04%
Escopo 3	**743,73**	**0,1%**	**752,03**	**0,1%**
Transport and Distribution (upstream)	616,95	0,1%	623,91	0,1%
Commuting	75,27	0,01%	76,33	0,01%
Business Travel	50,82	0,005%	51,11	0,005%
Indirect Stationary Combustion	0,68	0,0001%	0,68	0,0001%
Total	**1.085.549,43**	**100,0%**	**1.016.297,69**	**100,0%**

Analysis

EBE's biogenic emissions are concentrated in biogenic CO_2 emissions from its biomass power plants.

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Analysis

In 2022, HCFC-22 replenished in air conditioners was the only non-GHG gas emitted by EBE.

Non-GHG Emissions (tCO_2e)

Emission Sources	Operational Control		Equity Share	
	tCO_2e	%	tCO_2e	%
UHSA	49,98	44,6%	49,98	43,73%
UTPS	28,87	25,8%	28,87	25,26%
UHPP	10,95	9,8%	10,95	9,58%
PHJG	8,24	7,4%	8,24	7,21%
UCLA	7,04	0,06	7,04	6,16%
SEDE	3,92	3,5%	3,92	3,43%
UHCB	2,99	2,7%	2,99	2,62%
UHMA	-	-	2,31	2,02%
Total	**111,99**	**100%**	**114,29**	**100%**

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Analysis

The GHG inventory uncertainty was calculated by emission source. The cumulated uncertainty is 6.7%, as presented in the table.

Source description	Uncertainty of calculated emissions	Certainty Ranking
Acetylene	+/- 30,8%	Poor
Landfill - Common Waste	+/- 67,2%	Poor
Sugarcane Bagasse - UTFE	+/- 8,6%	Good
Sugarcane Bagasse - UTIB	+/- 8,6%	Good
Uncontaminated rubber	+/- 67,2%	Poor
Coal 3100 kcal/kg - UTPS	+/- 7,1%	Good
CO_2	+/- 5,0%	High
Diesel B10 FM on-road	+/- 16,6%	Fair
Diesel Monthly CE Energy	+/- 16,6%	Fair
Diesel Monthly FM off-road	+/- 16,6%	Fair
Diesel Monthly FM on-road	+/- 16,6%	Fair
Wastewater Employees	+/- 67,2%	Poor
Wastewater Septic Tank Final	+/- 67,2%	Poor
Wastewater Reactor Final	+/- 67,2%	Poor
Electric Power	+/- 7,0%	Good
Hydrated Ethanol	+/- 16,6%	Fair
Hydrated Ethanol FM on-road	+/- 16,6%	Fair
Hydrated Ethanol Mobile Sources on-road	+/- 16,6%	Fair
Gasoline E27 CE Energy	+/- 16,6%	Fair
Gasoline E27 FM off-road	+/- 16,6%	Fair
Gasoline E27 FM on-road	+/- 16,6%	Fair
Gypsum	+/- 30,8%	Poor
LPG Mobile Sources	+/- 8,6%	Good
LPG CE Energy	+/- 8,6%	Good
HFC-134a	+/- 5,4%	Good
Direct Firewood - UCLA	+/- 7,1%	Good
Wastewater treatment plant sludge	+/- 67,2%	Poor
Nitrogen Fertilizer	+/- 33,4%	Poor
R-22 HCFC22	+/- 5,4%	Good
R-407C	+/- 5,4%	Good
R-410A	+/- 5,4%	Good
Organic Waste	+/- 67,2%	Poor
Waste - Paper and Cardboard	+/- 67,2%	Poor
Food Waste	+/- 67,2%	Poor
Common Waste	+/- 67,2%	Poor
Wood Waste	+/- 67,2%	Poor
SF_6	+/- 5,4%	Good
Short-Distance Air Travel	+/- 16,6%	Fair
Long-Distance Air Travel	+/- 16,6%	Fair
Medium-Distance Air Travel	+/- 16,6%	Fair
Cumulated Uncertainty	**+/- 6,7%**	**Good**

Legend	
High	≤ 5%
Good	≤ 15%
Fair	≤ 30%
Poor	> 30%

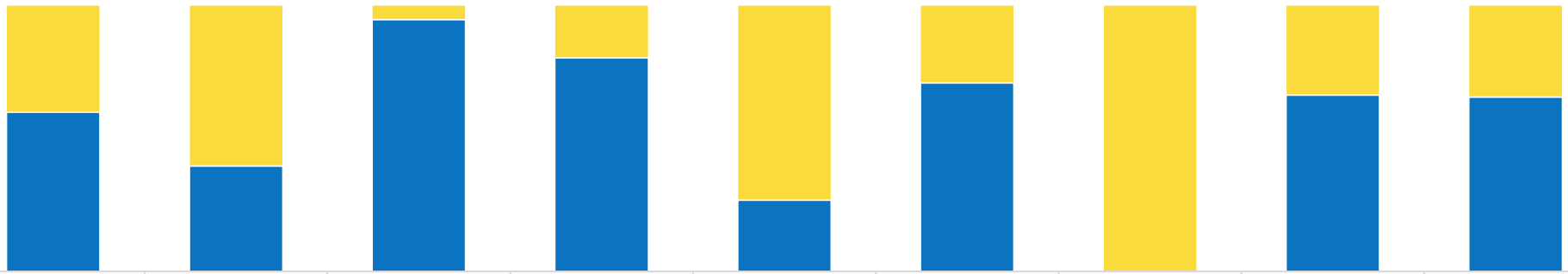
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Ecofinance NEGOCIOS

Head Office
Florianópolis

Office
São Paulo

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Fugitive Emissions	Stationary Combustion	Mobile Combustion	Waste	Electricity Acquisition	Business Travel	Wastewater Treatment - Scope 03	Waste - Scope 03	Total
2021	123,26	26,32	17,55	0,0003	219,16	302,85	8,20	0,01	697,35
2022	184,01	17,30	312,12	0,001	80,61	736,18	-	0,02	1.330,23

Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**513,43**	**38,6%**	**167,13**	**24,0%**	**346,30**	**207,2%**
Fugitive Emissions	184,01	13,8%	123,26	17,7%	60,75	49,3%
Stationary Combustion	17,30	1,3%	26,32	3,8%	(9,02)	-34,3%
Mobile Combustion	312,12	23,5%	17,55	2,5%	294,56	1678,0%
Waste	0,001	0,0%	0,0003	0,00004%	0,001	305,8%
Scope 2	**80,61**	**6,1%**	**219,16**	**31,4%**	**(138,55)**	**-63,2%**
Electricity Acquisition	80,61	6,1%	219,16	31,4%	(138,55)	-63,2%
Scope 3	**736,19**	**55,3%**	**311,07**	**44,6%**	**425,13**	**136,7%**
Business Travel	736,18	55,3%	302,85	43,4%	433,32	143,1%
Wastewater Treatment - Scope 03	-	-	8,20	1,176%	(8,20)	-100,0%
Waste - Scope 03	0,02	0,001%	0,01	0,001%	0,01	97,0%
Total	**1.330,23**	**100%**	**697,35**	**100%**	**632,88**	**90,8%**

Analysis

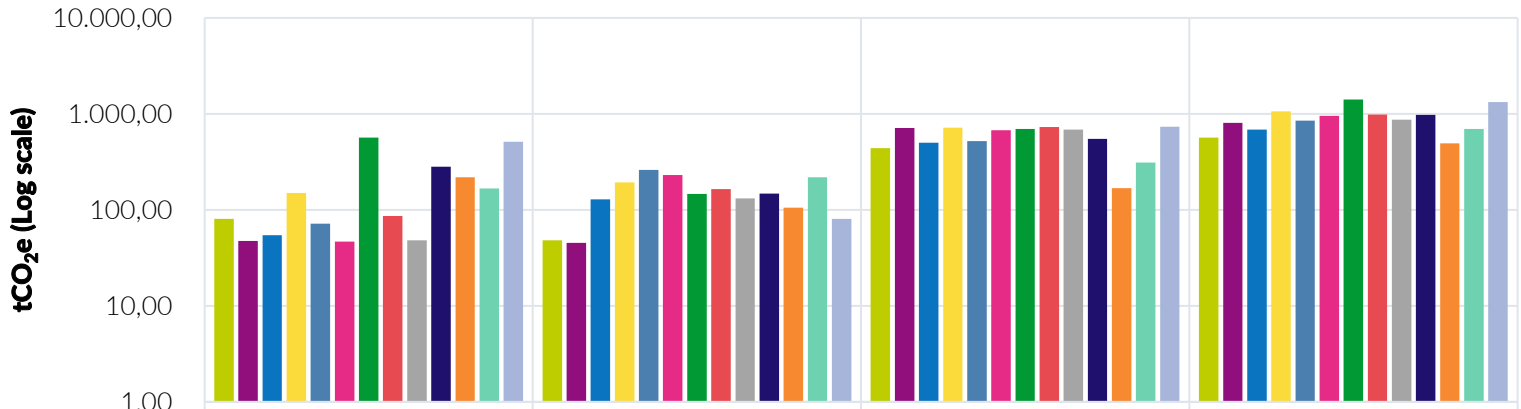
Emissions from the Florianópolis head office increased by 91% in 2022 compared to 2021. This growth is associated with higher emissions from business travel (143%), controlled vehicles (1678%) and fugitive emissions (49%). The electricity acquisition presented a reduction of 63%, due to the decrease of the SIN emission factor (-66%). This year, emissions related to projects under implementation were considered in this unit, which represents 32.76% of the emissions.

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Analysis

There was an increase of 91% in emissions in 2022 compared to 2021, due to the return to on-site activities with the cooling of the pandemic and the increase of emissions in projects under implementation. In relation to the baseline year (2010) there was a 58% growth.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



	Scope 1	Scope 2	Scope 3	Total
2010	80,44	48,44	438,55	567,43
2011	47,67	45,38	711,71	804,76
2012	54,69	129,08	501,22	684,98
2013	149,93	193,17	716,94	1.060,04
2014	71,78	262,04	518,90	852,73
2015	46,91	230,05	675,97	952,93
2016	566,74	146,53	696,54	1.409,80
2017	86,68	164,61	729,54	980,83
2018	48,24	131,4113	687,81	867,47
2019	282,59	148,00	549,03	979,62
2020	218,72	105,94	168,41	493,07
2021	167,13	219,16	311,07	697,35
2022	513,43	80,61	736,19	1.330,23

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Ecofinance NEGÓCIOS

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**55,00**	**65,3%**	**9,15**	**27,8%**	**45,85**	**500,8%**
Mobile Combustion	53,22	63,2%	6,10	18,5%	47,11	772,1%
Stationary Combustion	1,79	2,1%	3,05	9,3%	(1,26)	-41,4%
Scope 3	**29,18**	**34,7%**	**23,79**	**72,2%**	**5,39**	**22,7%**
Business Travel	29,18	34,7%	23,79	72,2%	5,39	22,7%
Total	**84,19**	**100%**	**32,95**	**100%**	**51,24**	**155,5%**

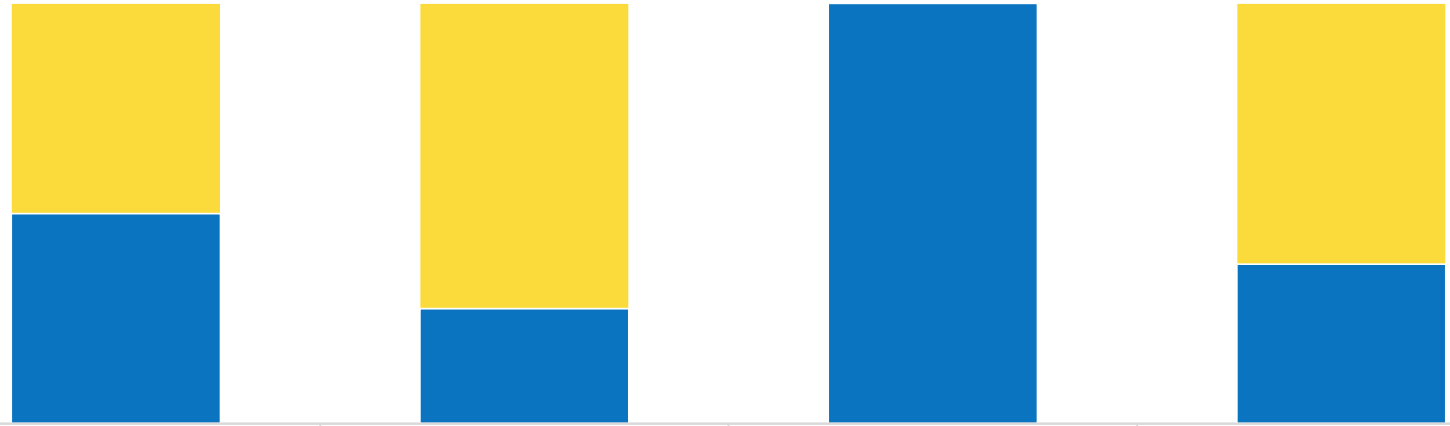
Analysis

Increase of 0.1% in biogenic emissions in 2022 compared to 2021, due to increased emissions from business travel (12%) and decreased mobile combustion from company-controlled vehicles (-26%) and stationary combustion (-41%), mainly from projects under implementation.

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Emissions by Source (tCO_2e) 2022 x 2021 Annual Performance (tCO_2e)

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Fugitive Emissions	Electricity Acquisition	Business Travel	Total
2021	0,01	7,16	-	7,17
2022	0,01	2,70	1,68	4,39

Emission Sources	Total Emission 2022		Total Emission 2021		Variation 2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**0,01**	**0,1%**	**0,01**	**0,1%**	**-**	**0,0%**
Fugitive Emissions	0,01	0,1%	0,01	0,1%	-	0,0%
Scope 2	**2,70**	**61,6%**	**7,16**	**99,9%**	**(4,46)**	**-62,3%**
Electricity Acquisition	2,70	61,6%	7,16	99,9%	(4,46)	-62,3%
Scope 3	**1,68**	**38,3%**	**-**	**0,0%**	**1,68**	**100,0%**
Business Travel	1,68	38,3%	-	0,0%	1,68	100,0%
Total	**4,39**	**100%**	**7,17**	**100%**	**(2,78)**	**-38,8%**

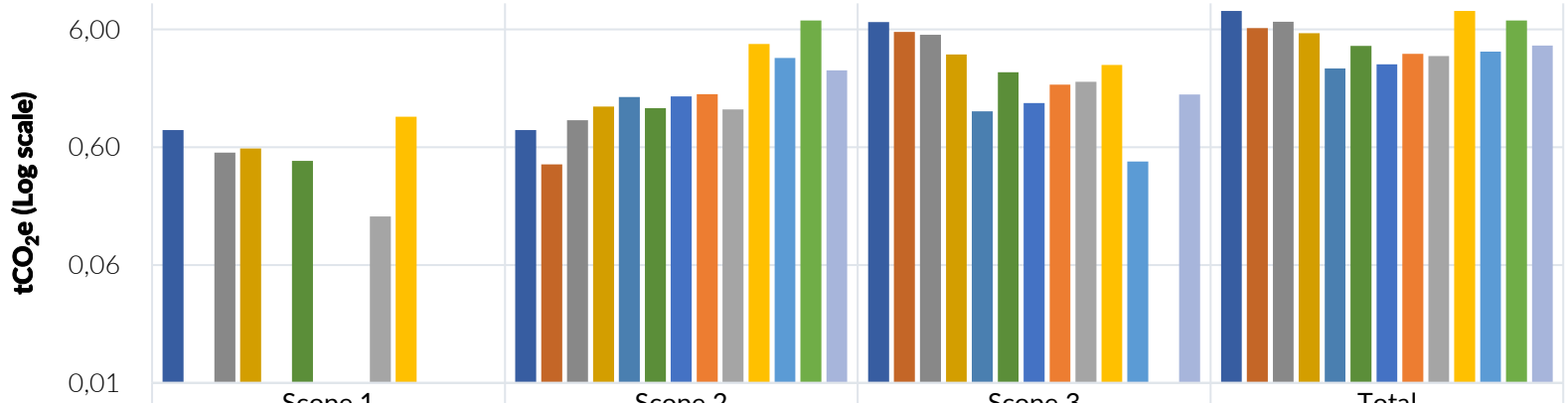
Analysis

38.8% reduction in emissions in 2022 due mainly to the decrease in the SIN emission factor (-66%). With the cooling of the pandemic, business travel resumed, causing an increase in scope 3 indirect emissions.

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Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 **Annual Performance (tCO_2e)**

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



	Scope 1	Scope 2	Scope 3	Total
2010	0,84	0,84	6,95	8,63
2011	-	0,43	5,72	6,15
2012	0,54	1,02	5,42	6,98
2013	0,58	1,32	3,68	5,59
2014	-	1,60	1,21	2,80
2015	0,46	1,29	2,59	4,34
2016	-	1,62	1,42	3,04
2017	-	1,70	2,04	3,73
2018	0,16	1,2571	2,15	3,56
2019	1,09	4,53	3,00	8,62
2020	0,01	3,43	0,45	3,89
2021	0,01	7,16	-	7,17
2022	0,01	2,70	1,68	4,39

Analysis

Due to the reduction of the SIN emission factor, emissions in 2022 were lower than in 2021 (39%). Compared to the baseline year, the reduction of scope 1 and 3 emissions provided a reduction of 49%.

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REMG
Minas Gerais Regional

RERI
Rio Iguaçu Regional

RERT
Rio Tocantins Regional

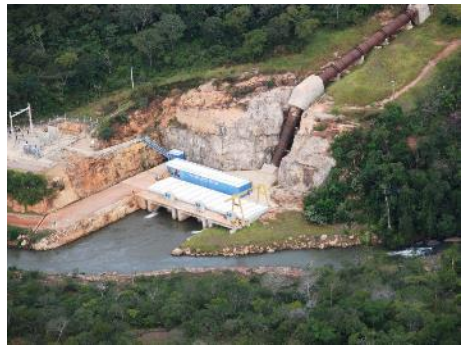
RERU
Rio Uruguai Regional

RRCR
Ceará and Rio Grande do Norte Renewable Regional

RRBA
Bahia Renewable Regional

RSSE
Sul/Sudeste Regional

Developed by:
Ecofinance NEGÓCIOS



PHJG
José Gelásio da Rocha
Small Hydroelectric Plant



PHRO
Rodonópolis
Small Hydroelectric Plant



UHJA
Jaguara
Hydroelectric Power Plant



UHMI
Miranda
Hydroelectric Power Plant

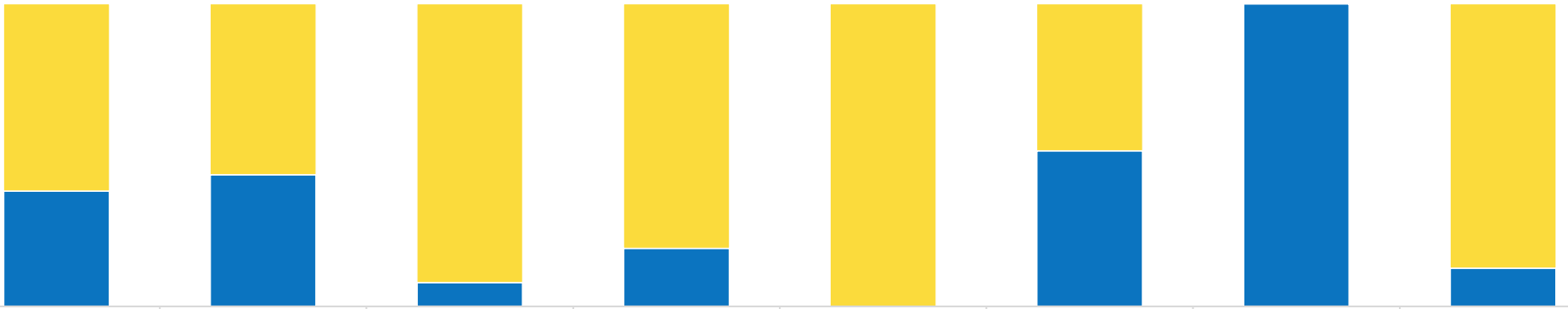


UHPP
Ponte de Pedra
Hydroelectric Power Plant

Developed by:
Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Stationary Combustion	Mobile Combustion	Fugitive Emissions	Electricity Acquisition	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2021	0,23	0,47	99,18	5,71	0,00004	4,87	-	110,47
2022	0,14	0,36	8,46	1,36	-	5,16	0,50	15,98

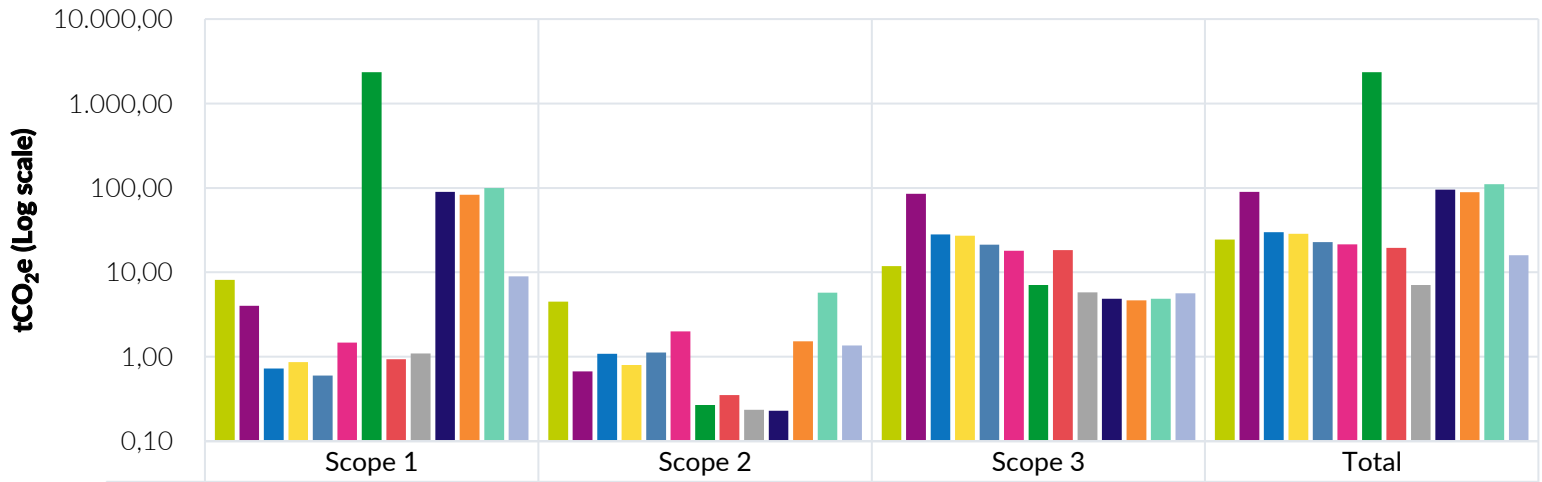
Emission Sources	Total Emission 2022		Total Emission 2021		Variation 2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**8,97**	**56,1%**	**99,89**	**90,4%**	**(90,92)**	**-91,0%**
Stationary Combustion	0,14	0,9%	0,23	0,2%	(0,09)	-38,4%
Mobile Combustion	0,36	2,3%	0,47	0,4%	(0,11)	-23,0%
Fugitive Emissions	8,46	53,0%	99,18	89,8%	(90,72)	-91,5%
Scope 2	**1,36**	**8,5%**	**5,71**	**5,2%**	**(4,35)**	**-76,2%**
Electricity Acquisition	1,36	8,5%	5,71	5,2%	(4,35)	-76,2%
Scope 3	**5,65**	**35,4%**	**4,87**	**4,4%**	**0,78**	**16,0%**
Waste - Scope 03	-	-	0,00004	0,00	(0,00004)	-100,0%
Transport and Distribution (upstream)	5,16	32,3%	4,87	4,4%	0,28	5,8%
Business Travel	0,50	3,1%	-	0,0%	0,50	100,0%
Total	**15,98**	**100%**	**110,47**	**100%**	**(94,49)**	**-85,5%**

Analysis

In 2022, PHJG has reduced 85% of emissions compared to 2021, due mainly to fugitive emissions (-91%).

Developed by:
Ecofinance NEGOCIOS

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



	Scope 1	Scope 2	Scope 3	Total
2010	8,12	4,49	11,81	24,42
2011	4,02	0,67	85,30	89,99
2012	0,72	1,08	28,05	29,86
2013	0,86	0,80	27,02	28,68
2014	0,60	1,12	21,16	22,87
2015	1,47	2,00	18,00	21,46
2016	2.349,09	0,27	7,09	2.356,46
2017	0,93	0,35	18,25	19,54
2018	1,09	0,23	5,77	7,09
2019	89,90	0,23	4,87	94,99
2020	83,01	1,52	4,65	89,18
2021	99,89	5,71	4,87	110,47
2022	8,97	1,36	5,65	15,98

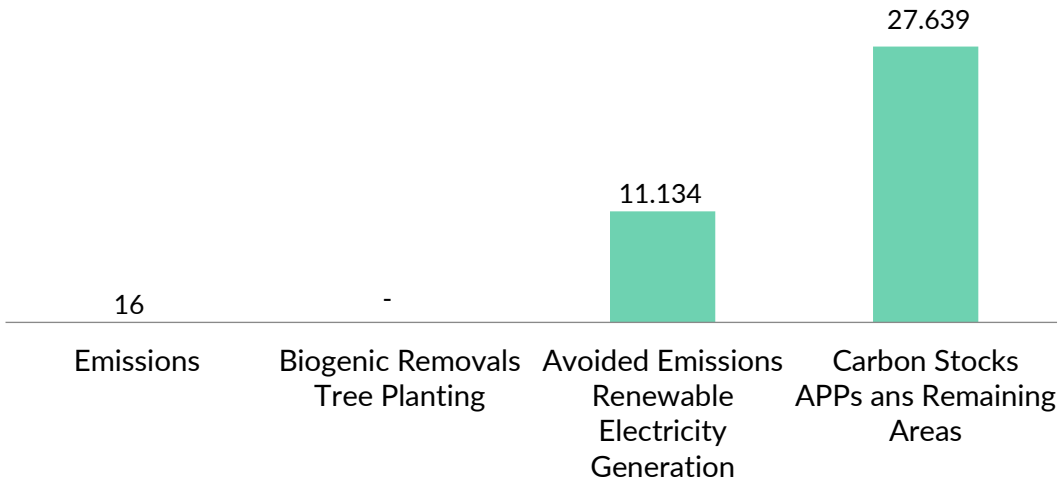
Analysis

Compared to the baseline year (2010), PHJG emissions reduced by 35%, mainly in scope 2 and 3 emissions.

Developed by: Ecofinance NEGÓCIOS

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**4,29**	**72,4%**	**5,61**	**82,7%**	**(1,32)**	**-23,5%**
Mobile Combustion	4,28	72,1%	5,58	82,3%	(1,31)	-23,4%
Stationary Combustion	0,01	0,3%	0,03	0,4%	(0,01)	-49,6%
Scope 3	**1,64**	**27,6%**	**1,17**	**17,3%**	**0,47**	**39,8%**
Transport and Distribution (upstream)	1,64	27,6%	1,17	17,3%	0,47	39,8%
Total	**5,93**	**100%**	**6,78**	**100%**	**(0,85)**	**-12,6%**

Emissions Balance (tCO_2e)

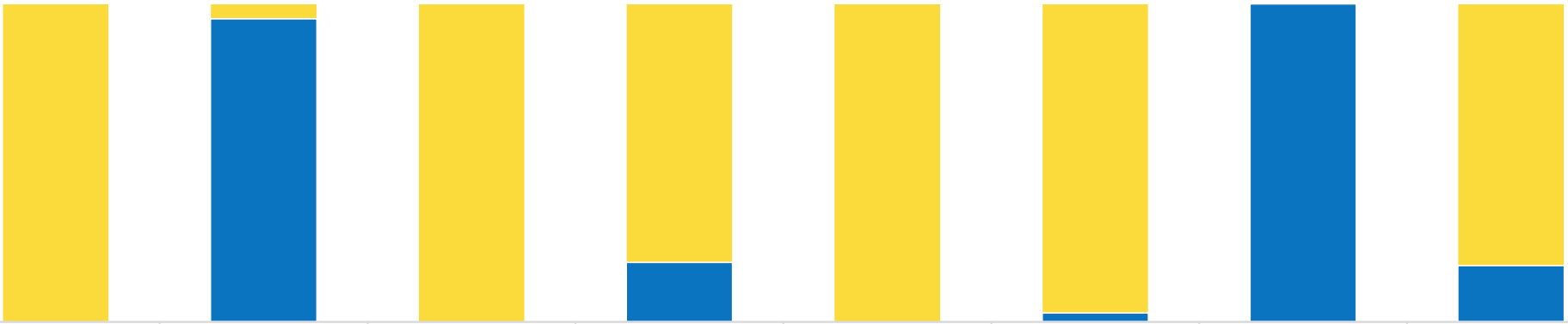


Analysis

In 2022, PHJG's biogenic emissions were reduced by 12.6%, associated with mobile combustion of controlled vehicles and stationary combustion. With the generation of renewable energy, PHJG avoided the emission of 11,134 tCO_2e. Also, the maintenance and preservation of remaining areas and APPs presented a biogenic carbon stock of 27,639 tCO_2e. In 2022, no trees were planted by PHJG.

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Stationary Combustion	Mobile Combustion	Fugitive Emissions	Electricity Acquisition	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2021	0,23	0,04	0,01	4,81	0,0001	4,93	-	10,02
2022	-	0,84	-	1,11	-	0,14	0,07	2,15

Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**0,84**	**38,9%**	**0,28**	**2,8%**	**0,56**	**198,9%**
Stationary Combustion	-	0,0%	0,23	2,3%	(0,23)	-100,0%
Mobile Combustion	0,84	38,9%	0,04	0,4%	0,80	1923,9%
Fugitive Emissions	-	0,0%	0,01	0,1%	(0,01)	-100,0%
Scope 2	**1,11**	**51,4%**	**4,81**	**48,0%**	**(3,70)**	**-77,0%**
Electricity Acquisition	1,11	51,4%	4,81	48,0%	(3,70)	-77,0%
Scope 3	**0,21**	**9,7%**	**4,93**	**49,2%**	**(4,72)**	**-95,8%**
Waste - Scope 03	-	0,0%	0,0001	0,0%	(0,00)	-100,0%
Transport and Distribution (upstream)	0,14	6,6%	4,93	49,2%	(4,79)	-97,1%
Business Travel	0,07	3,0%	-	0,0%	0,07	100,0%
Total	**2,15**	**100%**	**10,02**	**100%**	**(7,86)**	**-78,5%**

Analysis

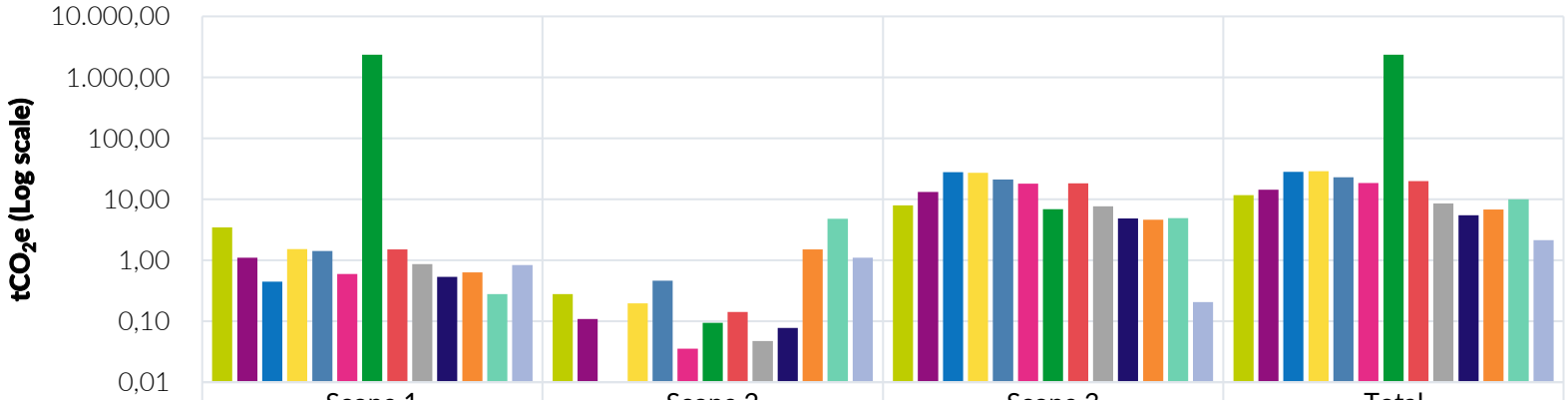
PHRO reduced total emissions by 78.5% compared to 2021, associated mainly with the reduction of the SIN emission factor (-66%) that impacts emissions from energy consumption, and upstream transportation and distribution.

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Ecofinance NEGOCIOS

Analysis

In 2022, PHRO had the lowest level of emissions since the baseline year (2010). It reduced 78.5% compared to 2021 and 82% compared to 2010 (baseline year).

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)

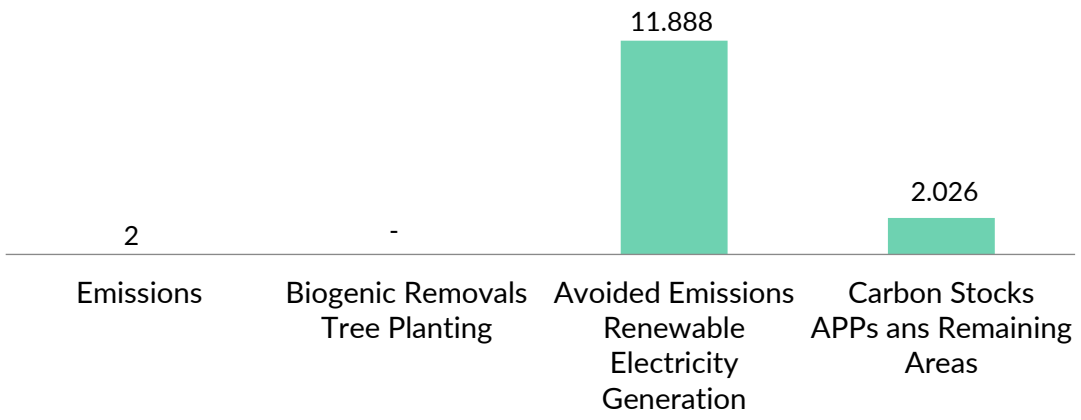


	Scope 1	Scope 2	Scope 3	Total
2010	3,49	0,28	8,02	11,79
2011	1,11	0,11	13,26	14,48
2012	0,45	-	27,79	28,24
2013	1,54	0,20	27,36	29,10
2014	1,42	0,47	21,15	23,04
2015	0,60	0,04	18,00	18,64
2016	2.350,13	0,09	6,88	2.357,11
2017	1,52	0,14	18,25	19,91
2018	0,87	0,05	7,66	8,57
2019	0,54	0,08	4,87	5,48
2020	0,63	1,52	4,65	6,80
2021	0,28	4,81	4,93	10,02
2022	0,84	1,11	0,21	2,15

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions 2022		Biogenic Emissions 2021		Variation 2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**5,15**	**99,4%**	**4,30**	**78,4%**	**0,85**	**19,8%**
Mobile Combustion	5,15	99,4%	4,27	77,8%	0,88	20,7%
Stationary Combustion	-	0,0%	0,03	0,5%	(0,03)	-100,0%
Scope 3	**0,03**	**0,6%**	**1,18**	**21,6%**	**(1,15)**	**-97,4%**
Transport and Distribution (upstream)	0,01	0,3%	1,18	21,6%	(1,17)	-98,8%
Business Travel	0,02	0,3%	-	-	0,02	100,0%
Total	**5,18**	**100%**	**5,48**	**100%**	**(0,30)**	**-5,5%**

Emissions Balance (tCO_2e)



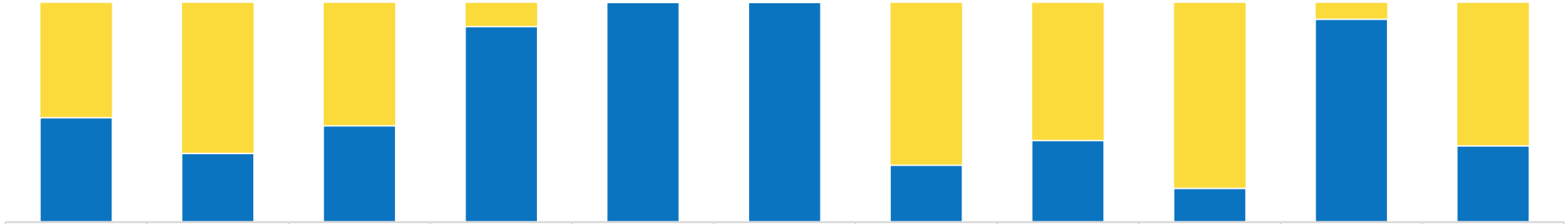
Analysis

PHRO's biogenic emissions were reduced by 5.5% in 2022 as a result of fuel consumption in transport controlled by third parties.

By generating renewable energy, PHRO avoided the emission of 11,888 tCO2e. While the maintenance and preservation of remaining areas and APPs presents a biogenic carbon stock of 2,026 tCO2e. In 2022, no trees were planted by PHRO.

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Agircultural Activities	Waste	Electricity Acquisition	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2021	1,08	5,82	2,27	4,20	-	-	120,29	1,88	61,12	0,95	197,61
2022	0,98	2,65	1,77	33,81	0,04	0,0001	42,09	1,11	11,13	11,43	105,02

Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**39,25**	**37,4%**	**13,37**	**6,8%**	**25,88**	**193,6%**
Stationary Combustion	0,98	0,9%	1,08	0,5%	(0,10)	-9,4%
Mobile Combustion	2,65	2,5%	5,82	2,9%	(3,17)	-54,5%
Wastewater Treatment	1,77	1,7%	2,27	1,2%	(0,50)	-21,9%
Fugitive Emissions	33,81	32,2%	4,20	2,1%	29,61	704,8%
Agircultural Activities	0,04	0,04%	-	-	0,04	100,0%
Waste	0,0001	0,0001%	-	-	0,00	100,0%
Scope 2	**42,09**	**40,1%**	**120,29**	**60,9%**	**(78,20)**	**-65,0%**
Electricity Acquisition	42,09	40,1%	120,29	60,9%	(78,20)	-65,0%
Scope 3	**23,67**	**22,5%**	**63,95**	**32,4%**	**(40,27)**	**-63,0%**
Waste - Scope 03	1,11	1,1%	1,88	1,0%	(0,77)	-40,9%
Transport and Distribution (upstream)	11,13	10,6%	61,12	30,9%	(49,98)	-81,8%
Business Travel	11,43	10,9%	0,95	0,5%	10,48	1098,6%
Total	**105,02**	**100%**	**197,61**	**100%**	**(92,59)**	**-46,9%**

Analysis

In 2022, UHJA reduced emissions by 46.9% compared to 2021, stemming from outsourced transportation services (-81.8%) and scope 2, due to the reduction in the SIN emission factor (-66%). The reduction was mitigated by the increase in fugitive emissions (704%).

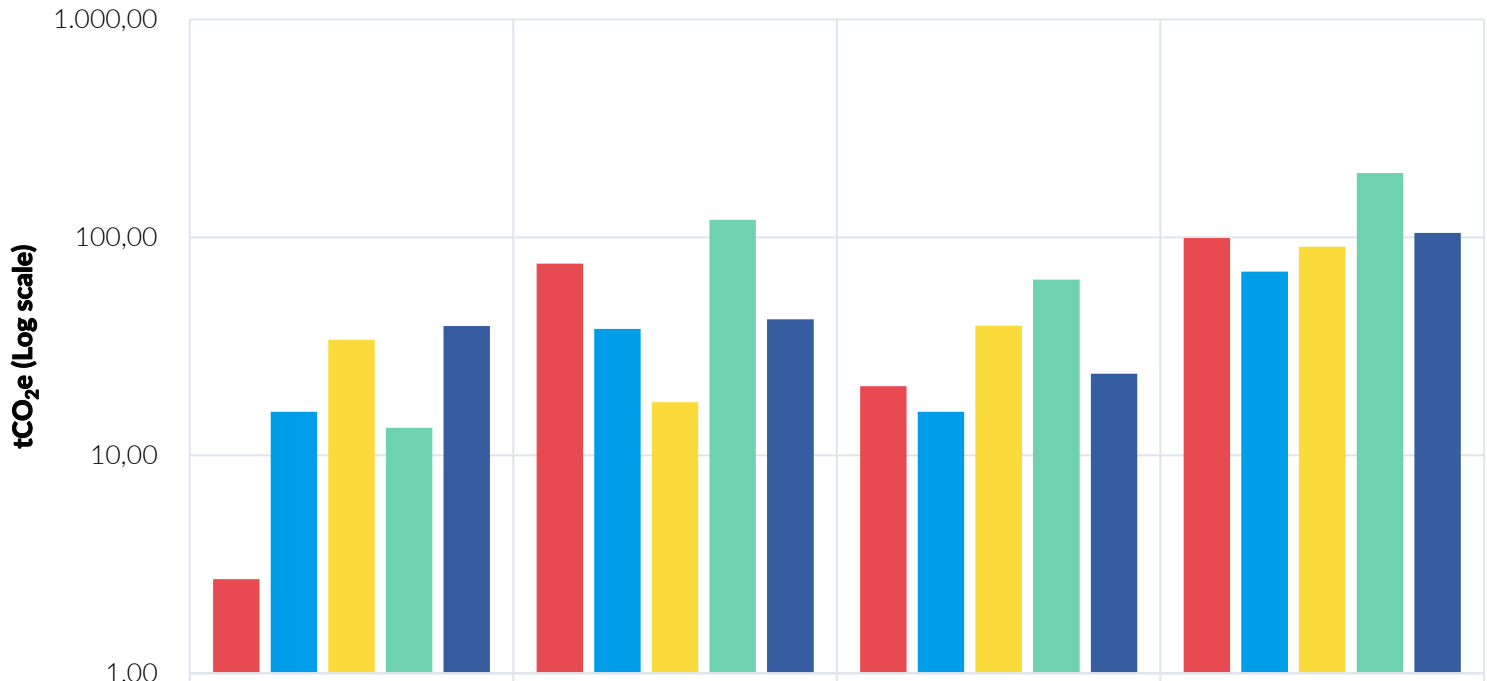
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Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | **Annual Performance (tCO_2e)** | Biogenic Emissions and Balance

Analysis

In 2022, UHJA reduced its emissions by 47% compared to 2021 and increased 6% compared to 2018, the first year of accounting for the plant's emissions.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



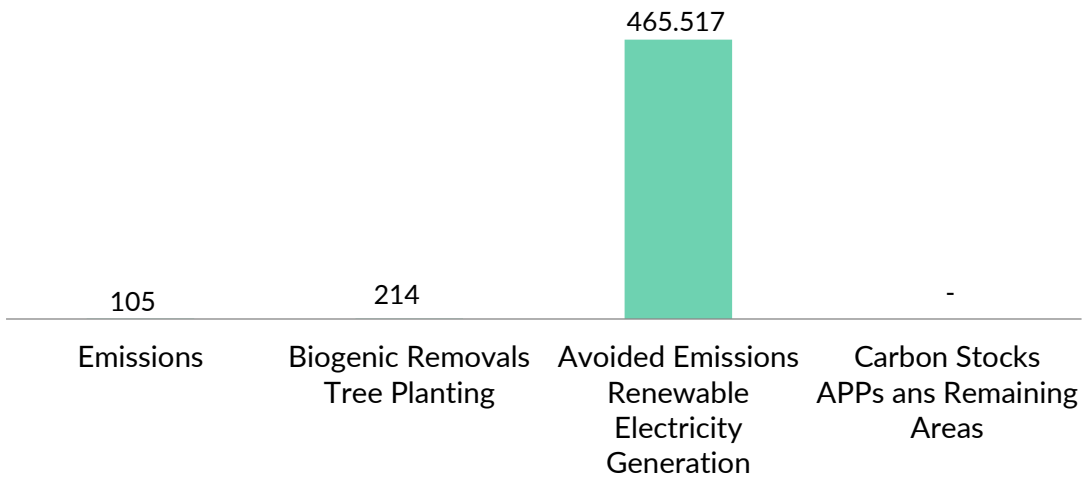
	Scope 1	Scope 2	Scope 3	Total
2018	2,70	75,75	20,78	99,23
2019	15,86	38,03	15,85	69,74
2020	33,90	17,51	39,30	90,71
2021	13,37	120,29	63,95	197,61
2022	39,25	42,09	23,67	105,02

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Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**28,52**	**53,5%**	**32,86**	**48,6%**	**(4,34)**	**-13,2%**
Mobile Combustion	28,26	53,0%	32,59	48,2%	(4,33)	-13,3%
Stationary Combustion	0,25	0,5%	0,27	0,4%	(0,02)	-6,5%
Scope 3	**24,83**	**46,5%**	**34,78**	**51,4%**	**(9,95)**	**-28,6%**
Transport and Distribution (upstream)	24,02	45,0%	34,68	51,3%	(10,66)	-30,7%
Business Travel	0,81	1,5%	0,10	0,2%	0,71	695,4%
Total	**53,34**	**100%**	**67,64**	**100%**	**(14,30)**	**-21,1%**

Emissions Balance (tCO_2e)



Análise

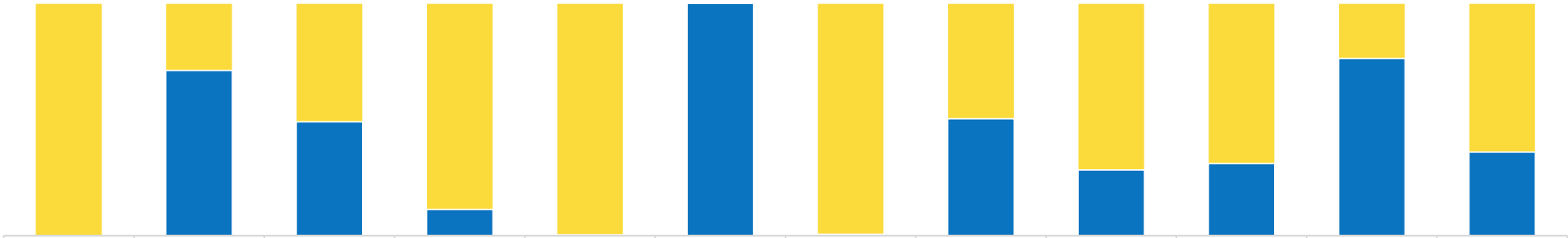
UHJA's biogenic emissions reduced 21% by 2022, associated with fuel consumption in third-party transportation and mobile combustion from vehicles controlled by the plant.

By generating renewable energy, UHJA avoided the emission of 465,517 tCO_2e in 2022. And tree planting provided biogenic removals of 214 tCO_2e.

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Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Agricultural Activities	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Waste	Electricity Acquisition	Commuting	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2021	0,11	2,39	4,61	0,06	11,98	-	24,96	13,81	0,64	26,76	4,18	89,48
2022	-	5,88	4,43	0,01	0,06	0,0001	0,17	14,00	0,25	12,05	13,42	50,27

Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**10,37**	**20,6%**	**19,14**	**21,4%**	**(8,78)**	**-45,8%**
Agricultural Activities	-	-	0,11	0,1%	(0,11)	-100,0%
Stationary Combustion	5,88	11,7%	2,39	2,7%	3,49	146,0%
Mobile Combustion	4,43	8,8%	4,61	5,1%	(0,18)	-4,0%
Wastewater Treatment	0,01	0,0%	0,06	0,1%	(0,05)	-87,3%
Fugitive Emissions	0,06	0,1%	11,98	13,4%	(11,92)	-99,5%
Waste	0,0001	0,0%	-	-	0,0001	100,0%
Scope 2	**0,17**	**0,3%**	**24,96**	**27,9%**	**(24,79)**	**-99,3%**
Electricity Acquisition	0,17	0,3%	24,96	27,9%	(24,79)	-99,3%
Scope 3	**39,73**	**79,0%**	**45,38**	**50,7%**	**(5,65)**	**-12,5%**
Commuting	14,00	27,8%	13,81	15,4%	0,19	1,4%
Waste - Scope 03	0,25	0,5%	0,64	0,7%	(0,39)	-60,5%
Transport and Distribution (upstream)	12,05	24,0%	26,76	29,9%	(14,71)	-55,0%
Business Travel	13,42	26,7%	4,18	4,7%	9,25	221,4%
Total	**50,27**	**100%**	**89,48**	**100%**	**(39,21)**	**-43,8%**

Analysis

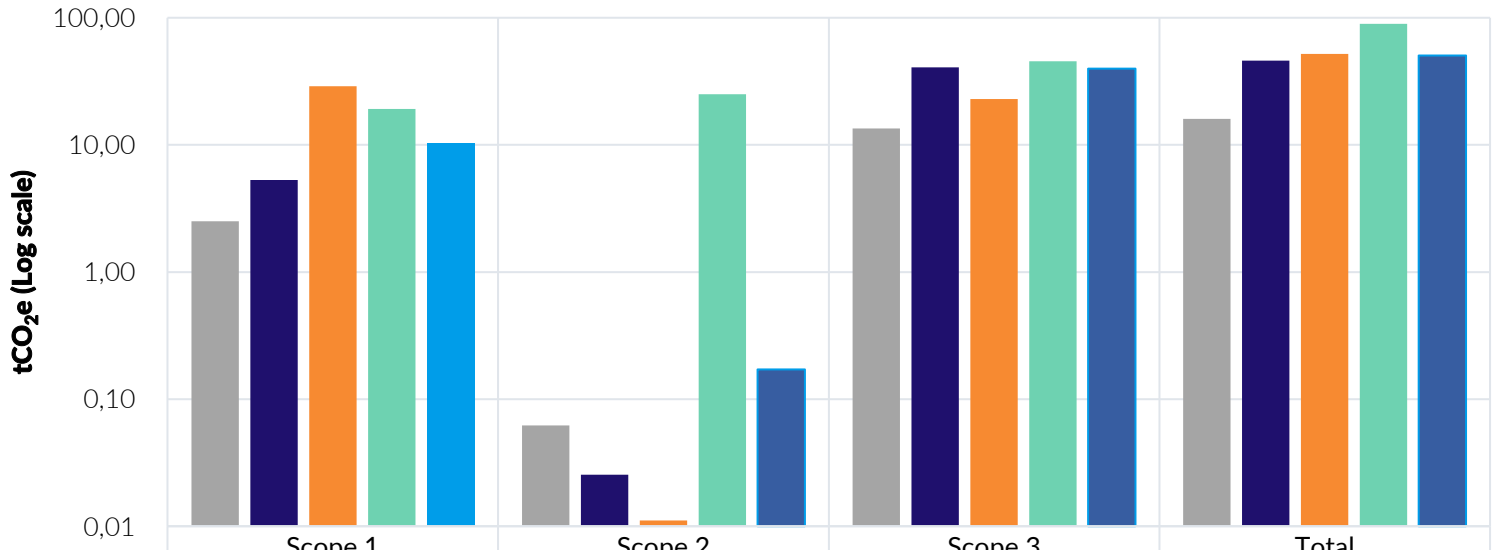
UHMI reduced emissions by 43.8% compared to 2021, mainly as a result of emissions from energy purchases, outsourced transportation, and fugitive emissions.

Developed by:
Ecofinance NEGOCIOS

Analysis

UHMI's emissions reduced by 44% in 2022 compared to 2021 and increased by 215% compared to the plant's first year of emissions accounting (2018).

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



	Scope 1	Scope 2	Scope 3	Total
2018	2,50	0,06	13,41	15,97
2019	5,28	0,03	40,75	46,05
2020	28,97	0,01	22,93	51,92
2021	19,14	24,96	45,38	89,48
2022	10,37	0,17	39,73	50,27

Developed by:
Ecofinance NEGOCIOS

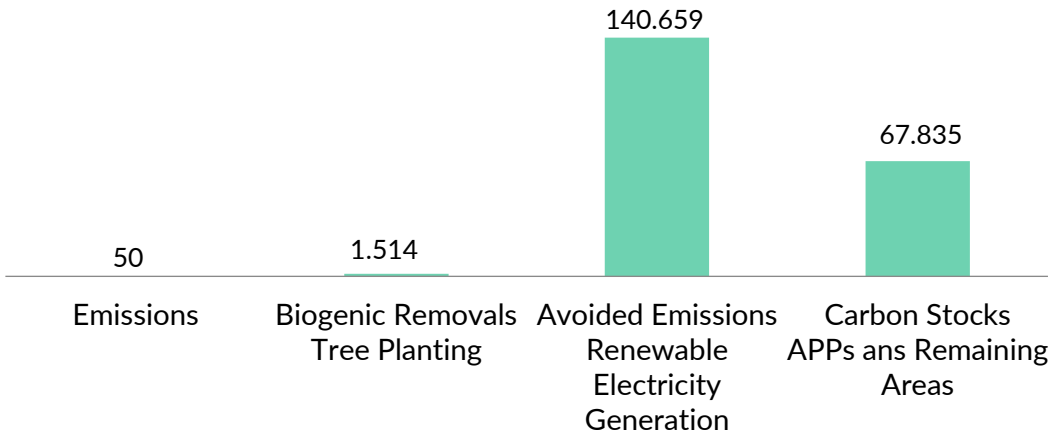
Emissions by Source (tCO_2e) 2022 x 2021

Annual Performance (tCO_2e)

Biogenic Emissions and Balance

Emission Sources	Biogenic Emissions 2022		Biogenic Emissions 2021		Variation 2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**14,34**	**39,7%**	**17,33**	**42,2%**	**(2,99)**	**-17,3%**
Mobile Combustion	13,40	37,1%	17,09	41,6%	(3,69)	-21,6%
Stationary Combustion	0,93	2,6%	0,24	0,6%	0,70	295,3%
Scope 3	**21,78**	**60,3%**	**23,78**	**57,8%**	**(1,99)**	**-8,4%**
Transport and Distribution (upstream)	19,41	53,8%	21,81	53,1%	(2,39)	-11,0%
Commuting	1,43	4,0%	1,61	3,9%	(0,18)	-11,1%
Business Travel	0,94	2,6%	0,36	0,9%	0,58	160,7%
Total	**36,12**	**100%**	**41,11**	**100%**	**(4,99)**	**-12,1%**

Emissions Balance (tCO_2e)



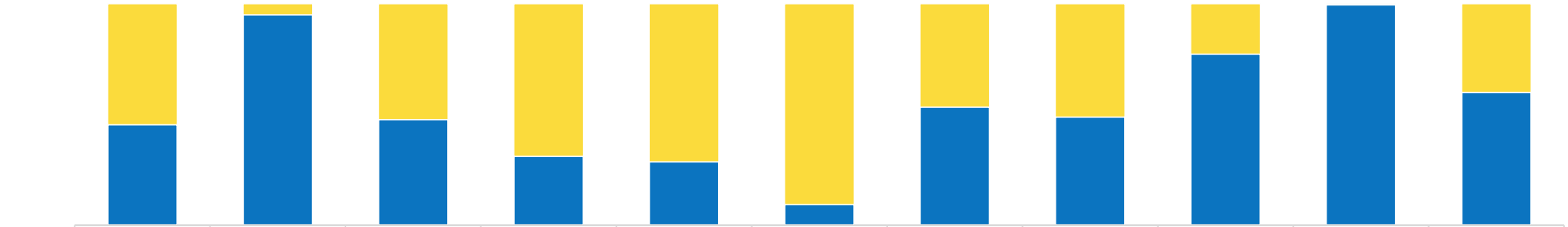
Analysis

UHMI's biogenic emissions were reduced by 12% in 2022, primarily due to emissions from third-party vehicles and company-controlled vehicles.

Tree planting provided biogenic removals of 1,514 tCO_2e in 2022. With the generation of renewable energy, UHMI avoided the emission of 140,659 tCO_2e. And the maintenance and preservation of remaining areas and APPs present a biogenic carbon stock of 67.835 tCO_2e.

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Mobile Combustion	Fugitive Emissions	Waste	Wastewater Treatment	Stationary Combustion	Electricity Acquisition	Transport and Distribution (upstream)	Commuting	Business Travel	Waste - Scope 03	Total
2021	12,94	1,77	0,001	0,28	7,32	0,08	34,64	10,31	1,79	0,0003	69,12
2022	10,75	34,18	0,001	0,13	2,93	0,01	39,66	9,83	6,09	0,06	103,63

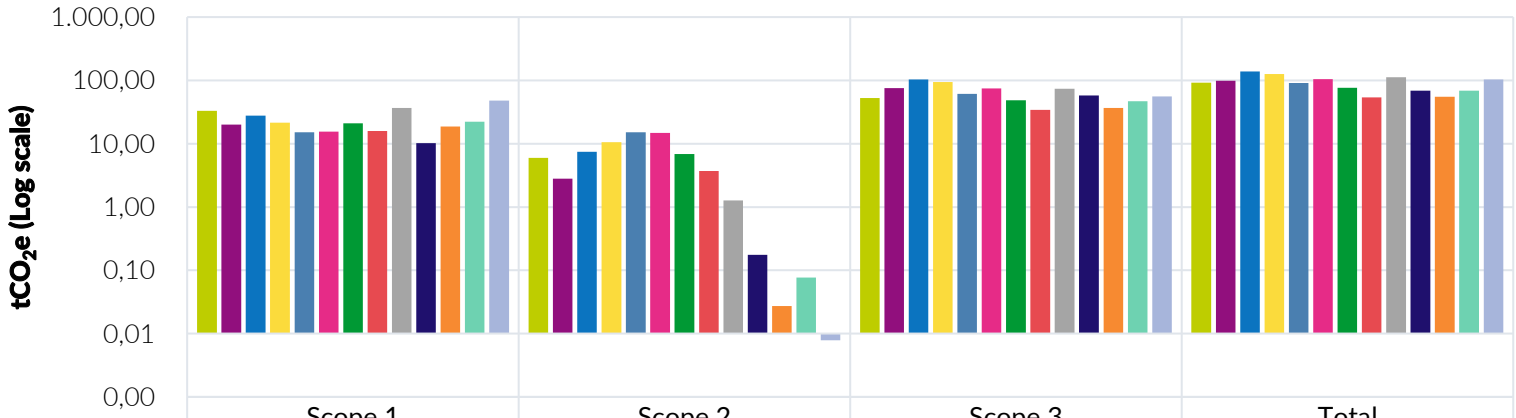
Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**47,99**	**46,3%**	**22,31**	**32,3%**	**25,68**	**115,1%**
Mobile Combustion	10,75	10,4%	12,94	18,7%	(2,19)	-17,0%
Fugitive Emissions	34,18	33,0%	1,77	2,6%	32,41	1829,2%
Waste	0,001	0,0005%	0,001	0,001%	(0,00)	-8,5%
Wastewater Treatment	0,13	0,1%	0,28	0,4%	(0,15)	-54,8%
Stationary Combustion	2,93	2,8%	7,32	10,6%	(4,38)	-59,9%
Scope 2	**0,01**	**0,0%**	**0,08**	**0,11%**	**(0,07)**	**-89,7%**
Electricity Acquisition	0,01	0,0%	0,08	0,11%	(0,07)	-89,7%
Scope 3	**55,63**	**53,7%**	**46,74**	**67,6%**	**8,90**	**19,0%**
Transport and Distribution (upstream)	39,66	38,3%	34,64	50,1%	5,01	14,5%
Commuting	9,83	9,5%	10,31	14,9%	(0,48)	-4,6%
Business Travel	6,09	5,9%	1,79	2,6%	4,30	240,6%
Waste - Scope 03	0,06	0,1%	0,0003	0,0004%	0,06	20817,8%
Total	**103,63**	**100%**	**69,12**	**100%**	**34,51**	**49,9%**

Analysis

In 2021, UHPP increased emissions by 49.9%, stemming mainly from fugitive emissions (1,829%).

Developed by: Ecofinance NEGOCIOS

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



	Scope 1	Scope 2	Scope 3	Total
2010	32,93	5,96	52,87	91,76
2011	20,01	2,79	75,92	98,72
2012	27,92	7,45	103,42	138,78
2013	21,46	10,52	94,08	126,06
2014	15,16	15,14	61,07	91,38
2015	15,52	14,84	74,43	104,78
2016	21,12	6,87	48,64	76,64
2017	15,97	3,73	34,37	54,08
2018	36,62	1,28	74,16	112,05
2019	10,19	0,18	58,24	68,61
2020	18,71	0,03	36,59	55,32
2021	22,31	0,08	46,74	69,12
2022	47,99	0,01	55,63	103,63

Analysis

UHPP emissions increased 50% in 2022 compared to 2021 and 13% compared to 2010, the base year of the EBE inventory.

Greenhouse Gases Emissions Inventory 2022

Institutional

Methodology

Results

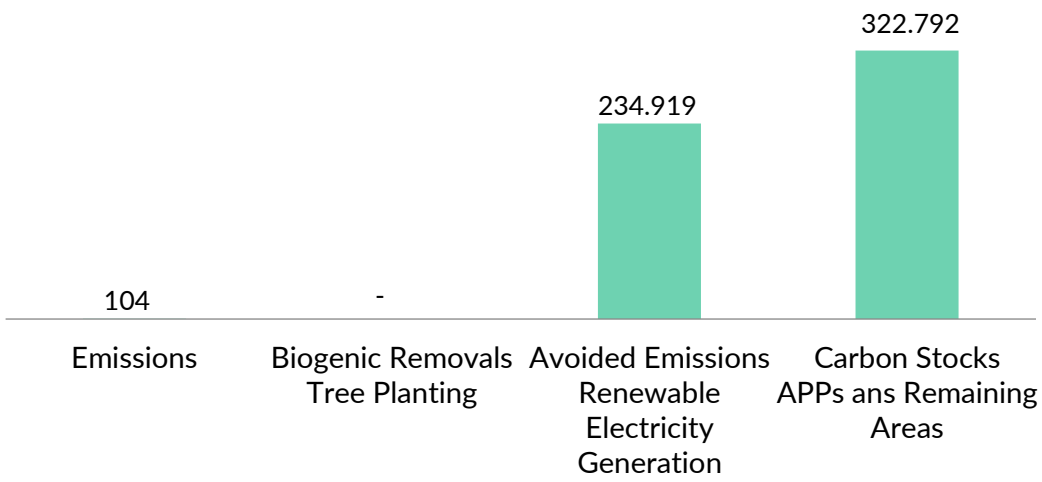
Verification

Return

Developed by:
Ecofinance NEGOCIOS

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**23,79**	**61,2%**	**31,05**	**68,8%**	**(7,27)**	**-23,4%**
Mobile Combustion	23,48	60,4%	30,24	67,0%	(6,76)	-22,3%
Stationary Combustion	0,30	0,8%	0,81	1,8%	(0,51)	-62,6%
Scope 3	**15,06**	**38,8%**	**14,08**	**31,2%**	**0,98**	**7,0%**
Transport and Distribution (upstream)	13,65	35,1%	12,77	28,3%	0,88	6,9%
Commuting	1,00	2,6%	1,19	2,6%	(0,18)	-15,5%
Business Travel	0,41	1,1%	0,12	0,3%	0,29	235,7%
Total	**38,85**	**100%**	**45,13**	**100%**	**(6,28)**	**-13,9%**

Emissions Balance (tCO_2e)



Analysis

Biogenic emissions from UHPP reduced 13.9% in 2021 associated with fuel consumption in vehicles controlled by the plant.

With the generation of renewable energy, UHPP avoided the emission of 234,919 tCO_2e. And the maintenance and preservation of remaining areas and APPs present a biogenic carbon stock of 322.792 tCO_2e.



UHSO
Salto Osório
Hydroelectric Power Plant



UHSS
Salto Santiago
Hydroelectric Power Plant

Developed by:
Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Fugitive Emissions	Mobile Combustion	Wastewater Treatment	Stationary Combustion	Agricultural Activities	Electricity Acquisition	Transport and Distribution (upstream)	Waste - Scope 03	Commuting	Business Travel	Indirect Fugitive Emissions	Total
2021	30,09	9,33	0,09	1,55	0,05	988,00	102,82	2,58	31,56	3,69	0,03	1.169,80
2022	46,86	12,35	0,23	0,15	-	13,36	128,31	110,46	30,55	8,93	-	351,21

Emission Sources	Total Emission 2022		Total Emission 2021		Variation 2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**59,59**	**17,0%**	**41,11**	**3,5%**	**18,49**	**45,0%**
Fugitive Emissions	46,86	0,13	30,09	2,572%	16,77	55,7%
Mobile Combustion	12,35	3,52%	9,33	0,80%	3,03	32,4%
Wastewater Treatment	0,23	0,1%	0,09	0,0%	0,14	169,0%
Stationary Combustion	0,15	0,0%	1,55	0,13%	(1,40)	-90,3%
Agricultural Activities	-	0,0%	0,05	0,0%	(0,05)	-100,0%
Scope 2	**13,36**	**3,8%**	**988,00**	**84,5%**	**(974,64)**	**-98,6%**
Electricity Acquisition	13,36	3,8%	988,00	84,5%	(974,64)	-98,6%
Scope 3	**278,26**	**79,2%**	**140,69**	**12,0%**	**137,57**	**97,8%**
Transport and Distribution (upstream)	128,31	0,37	102,82	8,8%	25,49	24,8%
Waste - Scope 03	110,46	31,5%	2,58	0,2%	107,88	4178,4%
Commuting	30,55	8,7%	31,56	2,7%	(1,01)	-3,2%
Business Travel	8,93	2,5%	3,69	0,3%	5,23	141,7%
Indirect Fugitive Emissions	-	-	0,03	0,003%	(0,03)	-100,0%
Total	**351,21**	**100%**	**1.169,80**	**100%**	**(818,58)**	**-70,0%**

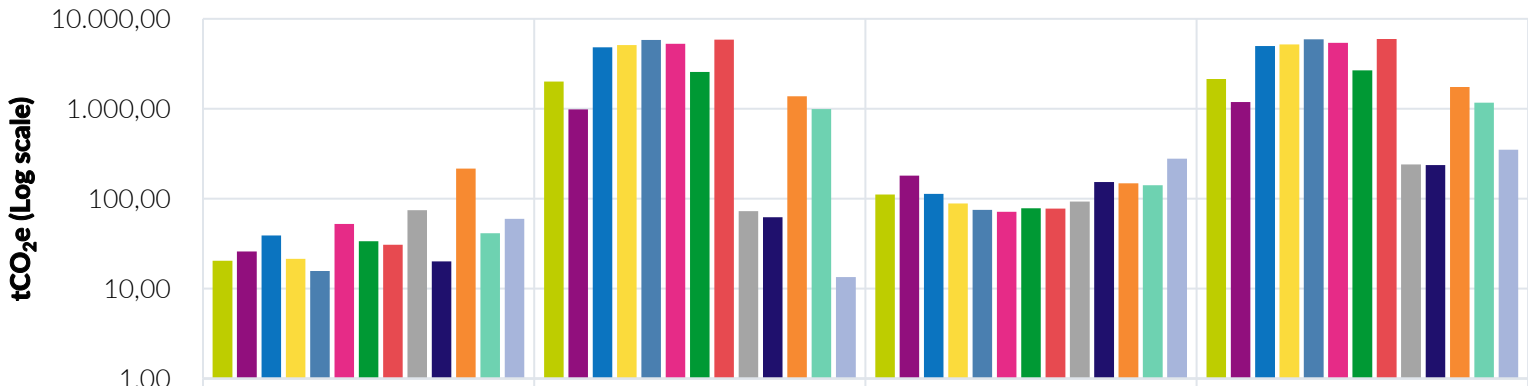
Analysis

UHSO reduced, in 2022, 70% of emissions, mainly due to the consumption of energy from the grid (-98.6%). The reduction was mitigated mainly by the increase in emissions from scope 3 waste (4,178%).

Developed by:
Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | **Annual Performance (tCO_2e)** | **Biogenic Emissions and Balance**

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



	Scope 1	Scope 2	Scope 3	Total
2010	20,34	2.010,32	111,44	2.142,10
2011	25,79	985,06	180,16	1.191,01
2012	38,90	4.841,48	112,94	4.993,32
2013	21,41	5.103,80	88,65	5.213,86
2014	15,68	5.837,95	75,02	5.928,66
2015	52,14	5.298,14	71,24	5.421,52
2016	33,65	2.565,19	77,99	2.676,83
2017	30,75	5.852,30	77,19	5.960,24
2018	74,51	72,62	93,19	240,33
2019	20,00	61,99	153,58	235,58
2020	216,69	1.381,61	148,58	1.746,87
2021	41,11	988,00	140,69	1.169,80
2022	59,59	13,36	278,26	351,21

Analysis

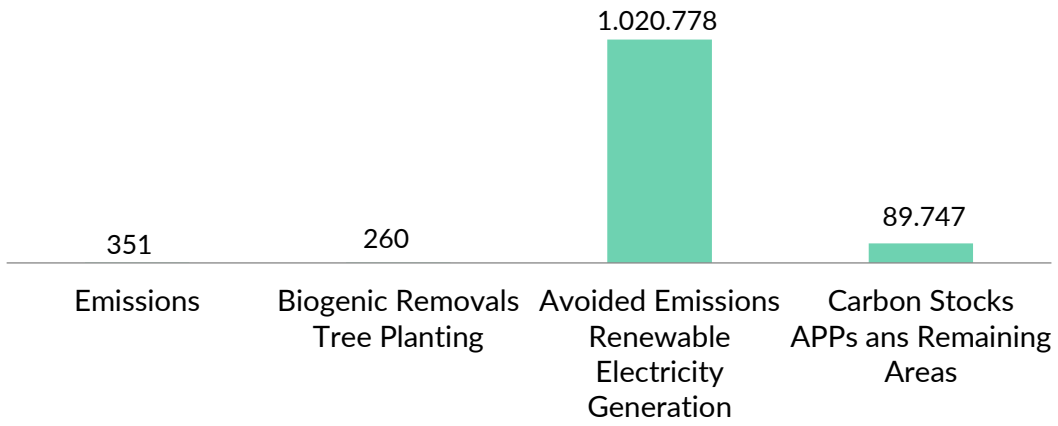
UHSO emissions were 70% lower than in the year 2021 and reduced 84% from the baseline year (2010).

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**27,72**	**50,1%**	**26,19**	**48,2%**	**1,53**	**5,8%**
Mobile Combustion	27,68	50,0%	25,85	47,6%	1,83	7,1%
Stationary Combustion	0,04	0,1%	0,35	0,6%	(0,31)	-88,7%
Scope 3	**27,64**	**49,9%**	**28,15**	**51,8%**	**(0,51)**	**-1,8%**
Transport and Distribution (upstream)	22,75	41,1%	23,19	42,7%	(0,44)	-1,9%
Commuting	4,22	7,6%	4,58	8,4%	(0,35)	-7,7%
Business Travel	0,66	1,2%	0,38	0,7%	0,28	73,4%
Total	**55,36**	**100%**	**54,34**	**100%**	**1,01**	**1,9%**

Emissions Balance (tCO_2e)



Analysis

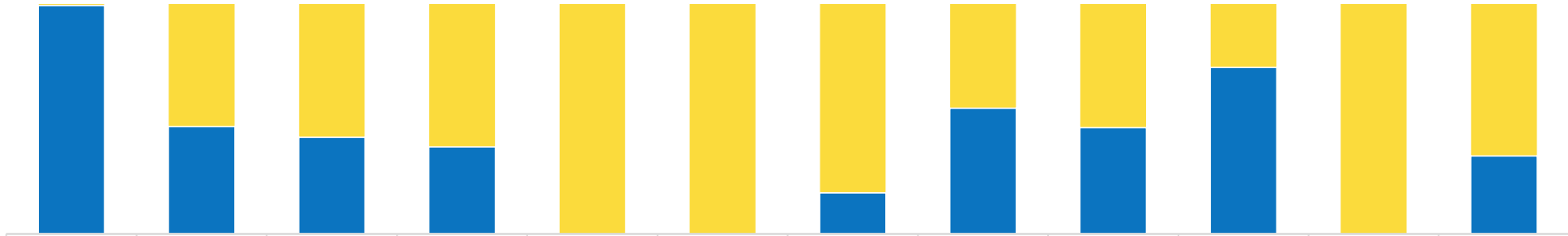
Biogenic emissions from UHSO increased by 1.9% in 2022, mainly associated with fuel consumption in vehicles controlled by the plant.

In 2022, tree planting provided biogenic removals of 260 tCO_2e. By generating renewable energy, UHSO avoided the emission of 1,020,778 tCO_2e. And the maintenance and preservation of remaining areas and APPs present a biogenic carbon stock of 89,747 tCO_2e.

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Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Fugitive Emissions	Mobile Combustion	Stationary Combustion	Wastewater Treatment	Land Use Change	Agriculture activities	Electricity Acquisition	Commuting	Transport and distribution (upstream)	Business Travel	Waste - Scope 03	Total
2021	0,83	8,84	4,34	0,34	0,14	0,09	439,47	30,66	28,20	3,23	14,66	530,80
2022	95,21	7,72	3,14	0,21	-	-	95,65	36,90	24,18	8,42	-	271,41

Emission Sources	Total Emission 2022		Total Emission 2021		Variation 2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**106,27**	**39,2%**	**14,58**	**2,7%**	**91,69**	**628,8%**
Fugitive Emissions	95,21	35,1%	0,83	0,2%	94,38	11316,5%
Mobile Combustion	7,72	2,8%	8,84	1,7%	(1,12)	-12,7%
Stationary Combustion	3,14	1,2%	4,34	0,8%	(1,20)	-27,7%
Wastewater Treatment	0,21	0,1%	0,34	0,1%	(0,13)	-39,4%
Land Use Change	-	0,0%	0,14	0,0%	(0,14)	-100,0%
Agriculture activities	-	0,0%	0,09	0,0%	(0,09)	-100,0%
Scope 2	**95,65**	**35,2%**	**439,47**	**82,8%**	**(343,82)**	**-78,2%**
Electricity Acquisition	95,65	35,2%	439,47	82,8%	(343,82)	-78,2%
Scope 3	**69,49**	**25,6%**	**76,75**	**14,5%**	**(7,26)**	**-9,5%**
Commuting	36,90	13,6%	30,66	5,8%	6,23	20,3%
Transport and distribution (upstream)	24,18	8,9%	28,20	5,3%	(4,03)	-14,3%
Business Travel	8,42	3,1%	3,23	0,6%	5,19	161,0%
Waste - Scope 03	-	0,0%	14,66	2,8%	(14,66)	-100,0%
Total	**271,41**	**100%**	**530,80**	**100%**	**(259,39)**	**-48,9%**

Analysis

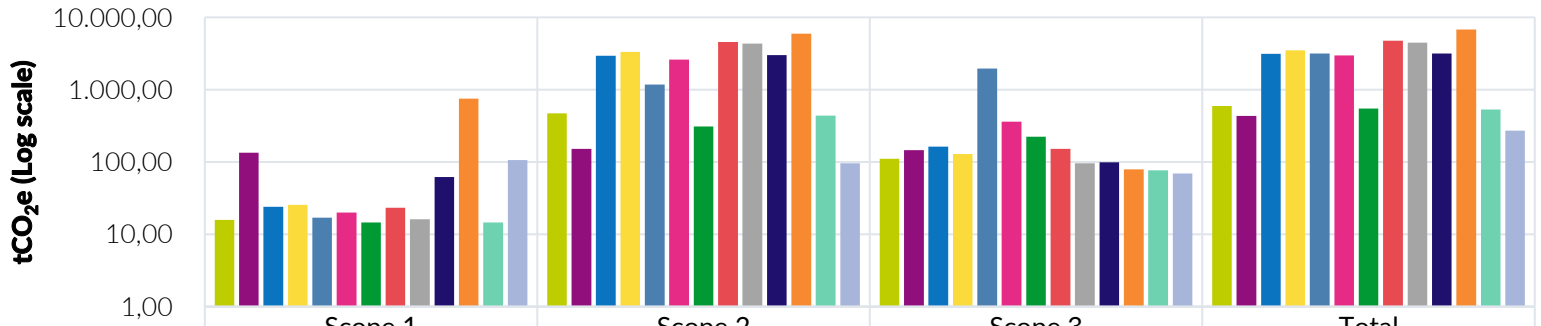
UHSS reduced, in 2022, 48.9% of its emissions, associated with the energy consumption from the grid (-78%). The reduction was mitigated by the increase in fugitive emissions (94 tCO_2e).

Developed by:
Ecofinance NEGOCIOS

Analysis

In the historical series, the emissions of UHSS in 2022 presented its lowest level of emissions. Compared to 2010, the base year of the UHSS inventory, the reduction was 54%.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



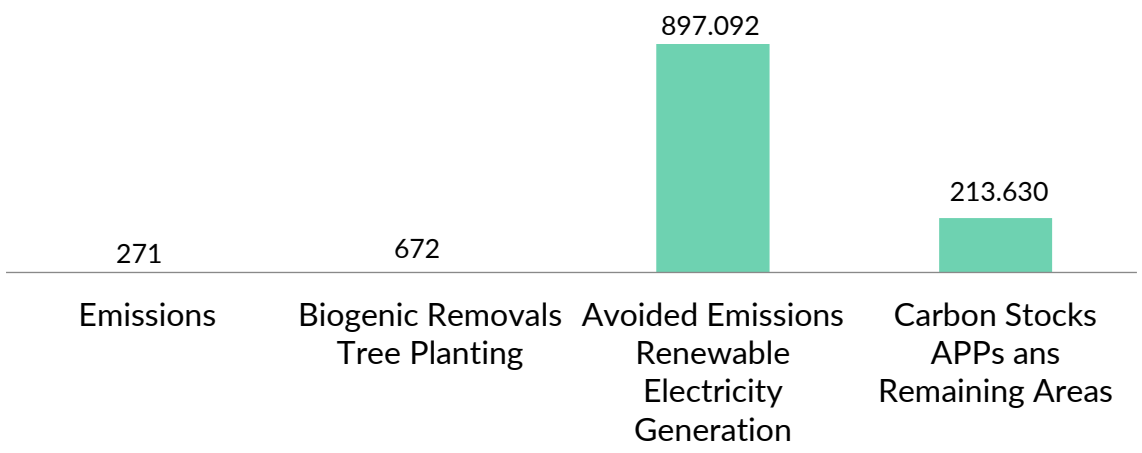
	Scope 1	Scope 2	Scope 3	Total
2010	15,78	469,07	111,20	596,05
2011	135,11	151,99	145,24	432,34
2012	24,09	2.938,79	163,23	3.126,11
2013	25,58	3.352,19	128,78	3.506,55
2014	16,94	1.182,46	1.973,33	3.172,73
2015	19,91	2.603,50	360,48	2.983,89
2016	14,59	311,21	224,51	550,31
2017	23,26	4.571,20	151,52	4.745,99
2018	16,08	4.367,33	95,99	4.479,39
2019	62,02	3.022,82	99,05	3.183,88
2020	753,76	5.974,58	78,87	6.807,20
2021	14,58	439,47	76,75	530,80
2022	106,27	95,65	69,49	271,41

Developed by:
Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**20,47**	**66,9%**	**19,99**	**66,1%**	**0,48**	**2,4%**
Mobile Combustion	19,72	64,5%	18,99	62,8%	0,74	3,9%
Stationary Combustion	0,75	2,4%	1,00	3,3%	(0,25)	-25,5%
Scope 3	**10,13**	**33,1%**	**10,25**	**33,9%**	**(0,12)**	**-1,2%**
Transport and distribution (upstream)	5,78	18,9%	6,54	21,6%	(0,77)	-11,7%
Commuting	3,77	12,3%	3,52	11,6%	0,25	7,2%
Business Travel	0,58	1,9%	0,19	0,6%	0,39	205,5%
Total	**30,60**	**100%**	**30,24**	**100%**	**0,36**	**1,2%**

Emissions Balance (tCO_2e)



Analysis

UHSS biogenic emissions increased by 1.2% in 2022, associated with fuel consumption in controlled vehicles, employee commuting and business travel.

By generating renewable energy, UHSS avoided the emission of 897,092 tCO_2e. Tree planting executed in 2022 provided biogenic removals of 672 tCO_2e. The preservation of remaining areas and APPs provides a biogenic carbon stock of 213.630 tCO_2e.



UHCB
Cana Brava Hydroelectric Power Plant



UHET
Estreito Hydroelectric Power Plant

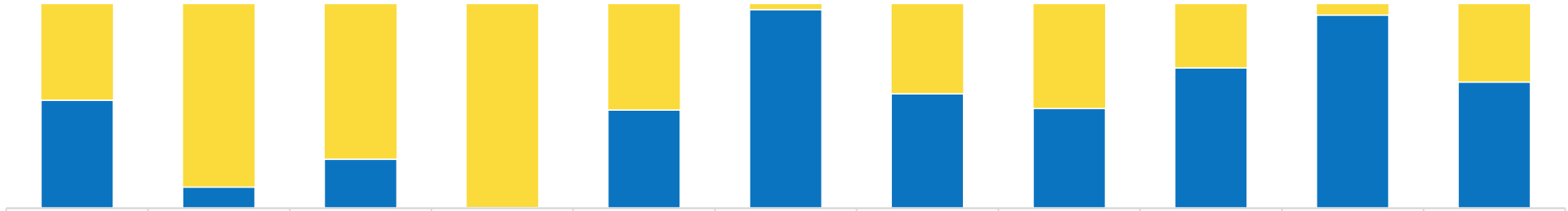


UHSA
São Salvador Hydroelectric Power Plant

Developed by:
Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Mobile Combustion	Agircultural Activities	Wastewater Treatment	Fugitive Emissions	Waste	Electricity Acquisition	Commuting	Transport and Distribution (upstream)	Business Travel	Waste - Scope 03	Total
2021	0,93	1,67	0,40	0,55	0,0005	0,33	9,72	6,43	2,14	0,001	22,17
2022	1,04	0,19	0,13	0,002	0,0004	11,23	12,36	6,12	4,70	0,01	35,79

Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**1,36**	**3,8%**	**3,55**	**16,0%**	**(2,19)**	**-61,8%**
Mobile Combustion	1,04	2,9%	0,93	4,2%	0,11	12,0%
Agircultural Activities	0,19	0,5%	1,67	7,5%	(1,48)	-88,5%
Wastewater Treatment	0,13	0,4%	0,40	1,8%	(0,27)	-68,3%
Fugitive Emissions	0,002	0,01%	0,55	2,5%	(0,55)	-99,6%
Waste	0,0004	0,001%	0,0005	0,002%	(0,00004)	-7,4%
Scope 2	**11,23**	**31,4%**	**0,33**	**1,5%**	**10,90**	**3291,2%**
Electricity Acquisition	11,23	31,4%	0,33	1,5%	10,90	3291,2%
Scope 3	**23,20**	**64,8%**	**18,29**	**82,5%**	**4,91**	**26,8%**
Commuting	12,36	34,5%	9,72	43,8%	2,65	27,2%
Transport and Distribution (upstream)	6,12	17,1%	6,43	29,0%	(0,31)	-4,8%
Business Travel	4,70	13,1%	2,14	9,7%	2,56	119,2%
Waste - Scope 03	0,01	0,04%	0,001	0,004%	0,01	1596,6%
Total	**35,79**	**100%**	**22,17**	**100%**	**13,61**	**61,4%**

Analysis

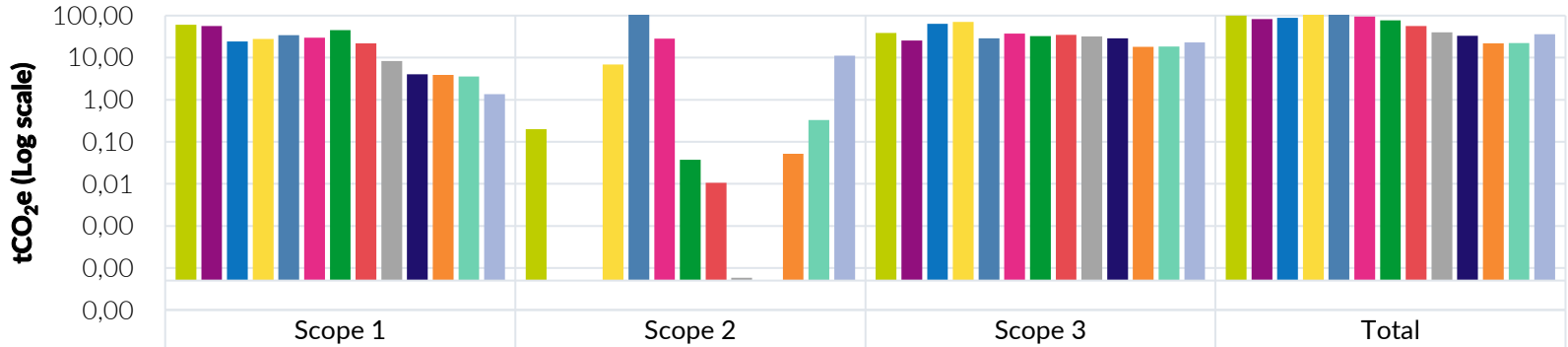
In 2022, UHCB increased emissions by 61.4%, mainly due to the purchase of electricity (10.9 tCO_2e).

Developed by:
Ecofinance NEGOCIOS

Analysis

UHCB emissions increased by 61% in 2022 compared to 2021, but showed a 64% reduction compared to 2010, the base year of the EBE inventory.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



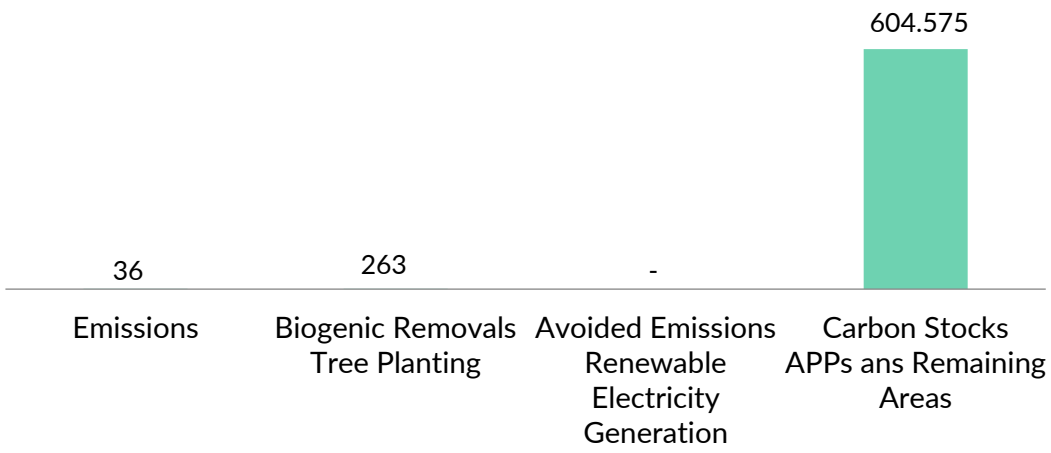
	Scope 1	Scope 2	Scope 3	Total
2010	60,85	0,20	38,58	99,63
2011	56,18	-	25,74	81,92
2012	24,38	-	64,29	88,67
2013	27,75	6,83	70,79	105,37
2014	34,09	487,51	28,99	550,58
2015	29,97	28,24	37,26	95,46
2016	45,04	0,04	32,36	77,44
2017	21,74	0,01	35,01	56,75
2018	8,28	0,0001	31,88	40,16
2019	4,00	-	28,89	32,88
2020	3,86	0,05	18,06	21,98
2021	3,55	0,33	18,29	22,17
2022	1,36	11,23	23,20	35,79

Developed by: Ecofinance Negocios

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**19,43**	**43,1%**	**19,56**	**57,3%**	**(0,13)**	**-0,7%**
Mobile Combustion	19,43	43,1%	19,56	57,3%	(0,13)	-0,7%
Scope 3	**25,60**	**56,9%**	**14,59**	**42,7%**	**11,01**	**75,4%**
Transport and Distribution (upstream)	24,22	53,8%	13,34	39,1%	10,88	81,6%
Commuting	1,26	2,8%	1,13	3,3%	0,13	12,0%
Business Travel	0,12	0,3%	0,13	0,4%	(0,01)	-6,1%
Total	**45,03**	**100%**	**34,15**	**100%**	**10,88**	**31,8%**

Emissions Balance (tCO_2e)



Analysis

UHCB's biogenic emissions increased by 31.8% in 2022 due to fuel consumption in vehicles controlled by third parties.

The tree planting carried out in 2022 provided biogenic removals of 263 tCO_2e. The maintenance and preservation of remaining areas and APPs presents a biogenic carbon stock of 604.575 tCO_2e.

Developed by:
Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Fugitive Emissions	Agricultural Activities	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Waste	Electricity Acquisition	Transport and Distribution (upstream)	Business Travel	Commuting	Waste - Scope 03	Total
2021	15,78	13,45	5,48	1,07	0,08	0,0005	14,93	18,81	5,94	5,29	-	80,83
2022	14,22	12,55	5,26	1,23	0,34	0,001	4,12	22,46	8,86	6,25	0,01	75,29

Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**33,60**	**44,6%**	**35,86**	**44,4%**	**(2,26)**	**-6,3%**
Fugitive Emissions	14,22	18,9%	15,78	19,5%	(1,56)	-9,9%
Agricultural Activities	12,55	16,7%	13,45	16,6%	(0,89)	-6,6%
Stationary Combustion	5,26	7,0%	5,48	6,8%	(0,22)	-4,1%
Mobile Combustion	1,23	1,6%	1,07	1,3%	0,16	15,1%
Wastewater Treatment	0,34	0,5%	0,08	0,1%	0,26	310,1%
Waste	0,001	0,0%	0,0005	0,0%	0,00	3,4%
Scope 2	**4,12**	**5,5%**	**14,93**	**18,5%**	**(10,81)**	**-72,4%**
Electricity Acquisition	4,12	5,5%	14,93	18,5%	(10,81)	-72,4%
Scope 3	**37,57**	**49,9%**	**30,04**	**37,2%**	**7,53**	**25,1%**
Transport and Distribution (upstream)	22,46	29,8%	18,81	23,3%	3,65	19,4%
Business Travel	8,86	11,8%	5,94	7,4%	2,92	49,1%
Commuting	6,25	8,3%	5,29	6,5%	0,96	18,1%
Waste - Scope 03	0,01	0,0%	-	0,0%	0,01	100,0%
Total	**75,29**	**100%**	**80,83**	**100%**	**(5,54)**	**-6,9%**

Analysis

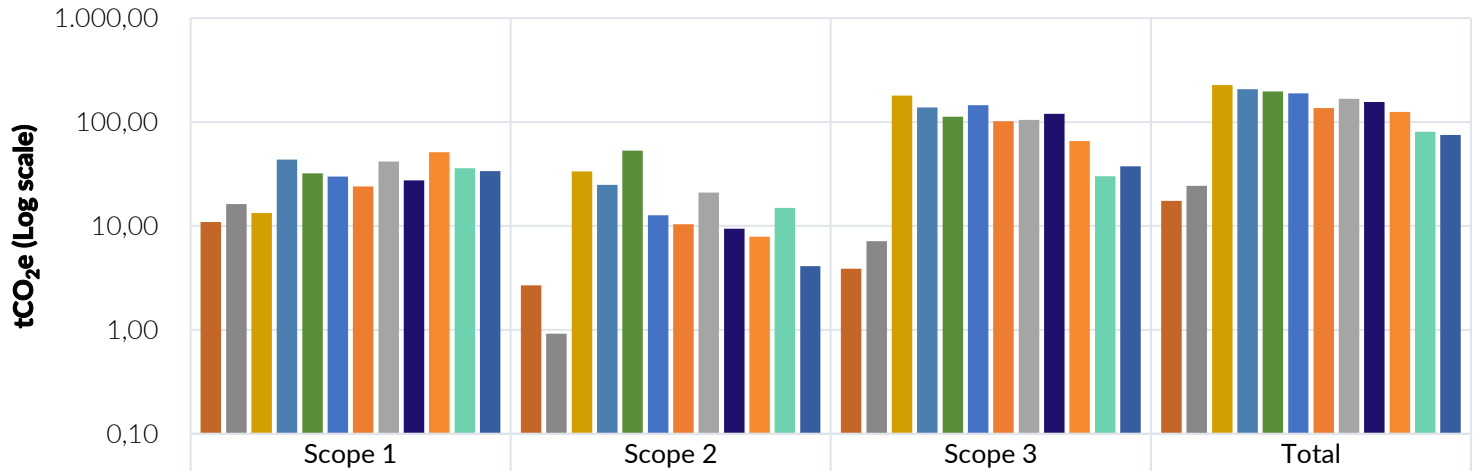
UHET reduced, in 2022, 6.9% of its emissions. Emissions associated with electricity consumption reduced 72%, partly due to the lower SIN emission factor (-66%), and were partially mitigated by increased fuel consumption in third-party vehicles and business travel.

Developed by:
Ecofinance NEGOCIOS

Analysis

UHET's emissions reduced by 7% in 2022 compared to 2021 and increased by 330% compared to 2011, the plant's first inventory year.

GHG Emission Evolution - Equity Share (tCO_2e)



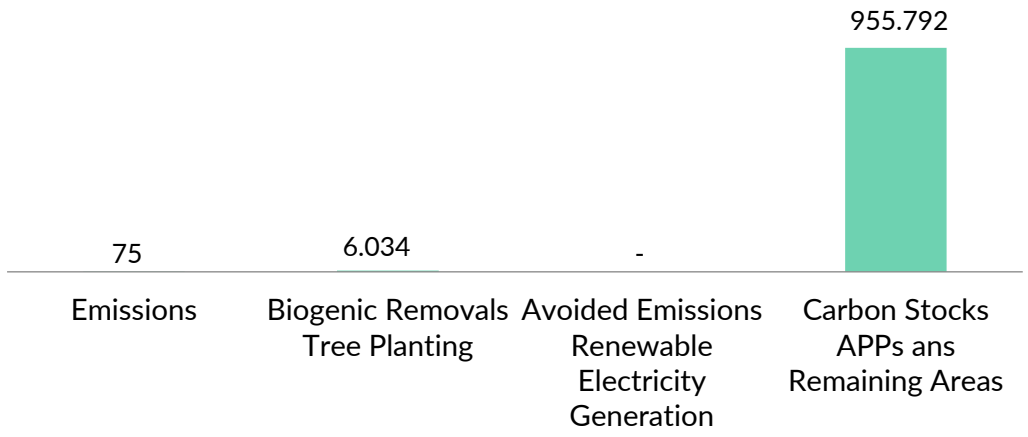
	Scope 1	Scope 2	Scope 3	Total
2011	10,92	2,69	3,88	17,49
2012	16,26	0,92	7,12	24,30
2013	13,30	33,57	179,97	226,84
2014	43,38	24,92	138,11	206,41
2015	32,06	53,09	112,20	197,35
2016	29,92	12,70	145,49	188,11
2017	24,05	10,37	101,72	136,15
2018	41,62	20,97	104,52	167,11
2019	27,41	9,40	119,46	156,27
2020	51,29	7,86	65,76	124,91
2021	35,86	14,93	30,04	80,83
2022	33,60	4,12	37,57	75,29

Developed by:
Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Escopo 1	**11,37**	**39,1%**	**11,74**	**41,1%**	**(0,37)**	**-3,1%**
Mobile Combustion	10,82	37,2%	11,11	38,9%	(0,28)	-2,6%
Stationary Combustion	0,54	1,9%	0,63	2,2%	(0,09)	-13,7%
Escopo 3	**17,73**	**60,9%**	**16,84**	**58,9%**	**0,89**	**5,3%**
Transport and Distribution (upstream)	16,50	56,7%	15,87	55,5%	0,63	3,9%
Commuting	1,06	3,7%	0,90	3,1%	0,17	18,6%
Business Travel	0,17	0,6%	0,07	0,2%	0,10	138,5%
Total	**29,10**	**100%**	**28,58**	**100%**	**0,52**	**1,8%**

Emissions Balance (tCO_2e)



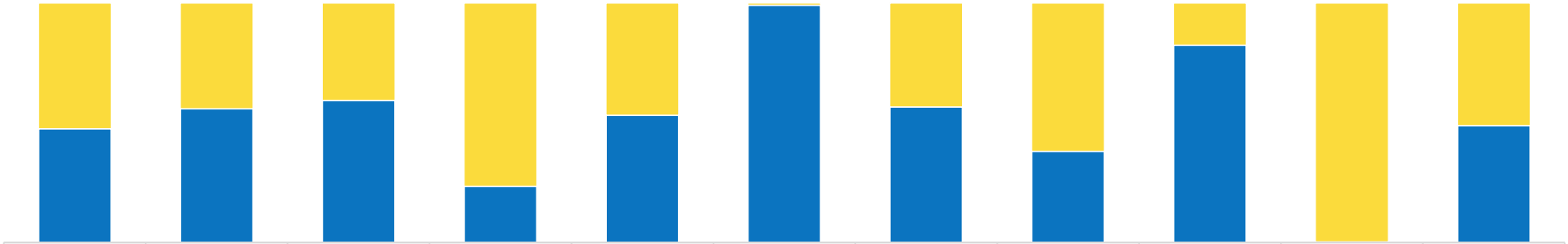
Analysis

UHET's biogenic emissions increased by 1.8% in 2022, associated with higher fuel consumption in third-party vehicles, employee commuting and business travel.

The tree planting carried out in 2022 provided biogenic removals of 6,034 tCO_2e. And the maintenance and preservation of remaining areas and APPs present a biogenic carbon stock of 955.792 tCO_2e.

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Fugitive Emissions	Mobile Combustion	Stationary Combustion	Wastewater Treatment	Waste	Electricity Acquisition	Commuting	Transport and Distribution (upstream)	Business Travel	Waste - Scope 03	Total
2021	7,67	2,56	1,19	1,18	0,0003	0,000004	12,53	21,28	0,75	0,25	47,40
2022	6,94	3,24	1,74	0,36	0,0003	0,0004	16,35	13,09	3,50	0,001	45,22

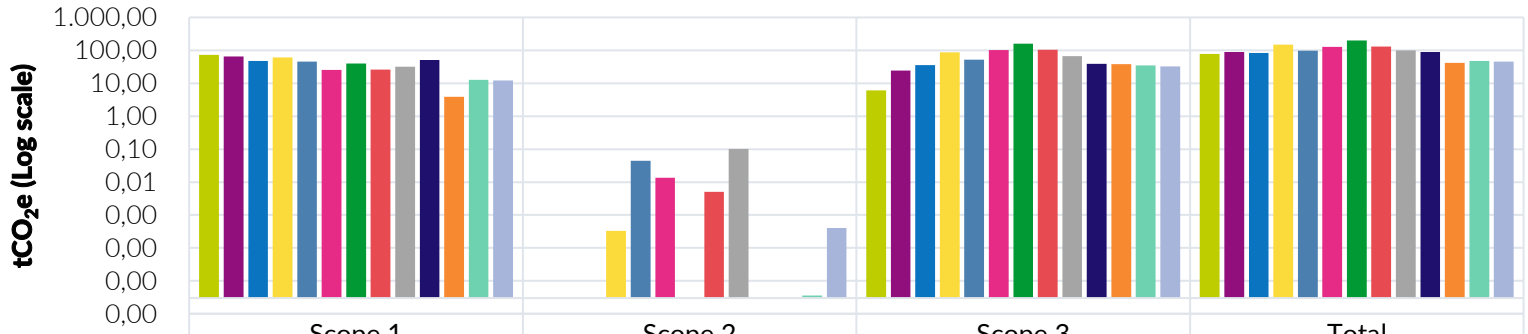
Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**12,27**	**27,1%**	**12,60**	**26,6%**	**(0,32)**	**-2,6%**
Fugitive Emissions	6,94	15,3%	7,67	16,2%	(0,73)	-9,5%
Mobile Combustion	3,24	7,2%	2,56	5,4%	0,68	26,5%
Stationary Combustion	1,74	3,8%	1,19	2,5%	0,54	45,6%
Wastewater Treatment	0,36	0,8%	1,18	2,5%	(0,81)	-69,3%
Waste	0,0003	0,001%	0,0003	0,001%	0,00	13,5%
Scope 2	**0,0004**	**0,001%**	**0,000004**	**0,0%**	**0,0004**	**11115,3%**
Electricity Acquisition	0,0004	0,001%	0,000004	0,00001%	0,0004	11115,3%
Scope 3	**32,95**	**72,9%**	**34,80**	**73,4%**	**(1,86)**	**-5,3%**
Commuting	16,35	36,2%	12,53	26,4%	3,82	30,5%
Transport and Distribution (upstream	13,09	29,0%	21,28	44,9%	(8,18)	-38,5%
Business Travel	3,50	7,7%	0,75	1,6%	2,75	367,3%
Waste - Scope 03	0,001	0,001%	0,25	0,5%	(0,24)	-99,8%
Total	**45,22**	**100%**	**47,40**	**100%**	**(2,18)**	**-4,6%**

Analysis

In 2022, UHSA reduced emissions by 4.6%, mainly as a result of fuel consumption in third-party vehicles (-38.5%) and mitigated by increased fuel consumption in employee commuting and business travel.

Developed by: Ecofinance NEGOCIOS

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



	Scope 1	Scope 2	Scope 3	Total
2010	72,73	-	6,13	78,86
2011	64,52	-	24,46	88,98
2012	47,29	-	35,92	83,21
2013	61,36	0,0003	87,60	148,97
2014	45,48	0,04	52,30	97,83
2015	25,68	0,01	101,29	126,98
2016	40,19	-	159,20	199,39
2017	25,80	0,01	104,58	130,39
2018	31,62	0,10	67,03	98,75
2019	50,71	-	38,81	89,53
2020	3,86	-	37,89	41,75
2021	12,60	0,000004	34,80	47,40
2022	12,27	0,0004	32,95	45,22

Analysis

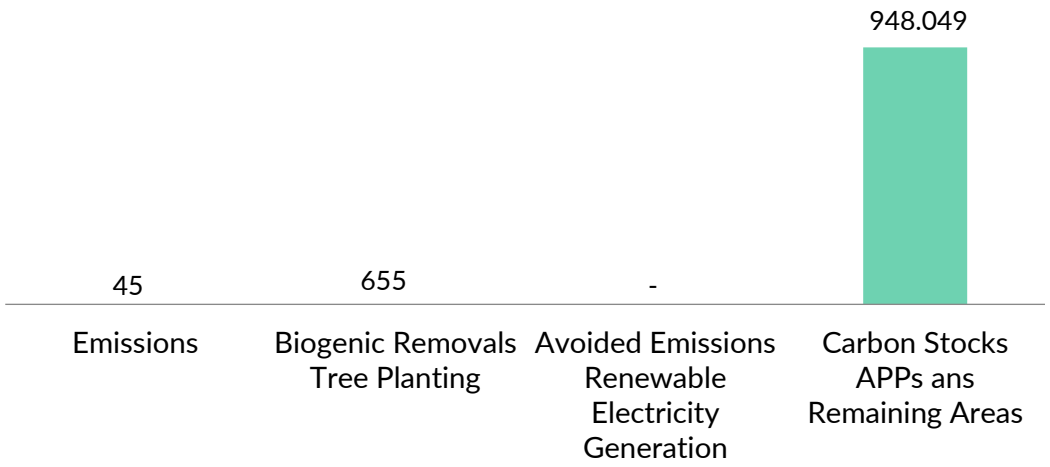
In 2022, UHSA reduced its emissions by 4.6% compared to 2021 and 43% compared to the baseline year (2010).

Developed by:
Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**26,54**	**49,8%**	**27,47**	**56,9%**	**(0,93)**	**-3,4%**
Mobile Combustion	26,36	49,5%	27,35	56,7%	(0,99)	-3,6%
Stationary Combustion	0,18	0,3%	0,12	0,2%	0,06	52,8%
Scope 3	**26,74**	**50,2%**	**20,77**	**43,1%**	**5,97**	**28,8%**
Transport and Distribution (upstream	24,94	46,8%	19,14	39,7%	5,80	30,3%
Commuting	1,67	3,1%	1,44	3,0%	0,23	15,7%
Business Travel	0,13	0,2%	0,18	0,4%	(0,06)	-31,7%
Total	**53,28**	**100%**	**48,23**	**100%**	**5,05**	**10,5%**

Emissions Balance (tCO_2e)



Analysis

UHSA biogenic emissions increased by 10.5% in 2022 associated with fuel consumption by third-party vehicles.

In 2022, tree planting provided biogenic removals of 655 tCO_2e. The maintenance and preservation of remaining areas and APPs present a biogenic carbon stock of 948.049 tCO_2e.



UHIT

Itá Hydroelectric Power Plant



UHMA

Machadinho Hydroelectric Power Plant

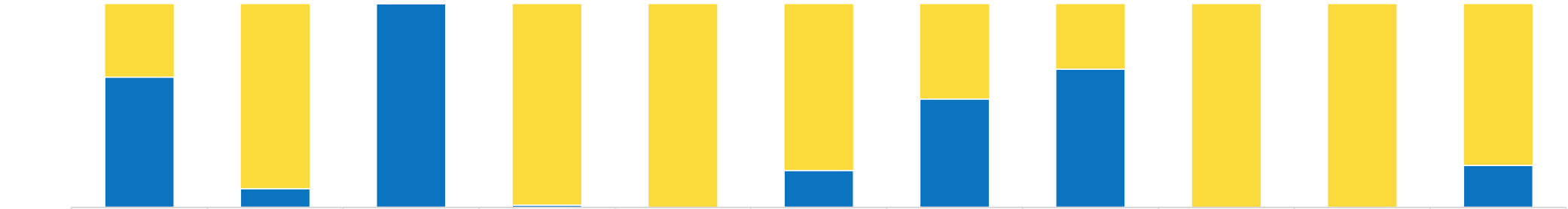


UHPF

Passo Fundo Hydroelectric Power Plant

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Wastewater Treatment	Mobile Combustion	Stationary Combustion	Fugitive Emissions	Waste	Agricultural Activities	Electricity Acquisition	Transport and Distribution (upstream)	Business Travel	Commuting	Waste - Scope 03
2021	0,47	6,74	-	0,33	0,001	179,69	12,45	3,65	39,56	0,001	243,21
2022	0,83	0,68	0,08	0,004	-	40,13	14,16	7,69	-	-	63,59

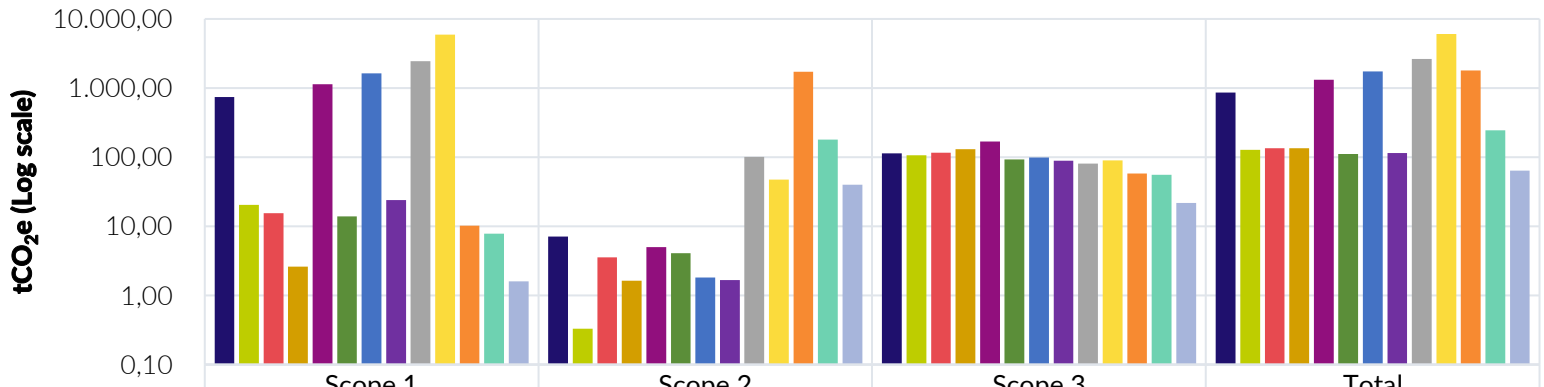
Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**1,60**	**2,5%**	**7,85**	**3,2%**	**(6,25)**	**-79,6%**
Wastewater Treatment	0,83	1,3%	0,47	0,2%	0,36	77,3%
Mobile Combustion	0,68	1,1%	6,74	2,8%	(6,06)	-89,9%
Stationary Combustion	0,08	0,1%	-	-	0,08	100,0%
Fugitive Emissions	0,004	0,01%	0,33	0,1%	(0,33)	-98,7%
Waste	-	-	0,001	0,0002%	(0,00)	-100,0%
Agricultural Activities	-	-	0,31	0,1%	(0,31)	-100,0%
Scope 2	**40,13**	**63,1%**	**179,69**	**73,9%**	**(139,56)**	**-77,7%**
Electricity Acquisition	40,13	63,1%	179,69	73,9%	(139,56)	-77,7%
Scope 3	**21,85**	**34,4%**	**55,66**	**22,9%**	**(33,81)**	**-60,7%**
Transport and Distribution (upstream)	14,16	22,3%	12,45	5,1%	1,71	13,7%
Business Travel	7,69	12,1%	3,65	1,5%	4,04	110,7%
Commuting	-	-	39,56	16,3%	(39,56)	-100,0%
Waste - Scope 03	-	-	0,001	0,0002%	(0,00)	-100,0%
Total	**63,59**	**100%**	**243,21**	**100%**	**(179,62)**	**-73,9%**

Analysis

UHIT reduced, in 2022, 73.9% of its emissions, associated mainly with energy consumption, as a result of the lower SIN emission factor (66%) and employee commuting, not reported in 2022.

Developed by:
Ecofinance NEGOCIOS

GHG Emission Evolution - Equity Share (tCO_2e)



	Scope 1	Scope 2	Scope 3	Total
2010	737,66	7,10	113,11	857,87
2011	20,44	0,33	106,56	127,33
2012	15,50	3,56	116,12	135,18
2013	2,62	1,62	130,18	134,43
2014	1.137,84	5,00	169,09	1.311,93
2015	13,94	4,07	92,95	110,96
2016	1.636,35	1,82	98,43	1.736,60
2017	23,82	1,67	89,19	114,69
2018	2.455,03	101,36	81,06	2.637,45
2019	5.914,55	47,57	89,38	6.051,50
2020	10,22	1.725,20	57,75	1.793,17
2021	7,85	179,69	55,66	243,21
2022	1,60	40,13	21,85	63,59

Analysis

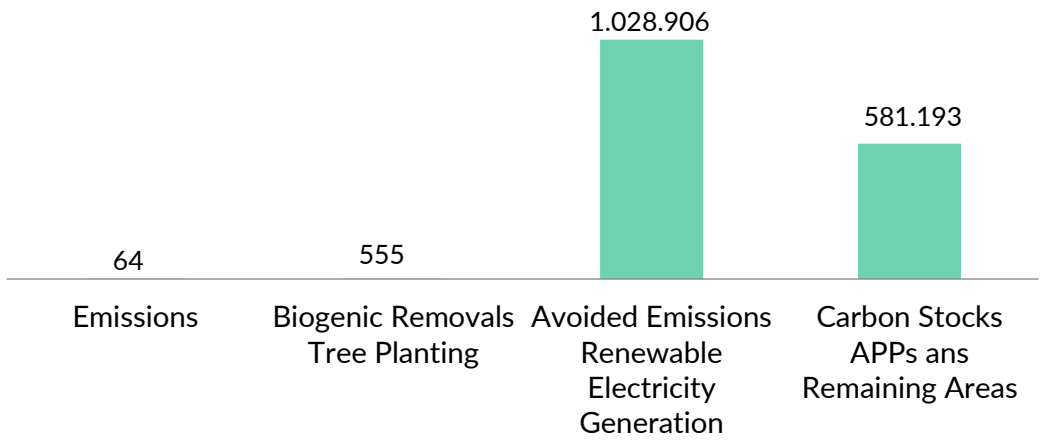
Considering the historical series, in 2022, UHIT presented the lowest emission level since the baseline year (2010) of the EBE inventory, reducing emissions by 93% compared to 2010.

Developed by:
Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**7,55**	**73,7%**	**9,27**	**57,5%**	**(1,72)**	**-18,6%**
Mobile Combustion	7,54	73,6%	9,27	57,5%	(1,73)	-18,7%
Stationary Combustion	0,01	0,1%	-	-	0,01	100,0%
Scope 3	**2,70**	**26,3%**	**6,86**	**42,5%**	**(4,16)**	**-60,6%**
Transport and Distribution (upstream)	2,61	25,5%	2,22	13,7%	0,39	17,7%
Business Travel	0,09	0,9%	0,08	0,5%	0,01	11,2%
Commuting	-	-	4,56	28,3%	(4,56)	-100,0%
Total	**10,25**	**100%**	**16,13**	**100%**	**(5,88)**	**-36,5%**

Emissions Balance (tCO_2e)



Analysis

In 2022, UHIT's biogenic emissions were reduced by 36%, due to fuel consumption in employee commuting and in vehicles controlled by the plant.

By generating renewable energy, UHIT avoided the emission of 1,028,906 tCO_2e. The maintenance and preservation of remaining areas and APPs presents a biogenic carbon stock of 581,193 tCO_2e. Tree planting executed in 2022 provided biogenic removals of 555 tCO_2e.

ENGIE
Greenhouse Gases Emissions Inventory 2022
Institutional
Methodology
Results
Verification
Return
Developed by: Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Waste	Electricity Acquisition	Business Travel	Transport and Distribution (upstream)	Commuting	Waste - Scope 03	Total
2021	-	0,62	0,08	0,17	0,0001	11,88	0,69	1,9675	10,95	0,00	26,34
2022	0,46	0,25	0,03	0,02	-	-	0,35	0,25	-	-	1,36

Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**0,76**	**56,0%**	**0,86**	**3,3%**	**(0,10)**	**-12,1%**
Stationary Combustion	0,46	33,8%	-	-	0,46	100,0%
Mobile Combustion	0,25	18,3%	0,62	2,3%	(0,37)	-59,8%
Wastewater Treatment	0,03	2,4%	0,08	0,3%	(0,04)	-57,5%
Fugitive Emissions	0,02	1,4%	0,17	0,6%	(0,15)	-88,3%
Waste	-	-	0,0001	0,001%	(0,00)	-100,0%
Scope 2	**-**	**-**	**11,88**	**45,1%**	**(11,88)**	**-100,0%**
Electricity Acquisition	-	-	11,88	45,1%	(11,88)	-100,0%
Scope 3	**0,60**	**44,0%**	**13,60**	**51,6%**	**(13,00)**	**-95,6%**
Business Travel	0,35	0,26	0,69	2,6%	(0,34)	-49,6%
Transport and Distribution (upstream)	0,25	0,19	1,9675	7,4690%	(1,72)	-87,2%
Commuting	-	0,0%	10,95	41,6%	(10,95)	-100,0%
Waste - Scope 03	-	0,0%	0,00	0,0%	(0,00)	-100,0%
Total	**1,36**	**100%**	**26,34**	**100%**	**(24,98)**	**-94,8%**

Analysis

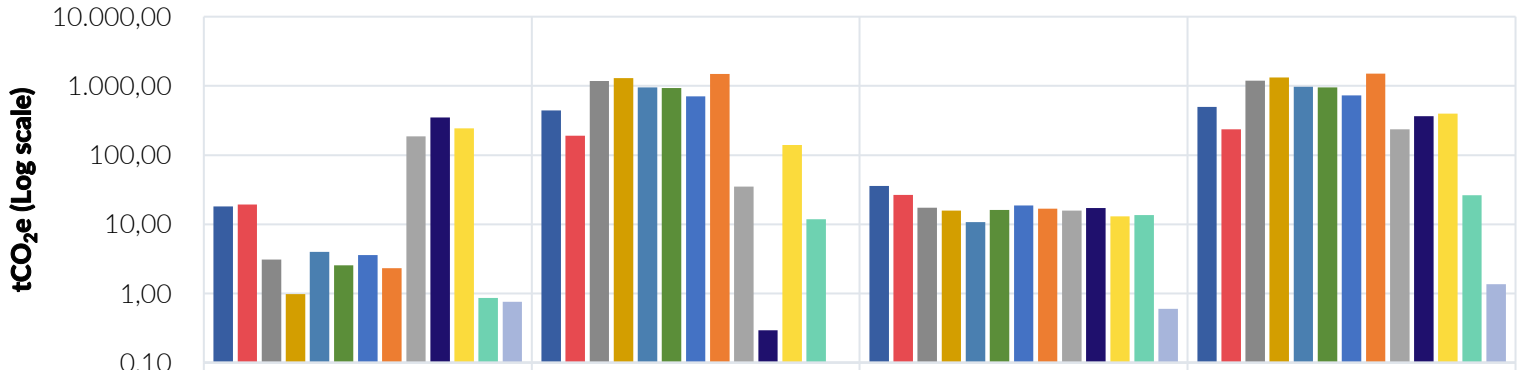
UHMA has reduced, in 2022, 95% of its emissions, associated primarily with energy consumption and employee commuting, which were not reported in 2022.

Developed by:
Ecofinance NEGOCIOS

Analysis

Since the start of emissions accounting (2010), 2022 was the year with the lowest level of UHMA emissions. UHMA emissions have reduced 99.7% compared to 2010.

GHG Emission Evolution - Equity Share (tCO_2e)



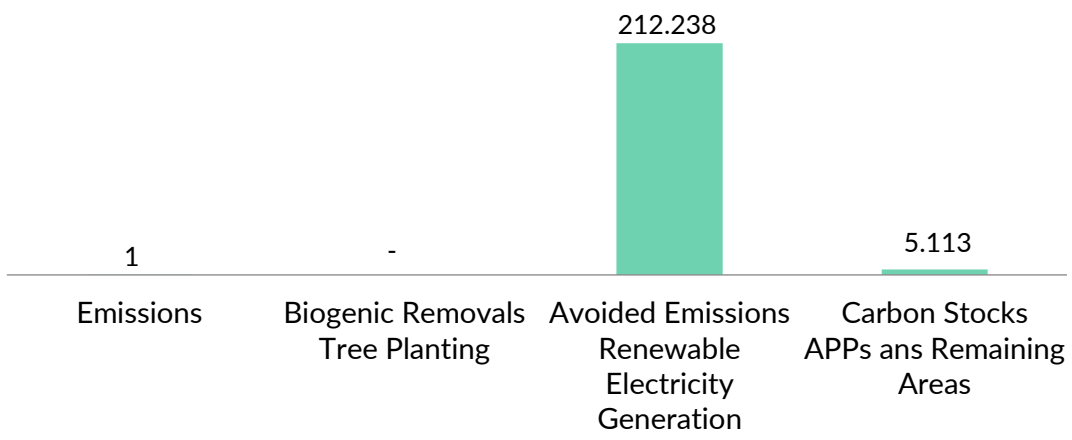
	Scope 1	Scope 2	Scope 3	Total
2010	18,15	442,58	35,97	496,70
2011	19,33	191,23	26,50	237,06
2012	3,08	1.175,85	17,31	1.196,25
2013	0,98	1.302,76	15,88	1.319,62
2014	4,01	957,13	10,75	971,89
2015	2,56	931,91	16,12	950,59
2016	3,60	707,17	18,71	729,47
2017	2,33	1.490,25	16,83	1.509,41
2018	186,26	35,11	15,81	237,18
2019	348,47	0,30	17,22	365,99
2020	244,99	140,41	12,98	398,38
2021	0,86	11,88	13,60	26,34
2022	0,76	-	0,60	1,36

Developed by:
Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**1,51**	**95,7%**	**2,59**	**61,3%**	**(1,07)**	**-41,5%**
Mobile Combustion	1,47	92,7%	2,59	61,3%	(1,12)	-43,3%
Stationary Combustion	0,05	3,0%	-	-	0,05	100,0%
Scope 3	**0,07**	**4,3%**	**1,63**	**38,7%**	**(1,57)**	**-95,8%**
Commuting	-	-	1,27	30,0%	(1,27)	-100,0%
Transport and Distribution (upstream)	0,04	2,7%	0,35	8,4%	(0,31)	-87,9%
Business Travel	0,03	1,6%	0,01	0,3%	0,01	73,9%
Total	**1,58**	**100%**	**4,22**	**100%**	**(2,64)**	**-62,5%**

Emissions Balance (tCO_2e)



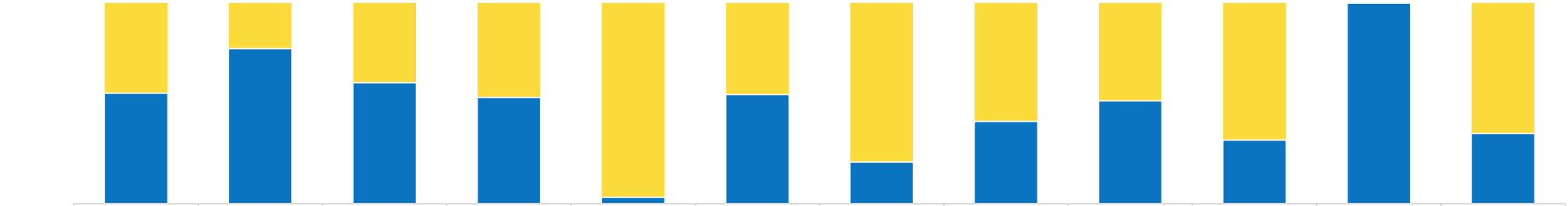
Analysis

UHMA's biogenic emissions were reduced 62.5% in 2022, associated with fuel consumption in employee commuting, in vehicles controlled by the plant and by third parties.

By generating renewable energy, UHMA avoided the emission of 212,238 tCO_2e. And the maintenance and preservation of remaining areas and APPs presented a biogenic carbon stock of 5,113 tCO_2e.

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Mobile Combustion	Stationary Combustion	Wastewater Treatment	Agricultural Activities	Fugitive Emissions	Waste	Electricity Acquisition	Transport and Distribution (upstream)	Commuting	Business Travel	Waste - Scope 03	Total
2021	4,11	0,19	0,15	0,08	0,18	0,001	52,62	33,90	10,75	2,09	0,0002	104,05
2022	5,01	0,64	0,22	0,09	0,01	0,001	13,80	23,49	11,26	0,97	0,14	55,62

Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**5,96**	**10,7%**	**4,70**	**4,5%**	**1,27**	**26,9%**
Mobile Combustion	5,01	9,0%	4,11	3,9%	0,90	21,9%
Stationary Combustion	0,64	1,2%	0,19	0,2%	0,45	236,4%
Wastewater Treatment	0,22	0,4%	0,15	0,1%	0,08	51,6%
Agricultural Activities	0,09	0,2%	0,08	0,1%	0,01	12,5%
Fugitive Emissions	0,01	0,0%	0,18	0,2%	(0,17)	-96,6%
Waste	0,001	0,0%	0,001	0,001%	0,0001	18,6%
Scope 2	**13,80**	**24,8%**	**52,62**	**50,6%**	**(38,82)**	**-73,8%**
Electricity Acquisition	13,80	24,8%	52,62	50,6%	(38,82)	-73,8%
Scope 3	**35,86**	**64,5%**	**46,74**	**44,9%**	**(10,88)**	**-23,3%**
Transport and Distribution (upstream)	23,49	42,2%	33,90	32,6%	(10,40)	-30,7%
Commuting	11,26	20,2%	10,75	10,3%	0,51	4,7%
Business Travel	0,97	1,7%	2,09	2,0%	(1,12)	-53,8%
Waste - Scope 03	0,14	0,3%	0,0002	0,0002%	0,14	68104,9%
Total	**55,62**	**100%**	**104,05**	**100%**	**(48,43)**	**-46,5%**

Analysis

In 2022, the UHPF reduced 46.5% of its emissions, associated mainly with energy consumption (-73.8%) and fuel consumption in third party vehicles. It is noteworthy the reduction of the SIN emission factor in the year 2022 (-66%).

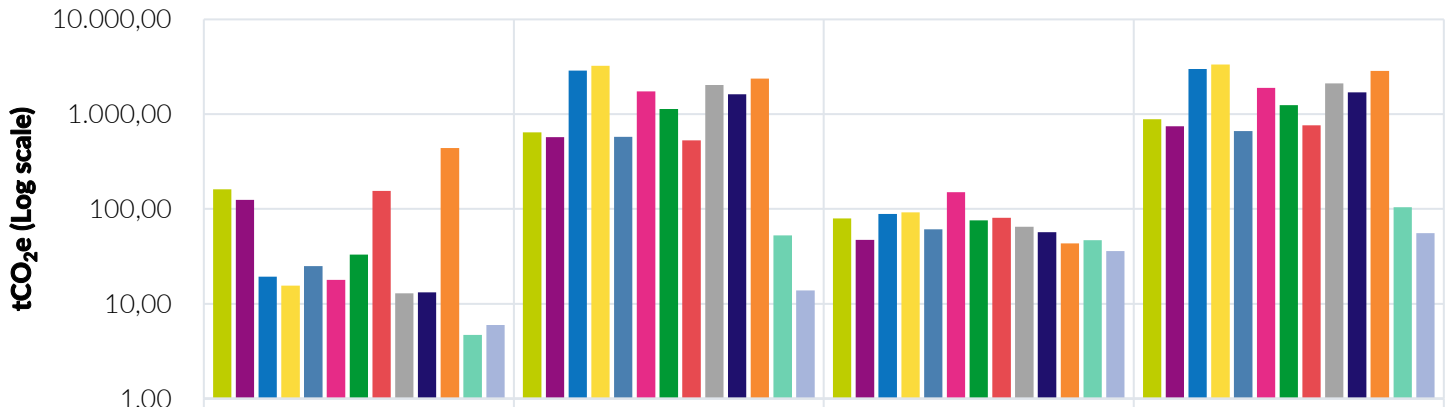
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Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | **Annual Performance (tCO_2e)** | Biogenic Emissions and Balance

Analysis

Since the beginning of emissions accounting (2010), 2022 was the year with the lowest level of emissions from the UHPF. Compared to the baseline year of the inventory (2010), the reduction was 94%.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



	Scope 1	Scope 2	Scope 3	Total
2010	160,97	644,58	79,56	885,11
2011	124,60	570,73	47,24	742,57
2012	19,35	2.883,34	88,83	2.991,52
2013	15,55	3.226,38	92,25	3.334,19
2014	25,02	574,82	61,04	660,88
2015	17,91	1.730,16	150,38	1.898,45
2016	33,05	1.132,56	75,94	1.241,55
2017	155,38	527,43	80,46	763,27
2018	12,88	2.034,35	64,83	2.112,06
2019	13,14	1.622,56	56,79	1.692,49
2020	439,03	2.367,42	43,45	2.849,90
2021	4,70	52,62	46,74	104,05
2022	5,96	13,80	35,86	55,62

Greenhouse Gases Emissions Inventory 2022

Institutional

Methodology

Results

Verification

Return

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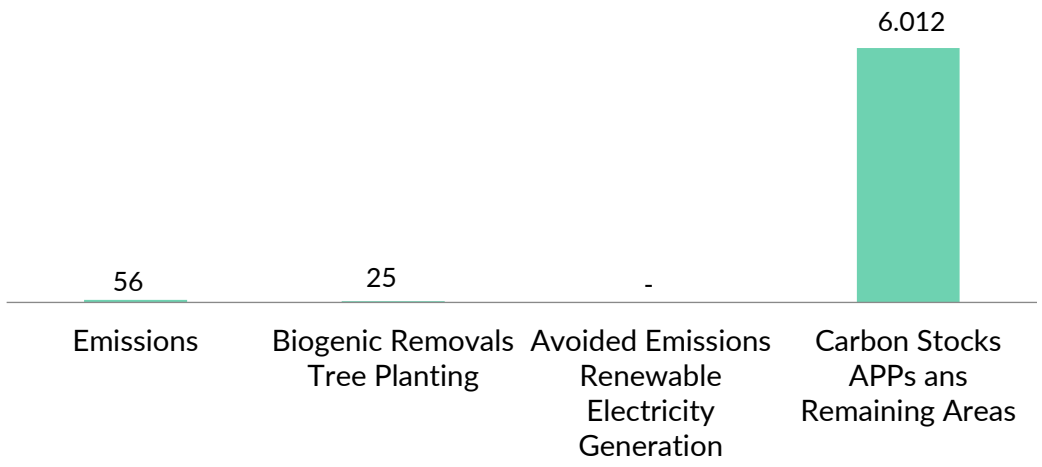
Emissions by Source (tCO_2e) 2022 x 2021

Annual Performance (tCO_2e)

Biogenic Emissions and Balance

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**12,25**	**69,2%**	**9,38**	**52,0%**	**2,87**	**30,6%**
Mobile Combustion	12,18	68,8%	9,36	51,9%	2,82	30,2%
Stationary Combustion	0,07	0,4%	0,02	0,1%	0,05	253,1%
Scope 3	**5,45**	**30,8%**	**8,67**	**48,0%**	**(3,22)**	**-37,2%**
Transport and Distribution (upstream)	4,23	23,9%	7,31	40,5%	(3,08)	-42,1%
Commuting	1,15	6,5%	1,24	6,9%	(0,09)	-7,6%
Business Travel	0,06	0,4%	0,11	0,6%	(0,04)	-40,9%
Total	**17,70**	**100%**	**18,04**	**100%**	**(0,35)**	**-1,9%**

Emissions Balance (tCO_2e)



Analysis

Biogenic emissions from the UHPF reduced by 1.9% in 2022, resulting mainly from lower fuel consumption by third-party vehicles.

The maintenance and preservation of remaining areas and APPs present a biogenic carbon stock of 6,012 tCO_2e. And the tree planting carried out in 2022 provided biogenic removals of 25 tCO_2e.

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CETR

Trairi Wind Power Plant



FVAE

Assú V Photovoltaic Power Plant



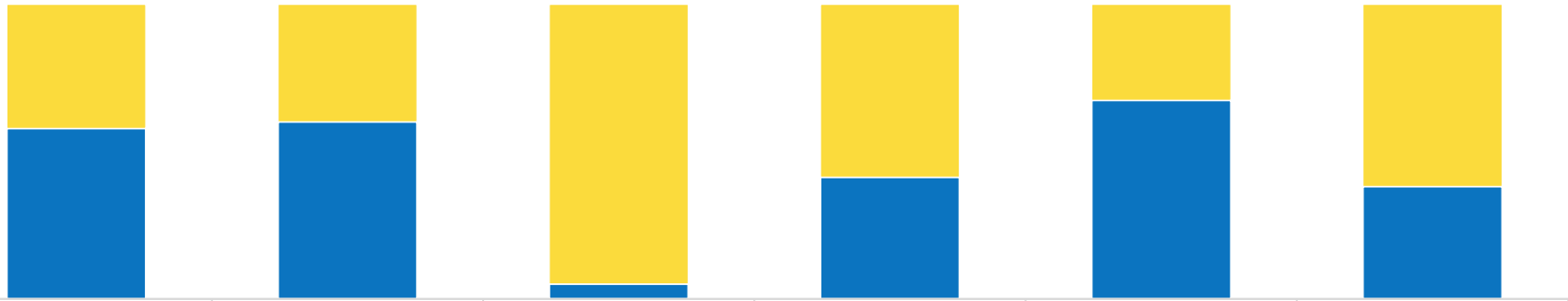
CFFL

Floresta Photovoltaic Solar Power Plant

Developed by:
Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Stationay Combustion	Mobile Combustion	Fugitive Emissions	Electricity Acquisition	Business Travel	Total
2021	0,03	8,39	49,87	24,65	12,67	95,61
2022	0,04	12,68	2,69	17,34	26,28	59,04

Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**15,41**	**26,1%**	**58,29**	**61,0%**	**(42,88)**	**-73,6%**
Stationay Combustion	0,04	0,1%	0,03	0,03%	0,01	37,3%
Mobile Combustion	12,68	21,5%	8,39	8,8%	4,29	51,1%
Fugitive Emissions	2,69	4,6%	49,87	52,2%	(47,18)	-94,6%
Scope 2	**17,34**	**29,4%**	**24,65**	**25,8%**	**(7,31)**	**-29,6%**
Electricity Acquisition	17,34	29,4%	24,65	25,8%	(7,31)	-29,6%
Scope 3	**26,28**	**44,5%**	**12,67**	**13,3%**	**13,61**	**107,4%**
Business Travel	26,28	44,5%	12,67	13,3%	13,61	107,4%
Total	**59,04**	**100%**	**95,61**	**100%**	**(36,57)**	**-38,3%**

Analysis

In 2022, CETR reduced its emissions by 38% compared to 2021. The reduction is associated with fugitive emissions (-95%), and the purchase of electricity from the grid (-30%), which had its emission factor reduced in 2022 (-66%). These reductions were partly offset by the increase in emissions from business travel associated to the unit (107%).

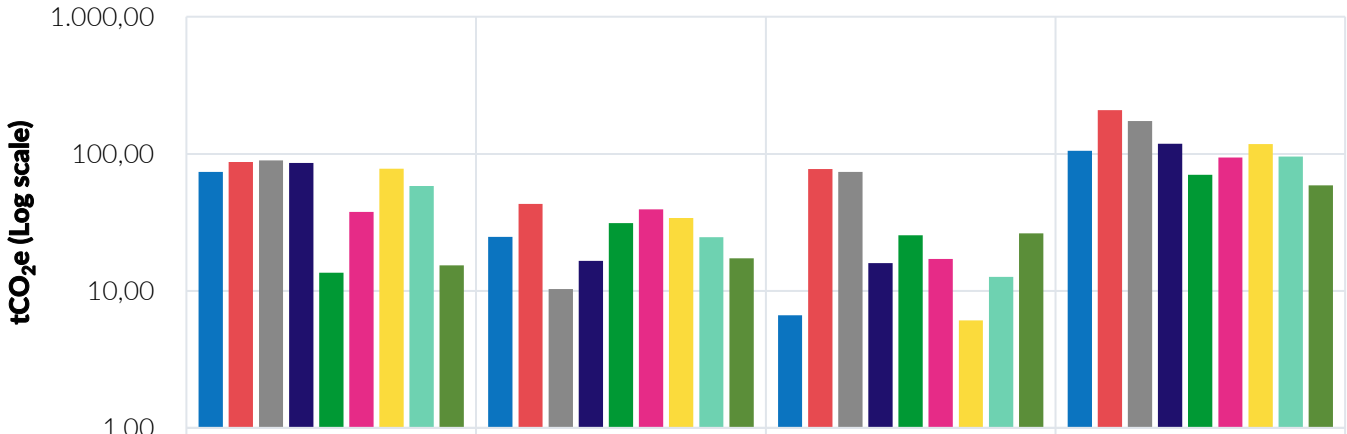
Developed by:
Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | **Annual Performance (tCO_2e)** | Biogenic Emissions and Balance

Analysis

CETR emissions reduced by 38% in 2022, compared to 2021. This was the year of lowest level of emissions within the historical series. Compared to 2014, the first year of data reporting for the power plant, the reduction was 44%.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



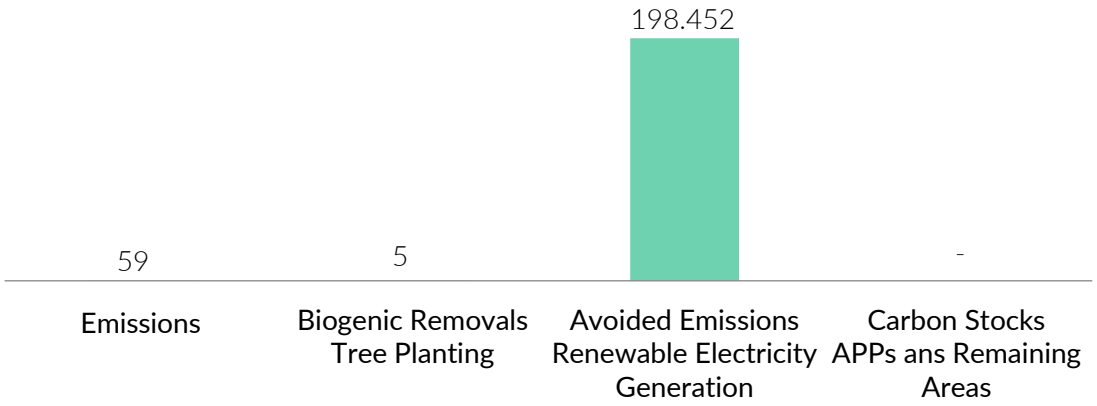
	Scope 1	Scope 2	Scope 3	Total
2014	73,97	24,86	6,65	105,49
2015	87,20	43,10	77,69	207,98
2016	89,78	10,30	73,79	173,87
2017	85,86	16,59	15,94	118,39
2018	13,59	31,19	25,52	70,30
2019	37,77	39,36	17,09	94,23
2020	77,91	33,99	6,11	118,02
2021	58,29	24,65	12,67	95,61
2022	15,41	17,34	26,28	59,04

Developed by:
Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**30,01**	**94,5%**	**22,25**	**97,7%**	**7,76**	**34,9%**
Mobile Combustion	30,00	94,5%	22,24	97,7%	7,76	34,9%
Stationary Combustion	0,01	0,0%	0,01	0,0%	0,00	37,8%
Scope 3	**1,74**	**5,5%**	**0,52**	**2,3%**	**1,22**	**234,2%**
Business Travel	1,74	5,5%	0,52	2,3%	1,22	234,2%
Total	**31,75**	**100%**	**22,77**	**100%**	**8,98**	**39,4%**

Emissions Balance (tCO_2e)



Analysis

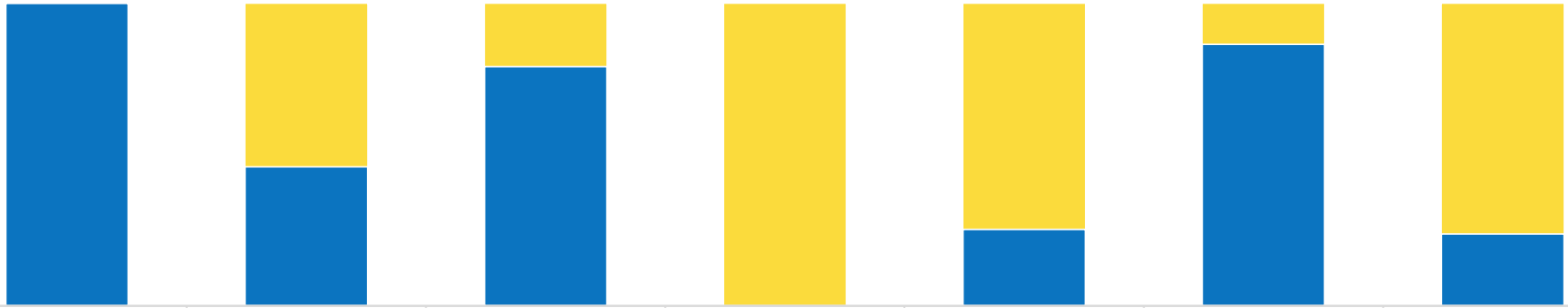
Increase in biogenic emissions (39%) is due to consumption of renewable fuel in company-controlled vehicles and business travel.

Tree planting provided biogenic removal of 5 tCO_2e. CETR's renewable energy generation avoided the emission 198.452 tCO_2e.

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Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Stationay Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Electricity Acquisition	Business Travel	Total
2021	-	7,28	0,20	28,10	84,22	0,28	120,07
2022	0,23	6,20	0,75	0,05	28,54	1,78	37,55

Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO2e	%	tCO2e	%	tCO2e	%
Scope 1	**7,23**	**19,3%**	**35,57**	**29,6%**	**(28,34)**	**-79,7%**
Stationay Combustion	0,23	0,6%	-	-	0,23	100,0%
Mobile Combustion	6,20	16,5%	7,28	6,1%	(1,08)	-14,9%
Wastewater Treatment	0,75	2,0%	0,20	0,2%	0,55	279,5%
Fugitive Emissions	0,05	0,1%	28,10	23,4%	(28,05)	-99,8%
Scope 2	**28,54**	**76,0%**	**84,22**	**70,1%**	**(55,67)**	**-66,1%**
Electricity Acquisition	28,54	76,0%	84,22	70,1%	(55,67)	-66,1%
Scope 3	**1,78**	**4,7%**	**0,28**	**0,2%**	**1,50**	**538,2%**
Business Travel	1,78	4,7%	0,28	0,2%	1,50	538,2%
Total	**37,55**	**100%**	**120,07**	**100%**	**(82,52)**	**-68,7%**

Analysis

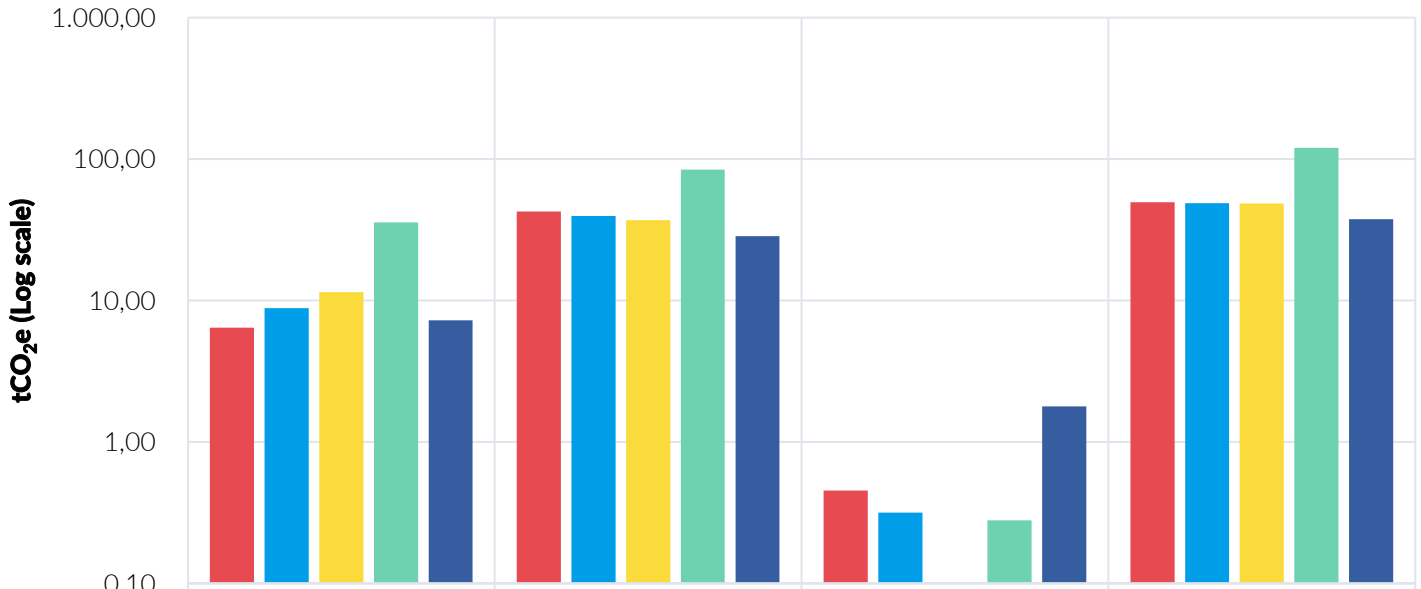
In 2022, FVAE reduced 68.7% of its emissions compared to 2021, due to the purchase of energy from the SIN, whose factor reduced 66%, as well as the reduction of fugitive emissions from the unit.

Developed by:
Ecofinance NEGOCIOS

Analysis

In 2022, FVAE reduced emissions by 69% compared to 2021. This was the year with the lowest level of emissions in the historical series. Compared to 2018, the plant's first year of operation, there was a 24% reduction.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



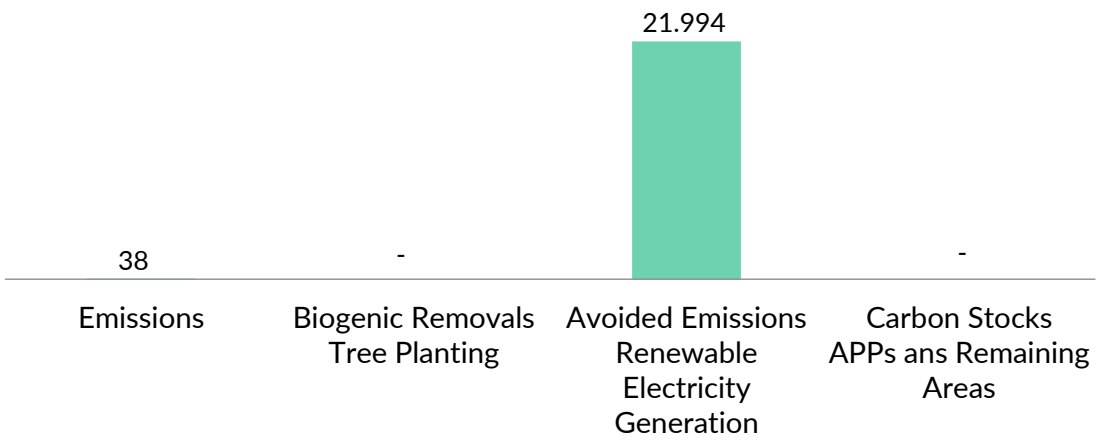
	Scope 1	Scope 2	Scope 3	Total
2018	6,42	42,6398	0,45	49,51
2019	8,84	39,62	0,32	48,78
2020	11,46	36,97	-	48,43
2021	35,55	84,22	0,28	120,05
2022	7,23	28,54	1,78	37,55

Developed by:
Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**3,83**	**98,8%**	**1,73**	**96,2%**	**2,10**	**121,7%**
Stationay Combustion	0,02	0,6%	-	-	0,02	100,0%
Mobile Combustion	3,81	98,2%	1,73	96,2%	2,08	120,3%
Scope 3	**0,05**	**1,2%**	**0,07**	**3,8%**	**(0,02)**	**-32,7%**
Business Travel	0,05	1,2%	0,07	3,8%	(0,02)	-32,7%
Total	**3,88**	**100%**	**1,80**	**100%**	**2,08**	**115,8%**

Emissions Balance (tCO_2e)



Analysis

FVAE's biogenic emissions increased by 116% in 2022 compared to 2021, resulting mainly from fuel consumption in the vehicles controlled by the company (120%).

FVAE's renewable energy generation avoided the emission of 21.994 tCO_2e.

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Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2022 x 2021

Biogenic Emissions and Balance

Emission Sources	Total Emission 2022	
	tCO_2e	%
Scope 1	**28,22**	**26,0%**
Stationary Combustion	1,58	1,5%
Mobile Combustion	6,63	6,1%
Fugitive Emissions	20,02	18,4%
Scope 2	**34,47**	**31,7%**
Electricity Acquisition	34,47	31,7%
Scope 3	**46,03**	**42,3%**
Transport & Distribution (upstream)	44,83	41,2%
Business Travel	1,19	1,1%
Total	**108,72**	**100%**

Analysis

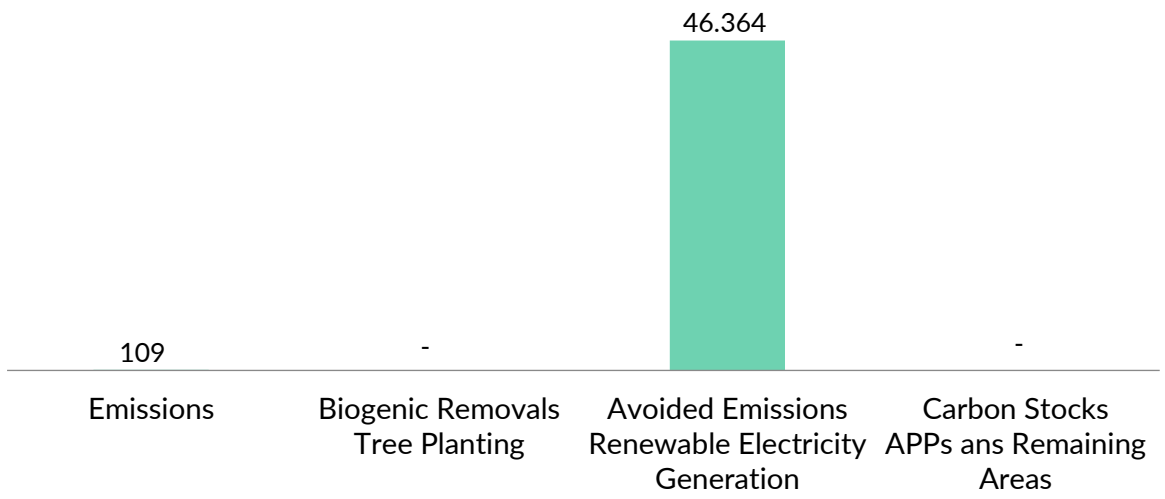
The year 2022 was the first year of data reporting for CFFL. In this year, its main emission sources were scope 3 (42.3%), the most relevant being emissions from transport and distribution not controlled by the plant (41.2%). Emissions related to the grid energy consumption were the second main emission source (31.7%).

Emissions by Source (tCO_2e) 2022 x 2021

Biogenic Emissions and Balance

Emission Sources	Biogenic Emissions 2022	
	tCO2e	%
Scope 1	**1,09**	**9,6%**
Mobile Combustion	0,68	6,0%
Stationary Combustion	0,41	3,6%
Scope 3	**10,24**	**90,4%**
Transport & Distribution (upstream)	10,23	90,3%
Business Travel	0,01	0,1%
Total	**11,33**	**100,0%**

Emissions Balance (tCO_2e)



Analysis

Biogenic emissions from the CFFL totaled 11.33 tCO_2e, with 90.3% of the emissions arising from transport and distribution not controlled by the company (scope 3).

The unit's renewable energy generation avoided the emission of 46,364 tCO_2e.

Developed by:
Ecofinance NEGOCIOS



CECL
Campo Largo
Wind Power Plant



CEUR
Umburanas
Wind Power Plant

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Agricultural Activities	Stationay Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Electricity Acquisition	Commuting	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2021	0,001	-	42,48	8,15	23,57	30,40	18,53	0,003	3,16	11,68	137,98
2022	-	1,49	38,84	18,20	46,41	19,89	6,50	2,15	14,03	19,83	167,34

Emission Sources	Emissões totais				Variação	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**104,95**	**62,7%**	**74,20**	**53,8%**	**30,75**	**41,4%**
Agricultural Activities	-	-	0,001	0,001%	(0,001)	-100,0%
Stationay Combustion	1,49	0,9%	-	-	1,49	100,0%
Mobile Combustion	38,84	23,2%	42,48	30,8%	(3,63)	-8,6%
Wastewater Treatment	18,20	10,9%	8,15	5,9%	10,05	123,3%
Fugitive Emissions	46,41	27,7%	23,57	17,1%	22,84	96,9%
Scope 2	**19,89**	**11,9%**	**30,40**	**22,0%**	**(10,52)**	**-34,6%**
Electricity Acquisition	19,89	11,9%	30,40	22,0%	(10,52)	-34,6%
Scope 3	**42,50**	**25,4%**	**33,38**	**24,2%**	**9,12**	**27,3%**
Commuting	6,50	3,9%	18,53	13,4%	(12,04)	-64,9%
Waste - Scope 03	2,15	1,3%	0,003	0,002%	2,14	71370,0%
Transport and Distribution (upstream)	14,03	8,4%	3,16	2,3%	10,86	343,6%
Business Travel	19,83	11,9%	11,68	8,5%	8,15	69,8%
Total	**167,34**	**100%**	**137,98**	**100%**	**29,36**	**21,3%**

Analysis

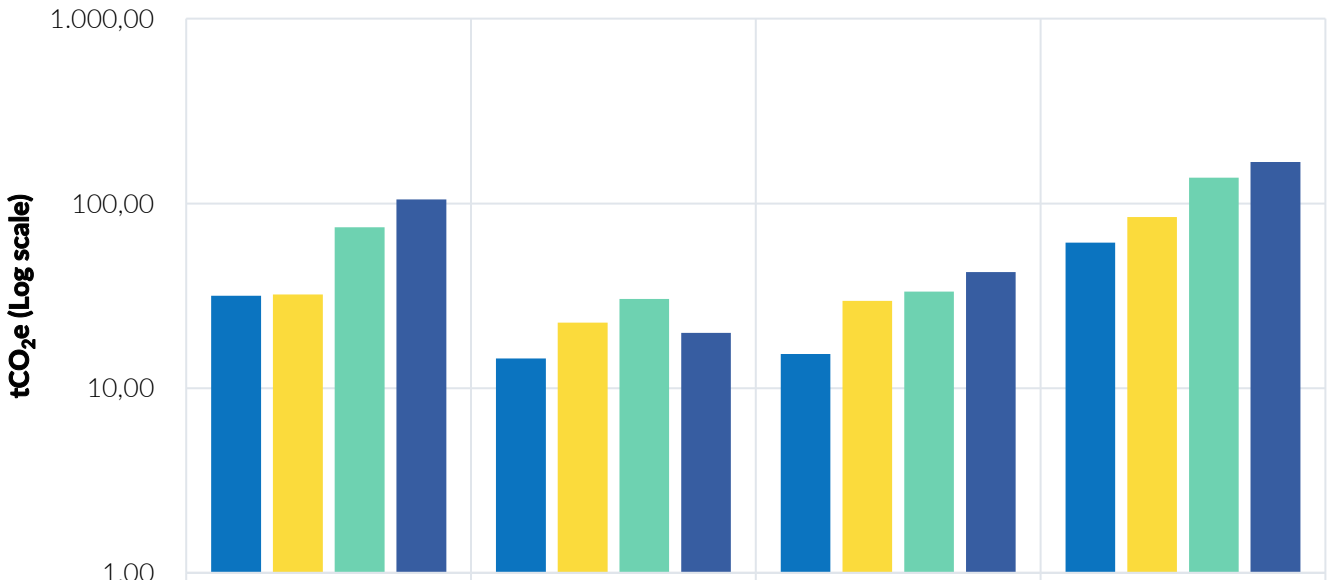
In 2022, CECL increased emissions by 21.3% compared to 2021, which is mainly associated with increased fugitive emissions (97%), wastewater treatment (123%), and transportation and distribution not controlled by the plant (344%), but mitigated by reduced emissions from employee commuting and transportation in company-controlled vehicles.

Developed by:
Ecofinance NEGOCIOS

Analysis

CECL's emissions increased by 21% in 2022 compared to 2021. When 2022 is compared to the first year of its reporting (2019), the increase is 173%.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



	Scope 1	Scope 2	Scope 3	Total
2019	31,63	14,48	15,29	61,40
2020	32,18	22,69	29,64	84,50
2021	74,20	30,40	33,38	137,98
2022	104,95	19,89	42,50	167,34

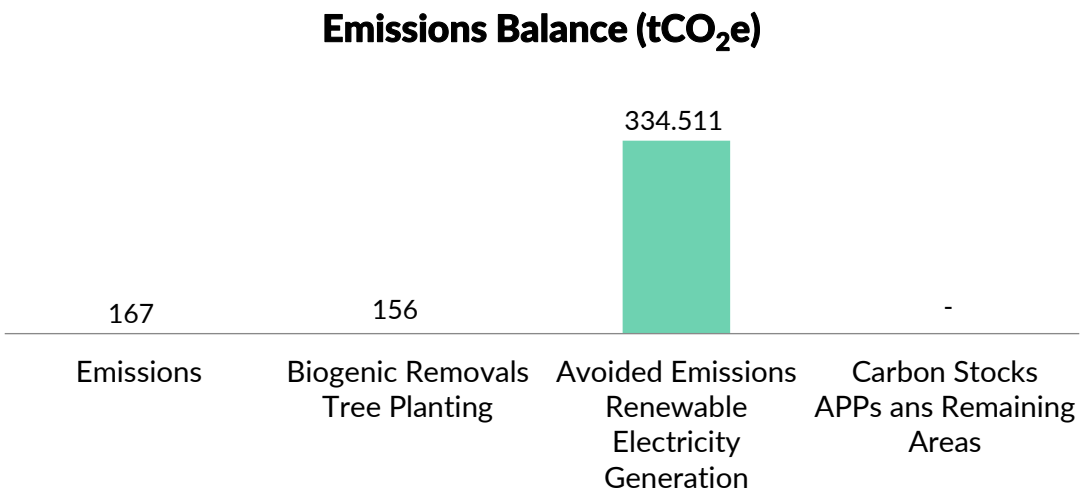
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Emissions by Source (tCO_2e) 2022 x 2021

Annual Performance (tCO_2e)

Biogenic Emissions and Balance

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**57,56**	**95,7%**	**72,62**	**95,9%**	**(15,06)**	**-20,7%**
Stationay Combustion	0,15	0,3%	-	-	0,15	100,0%
Mobile Combustion	57,40	95,4%	72,62	95,9%	(15,21)	-20,9%
Scope 3	**2,59**	**4,3%**	**3,12**	**4,1%**	**(0,53)**	**-17,0%**
Commuting	0,75	1,2%	2,23	2,9%	(1,48)	-66,5%
Transport and Distribution (upstream)	1,59	2,6%	0,40	0,5%	1,20	301,8%
Business Travel	0,25	0,4%	0,49	0,6%	(0,24)	-49,3%
Total	**60,15**	**100%**	**75,73**	**100%**	**(15,59)**	**-20,6%**



Analysis

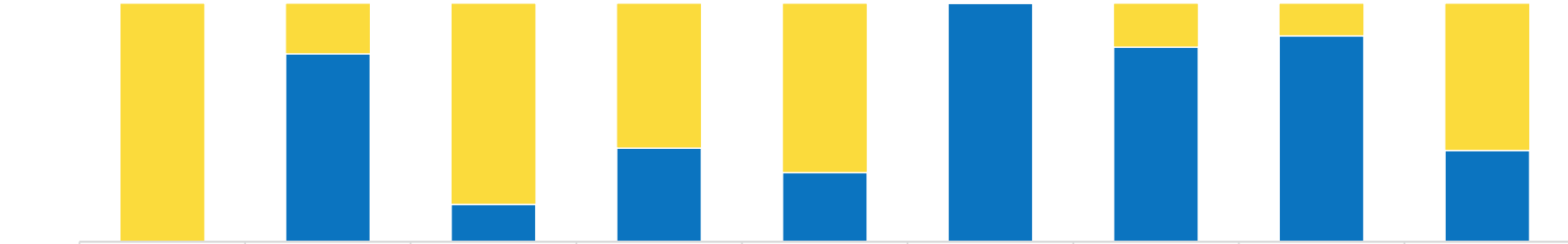
In 2022, CECL's biogenic emissions were reduced by 20.6%, mainly due to the mobile combustion of vehicles controlled by the company.

The tree planting carried out in 2022 provided biogenic removals of 156 tCO_2e. CECL's renewable energy generation avoided the emission of 334,511 tCO_2e.

Developed by:
Ecofinance NEGOCIOS

Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Stationay Combustion	Wastewater Treatment	Fugitive Emissions	Electricity Acquisition	Commuting	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2021	2,83	4,08	82,35	32,54	15,32	0,002	3,16	0,69	140,98
2022	-	15,13	15,31	20,99	6,26	11,03	14,03	4,34	87,09

Emission Sources	Total Emission 2022		Total Emission 2021		Variation 2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**30,43**	**34,9%**	**89,26**	**63,3%**	**(58,83)**	**-65,9%**
Stationay Combustion	-	-	2,83	2,0%	(2,83)	-100,0%
Wastewater Treatment	15,13	17,4%	4,08	2,9%	11,04	270,3%
Fugitive Emissions	15,31	17,6%	82,35	58,4%	(67,04)	-81,4%
Scope 2	**20,99**	**24,1%**	**32,54**	**23,1%**	**(11,56)**	**-35,5%**
Electricity Acquisition	20,99	24,1%	32,54	23,1%	(11,56)	-35,5%
Scope 3	**35,66**	**41,0%**	**19,18**	**13,6%**	**16,49**	**86,0%**
Commuting	6,26	7,2%	15,32	10,9%	(9,06)	-59,1%
Waste - Scope 03	11,03	12,7%	0,002	0,001%	11,03	614807,6%
Transport and Distribution (upstream	14,03	16,1%	3,16	2,2%	10,86	343,6%
Business Travel	4,34	5,0%	0,69	0,5%	3,65	530,8%
Total	**87,09**	**100%**	**140,98**	**100%**	**(53,90)**	**-38,2%**

Analysis

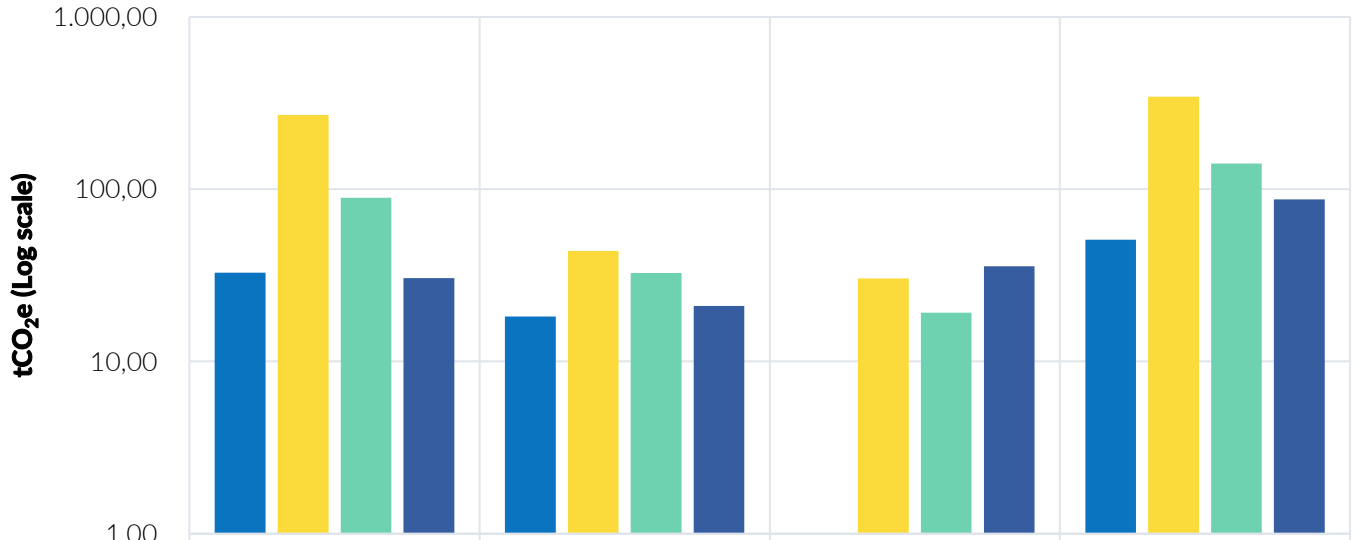
In 2022, CEUR reduced its emissions by 38.2% compared to 2021. The reduction was provided mainly by a reduction in fugitive emissions (-81%) and employee displacement (-59%), and mitigated by increased emissions in wastewater treatment, waste generation, and outsourced transportation and distribution.

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Analysis

CEUR's 2022 emissions reduced 38% from 2021 and increased 71% from 2019, the first reporting year.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



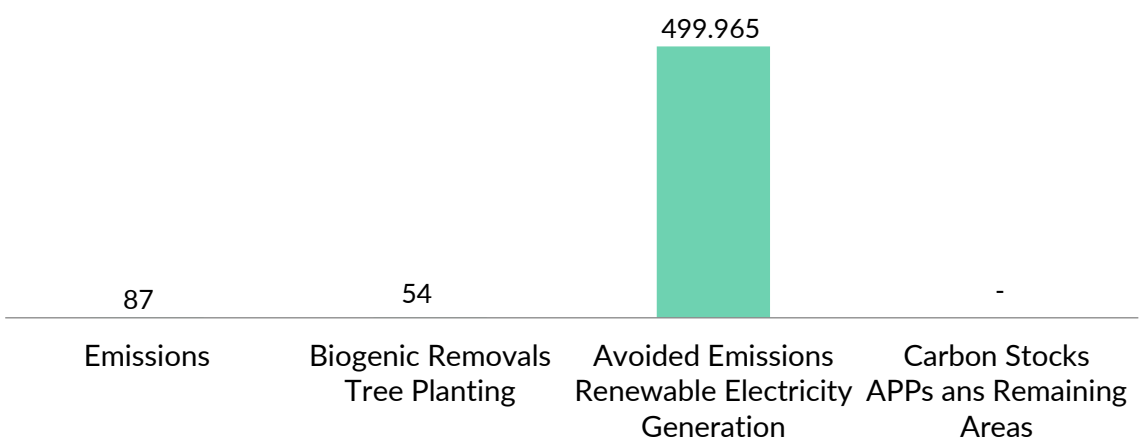
	Scope 1	Scope 2	Scope 3	Total
2019	32,68	18,20	-	50,89
2020	270,24	43,74	30,29	344,27
2021	89,26	32,54	19,18	140,98
2022	30,43	20,99	35,66	87,09

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Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions 2022		Biogenic Emissions 2021		Variation 2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	-	-	0,32	11,5%	(0,32)	-100,0%
Stationay Combustion	-	-	0,32	11,5%	(0,32)	-100,0%
Scope 3	3,01	100,0%	2,47	88,5%	0,54	21,7%
Commuting	0,72	24,1%	1,91	68,3%	(1,18)	-62,0%
Transport and Distribution (upstream	1,59	52,9%	0,40	14,2%	1,20	301,8%
Business Travel	0,69	23,1%	0,17	6,0%	0,53	312,1%
Total	3,01	100%	2,79	100%	0,22	7,7%

Emissions Balance (tCO_2e)



Analysis

In 2022, biogenic emissions from CEUR increased by 7.7%, associated with transportation and distribution not controlled by the plant (302%) and increased business travel (312%).

Tree planting executed in 2022 provided biogenic removals of 54 tCO_2e. In turn, CEUR's renewable energy generation avoided the emission of 499.965 tCO_2e.

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UCLA
Lages Cogeneration Unit



UETB
Tubarão Wind Power Plant



UFCA
Cidade Azul Photovoltaic Plant



UTFE
Ferrari Thermoelectric Plant



UTIB
Ibitiúva Thermoelectric Plant



CFPA
Paracatu Power Plant

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Emisions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Stationay Combustion	Mobile Combustion	Fugitive Emissions	Waste	Electricity Acquisition	Commuting	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2021	1.694,55	141,83	28,86	-	158,10	32,15	3,26	230,01	3,19	2.291,97
2022	3.711,03	221,04	0,28	0,0001	29,02	38,03	5,40	332,21	1,44	4.338,45

Emission Sources	Total Emission 2022		Total Emission 2021		Variation 2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**3.932,36**	**90,6%**	**1.865,25**	**81,4%**	**2.067,10**	**110,8%**
Stationay Combustion	3.711,03	85,5%	1.694,55	73,9%	2.016,47	119,0%
Mobile Combustion	221,04	5,1%	141,83	6,2%	79,21	55,8%
Fugitive Emissions	0,28	0,01%	28,86	1,3%	(28,58)	-99,0%
Waste	0,0001	0,000002%	-	-	0,0001	100,0%
Scope 2	**29,02**	**0,7%**	**158,10**	**6,9%**	**(129,08)**	**-81,6%**
Electricity Acquisition	29,02	0,7%	158,10	6,9%	(129,08)	-81,6%
Scope 3	**377,08**	**8,7%**	**268,61**	**11,7%**	**108,47**	**40,4%**
Commuting	38,03	0,9%	32,15	1,4%	5,88	18,3%
Waste - Scope 03	5,40	0,1%	3,26	0,1%	2,14	65,8%
Transport and Distribution (upstream)	332,21	7,7%	230,01	10,0%	102,20	44,4%
Business Travel	1,44	0,03%	3,19	0,1%	(1,76)	-55,0%
Total	**4.338,45**	**100%**	**2.291,97**	**100%**	**2.046,49**	**89,3%**

Analysis

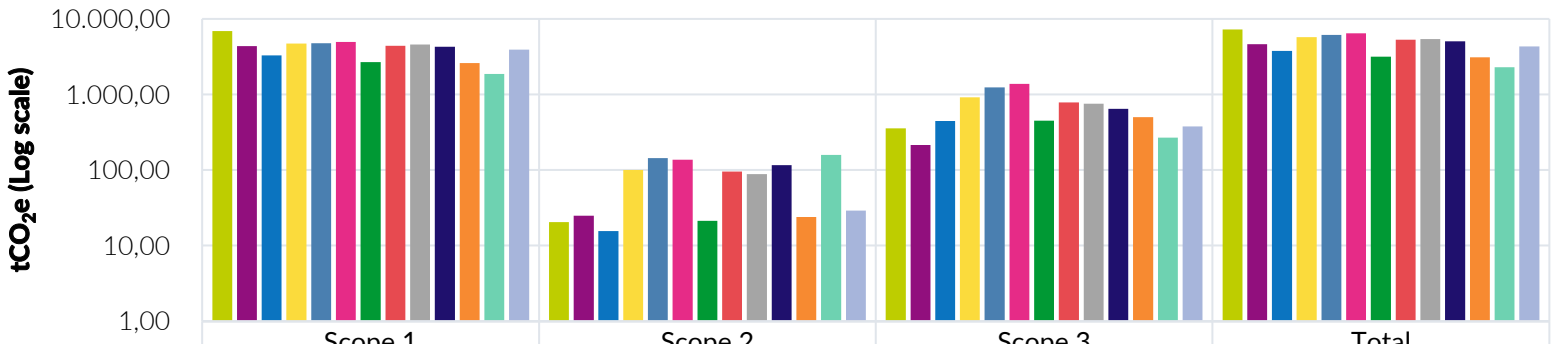
In 2022, UCLA increased 89.3% of its emissions compared to 2021. The increase was due to higher biomass consumption in its operation (119.0%) and transportation controlled by third parties (44.4%) in its operational process, and were partially mitigated by reduced emissions from the purchase of energy from the grid (81.6%), linked to the lower SIN emission factor (-66%).

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Analysis

Between the year 2021 and 2022, there was an 89.3% increase in emissions. However, in relation to the baseline year (2010), the reduction was 40%.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



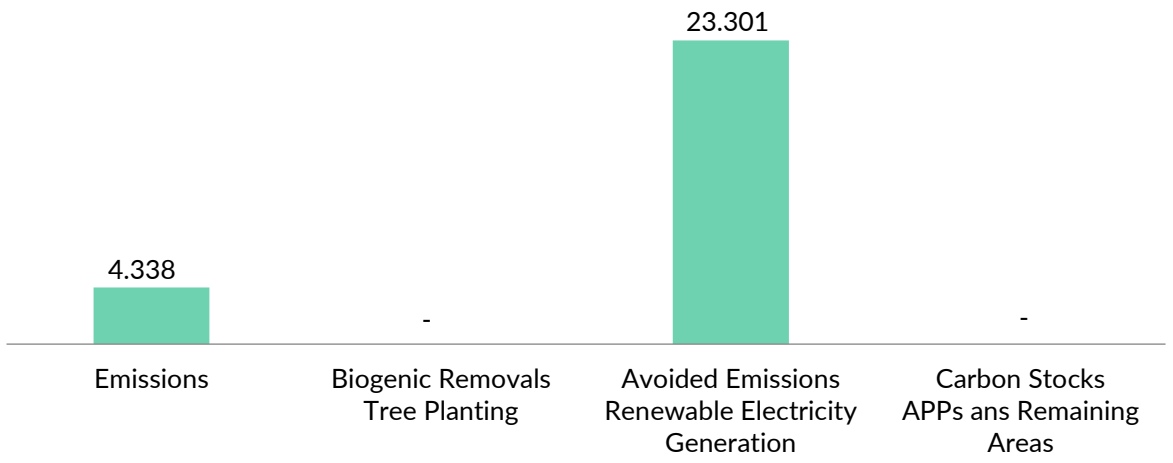
	Scope 1	Scope 2	Scope 3	Total
2010	6.874,85	20,45	355,12	7.250,42
2011	4.378,23	24,76	214,07	4.617,06
2012	3.296,34	15,55	444,97	3.756,86
2013	4.717,54	99,93	915,02	5.732,49
2014	4.750,27	144,11	1.240,06	6.134,44
2015	4.934,80	137,15	1.386,55	6.458,50
2016	2.686,00	21,31	448,80	3.156,11
2017	4.415,07	95,61	785,10	5.295,78
2018	4.572,33	87,9453	757,49	5.417,77
2019	4.293,37	115,98	648,05	5.057,40
2020	2.594,87	23,81	498,99	3.117,67
2021	1.865,25	158,10	268,61	2.291,97
2022	3.932,36	29,02	377,08	4.338,45

Developed by:
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Emisions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO2e	%	tCO2e	%	tCO2e	%
Scope 1	**218.197,78**	**100,0%**	**89.413,87**	**100,0%**	**128.783,92**	**144,0%**
Mobile Combustion	23,29	0,0%	17,06	0,0%	6,23	36,5%
Stationary Combustion	218.174,49	100,0%	89.396,80	99,9%	128.777,69	144,1%
Scope 3	**40,26**	**0,0%**	**31,70**	**0,0%**	**8,56**	**27,0%**
Transport and Distribution (upstream)	33,92	0,0%	25,99	0,0%	7,94	30,5%
Commuting	6,30	0,0%	5,57	0,0%	0,73	13,2%
Business Travel	0,03	0,0%	0,15	0,0%	(0,11)	-77,8%
Total	**218.238,04**	**100%**	**89.445,57**	**100%**	**128.792,47**	**144,0%**

Emissions Balance (tCO_2e)



Analysis

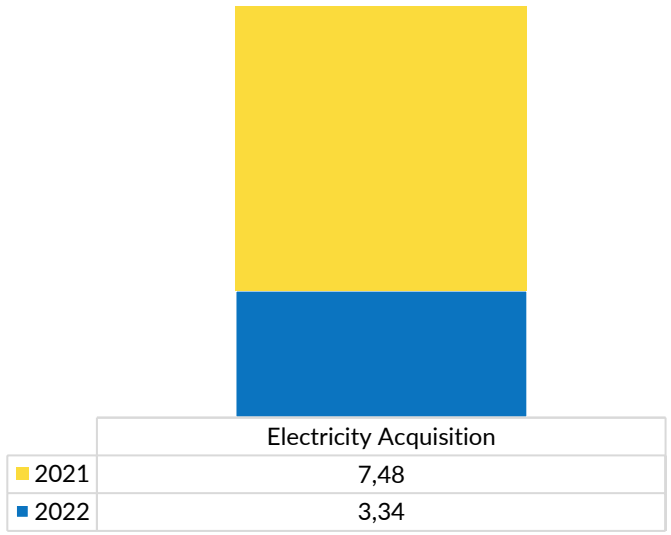
Increase in biogenic emissions (144%) related almost entirely to higher biomass consumption in stationary combustion.

UCLA's renewable energy generation avoided the emission of 23,301 tCO_2e.

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Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 2	**3,34**	**100,0%**	**7,48**	**100,0%**	**(4,14)**	**-55,4%**
Electricity Acquisition	3,34	100,0%	7,48	100,0%	(4,14)	-55,4%
Total	**3,34**	**100%**	**7,48**	**100%**	**(4,14)**	**-55,4%**

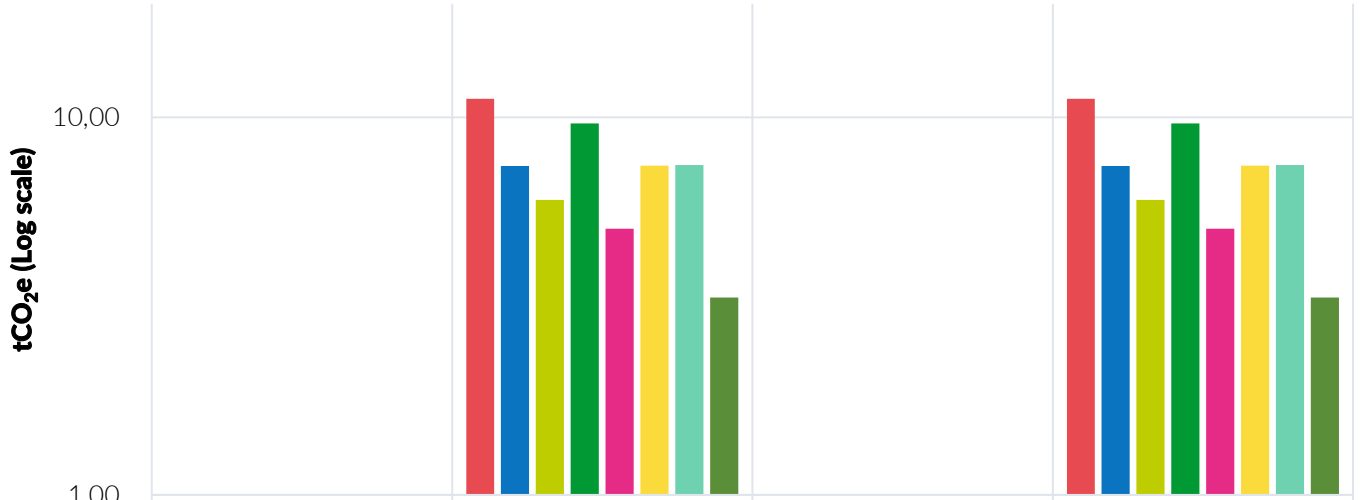
Analysis

In 2022, UETB reduced emissions by 55.4%, mainly due to the reduction in the SIN emission factor (66%), implying a lower emission from the grid's energy consumption.

Analysis

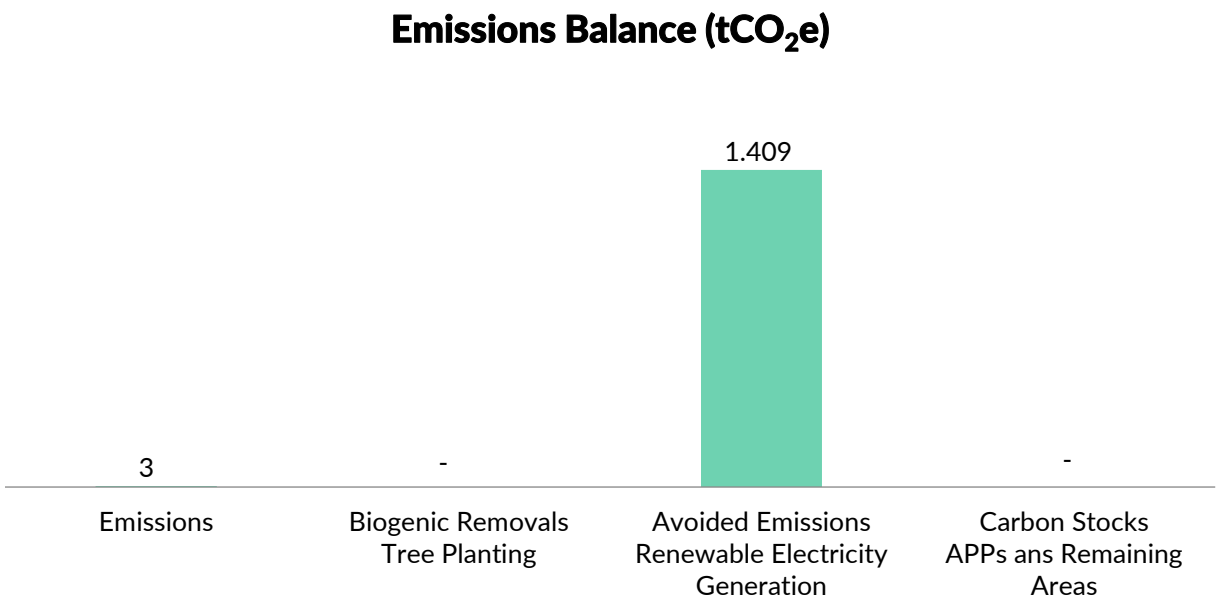
Emissions from UETB reduced 55.4% in 2022 compared to 2021 and 70% compared to 2015, the plant's first year of operation.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



	Scope 1	Scope 2	Scope 3	Total
2015	-	11,20	-	11,20
2016	-	7,44	-	7,44
2017	-	6,04	-	6,04
2018	-	9,63	-	9,63
2019	-	5,07	-	5,07
2020	-	7,45	-	7,45
2021	-	7,48	-	7,48
2022	-	3,34	-	3,34

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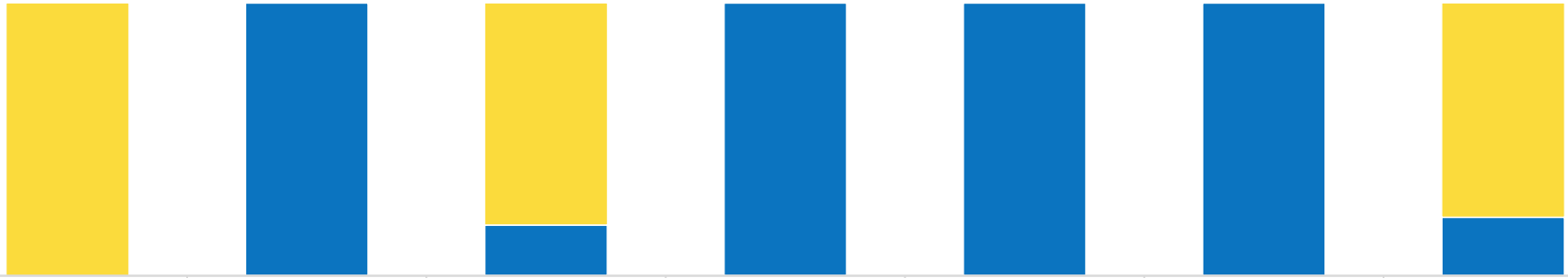
Analysis

No biogenic emissions were reported for this unit in the year 2022. The UETB's renewable energy generation avoided emissions of 1,409 tCO_2e.

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Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Fugitive Emissions	Waste	Electricity Acquisition	Transport & Distribution (upstream)	Business Travel	Waste - Scope 03	Total
2021	0,05	-	51,28	-	-	-	51,34
2022	-	0,00001	11,74	2,25	0,05	0,01	14,04

Emission Sources	Total Emission				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**0,00001**	**0,0%**	**0,05**	**0,1%**	**(0,05)**	**-100,0%**
Fugitive Emissions	-	-	0,05	0,1%	(0,05)	-100,0%
Waste	0,00001	0,0001%	-	-	0,00001	100,0%
Scope 2	**11,74**	**83,6%**	**51,28**	**99,9%**	**(39,54)**	**-77,1%**
Electricity Acquisition	11,74	83,6%	51,28	99,9%	(39,54)	-77,1%
Scope 3	**2,30**	**16,4%**	**-**	**0,0%**	**2,30**	**100,0%**
Transport & Distribution (upstream)	2,25	16,0%	-	-	2,25	100,0%
Business Travel	0,05	0,3%	-	-	0,05	100,0%
Waste - Scope 03	0,01	0,0628%	-	-	0,00881	100,0%
Total	**14,04**	**84%**	**51,34**	**100%**	**(37,29)**	**-72,6%**

Analysis

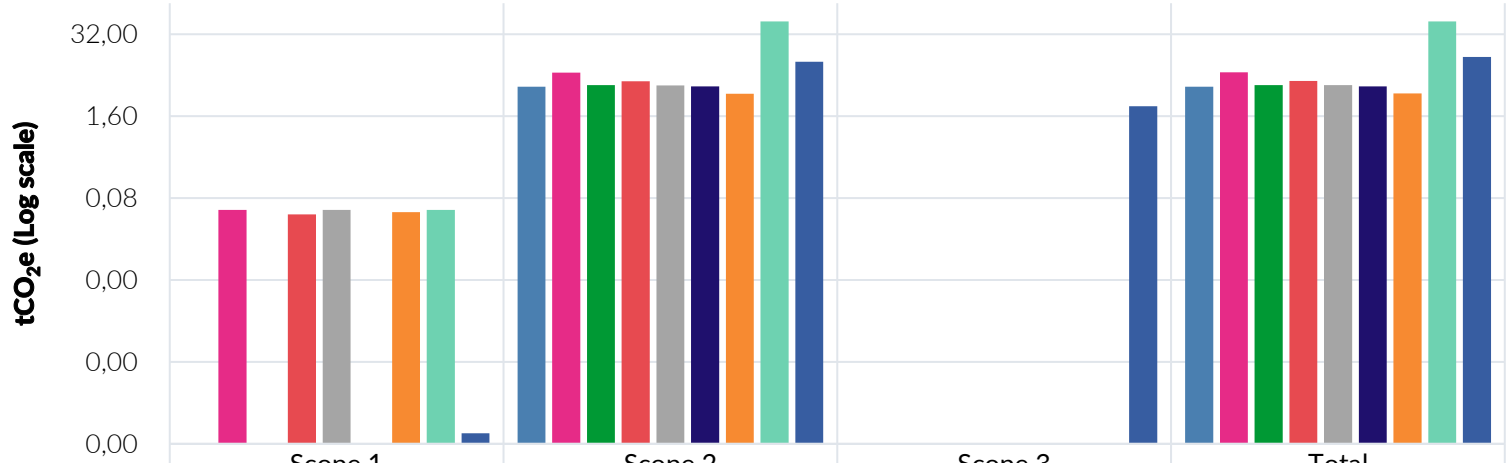
In 2022, UFCA reduced its emissions by 73% with respect to the year 2021, due to the reduction in grid electricity consumption and the reduction of the SIN emission factor (66%).

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Analysis

Between the years 2021 and 2022, there was a 73% reduction in GHG emissions. Compared to the plant's first year of operation (2014), there was an increase of 196%.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)

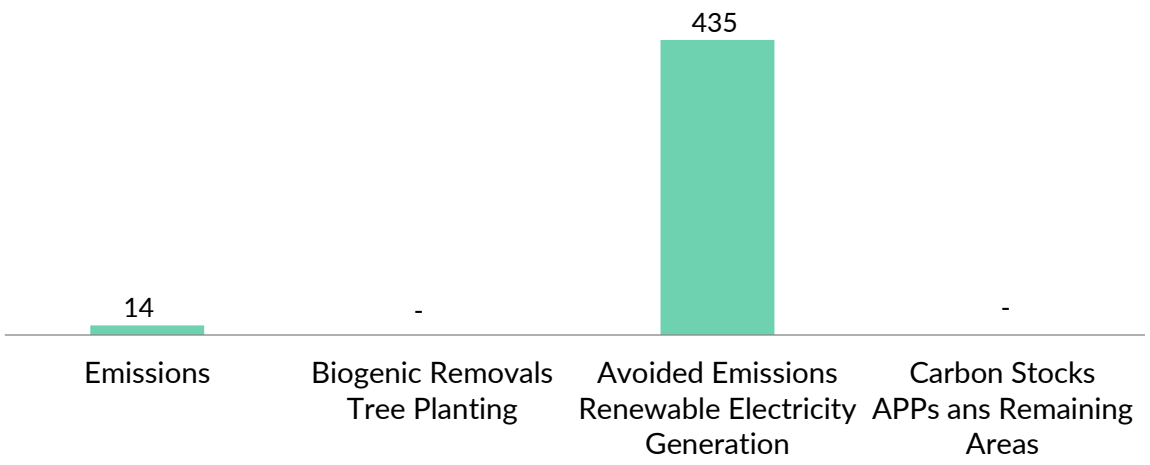


	Scope 1	Scope 2	Scope 3	Total
2014	-	4,74	-	4,74
2015	0,05	7,91	-	7,96
2016	-	4,99	-	4,99
2017	0,04	5,76	-	5,80
2018	0,05	4,9193	-	4,97
2019	-	4,80	-	4,80
2020	0,05	3,65	-	3,69
2021	0,05	51,28	-	51,34
2022	0,00001	11,74	2,30	14,04

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Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 3	**0,56**	**100,0%**	**-**	**-**	**0,56**	**100,0%**
Transport & Distribution (upstream	0,55	98,0%	-	-	0,55	100,0%
Business Travel	0,01	2,0%	-	-	0,01	100,0%
Total	**0,56**	**100%**	**-**	**-**	**0,56**	**100,0%**

Emissions Balance (tCO_2e)



Analysis

In 2022, the main biogenic emission from the unit was uncontrolled transport and distribution (0.55 tCO_2e).

UFCA's renewable energy generation avoided the emission of 435 tCO_2e.

Emissions by Source (tCO$_2$e) 2022 x 2021 | Annual Performance (tCO$_2$e) | Biogenic emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO$_2$e)



	Stationay Combustion	Mobile Combustion	Fugitive Emissions	Electricity Acquisition	Transport and Distribution (upstream)	Business Travel	Total
2021	13.516,01	0,18	0,04	96,38	666,64	0,94	14.280,19
2022	12.158,92	0,04	0,05	67,34	482,01	0,06	12.708,41

Emission Sources	Total Emission 2022		Total Emission 2021		Variation 2022 x 2021	
	tCO2e	%	tCO2e	%	tCO2e	%
Scope 1	**12.159,01**	**95,7%**	**13.516,23**	**94,7%**	**(1.357,22)**	**-10,0%**
Stationay Combustion	12.158,92	95,7%	13.516,01	94,6%	(1.357,10)	-10,0%
Mobile Combustion	0,04	0,0%	0,18	0,0%	(0,15)	-80,1%
Fugitive Emissions	0,05	0,0%	0,04	0,0%	0,02	50,0%
Scope 2	**67,34**	**0,5%**	**96,38**	**0,7%**	**(29,04)**	**-30,1%**
Electricity Acquisition	67,34	0,5%	96,38	0,7%	(29,04)	-30,1%
Scope 3	**482,07**	**3,8%**	**667,57**	**4,7%**	**(185,50)**	**-27,8%**
Transport and Distribution (upstream)	482,01	3,8%	666,64	4,7%	(184,62)	-27,7%
Business Travel	0,06	0,0%	0,94	0,0%	(0,88)	-93,7%
Total	**12.708,41**	**100%**	**14.280,19**	**100%**	**(1.571,77)**	**-11,0%**

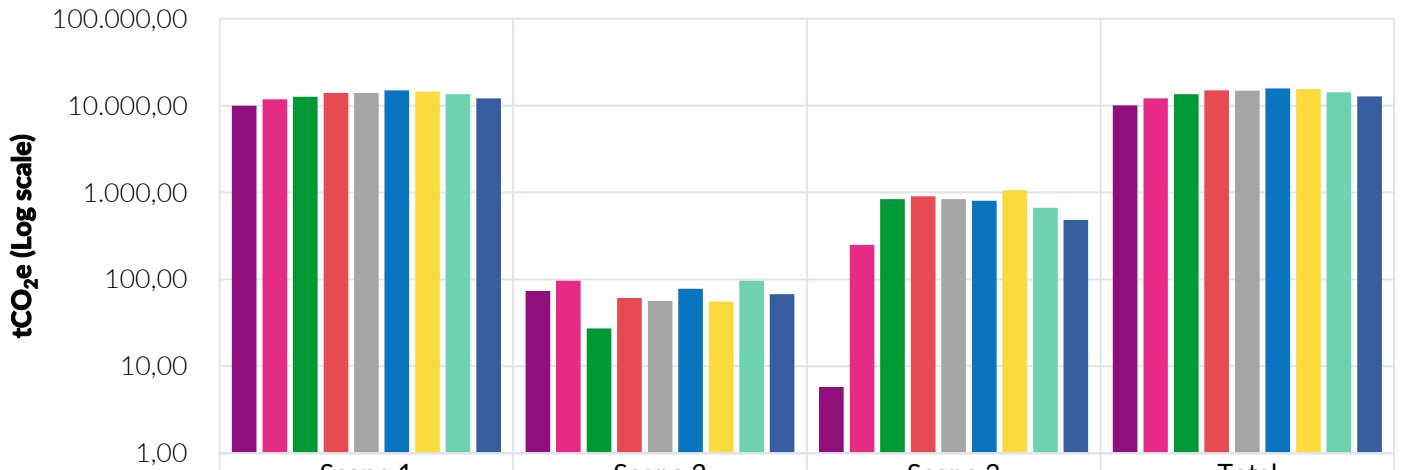
Analysis

In 2022, UTFE reduced emissions by 11% compared to 2021. The reduction was due mainly to lower biomass consumption (-10%), but also, to a lesser extent, to transportation controlled by third parties (-28%), and the reduction in emissions from the acquisition of energy from the grid (-30%), associated with the reduction of the SIN emission factor by 66%.

Analysis

UTFE's 2022 emissions reduced 11% from 2021 and increased 27% from 2014, the plant's first year of data reporting.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)

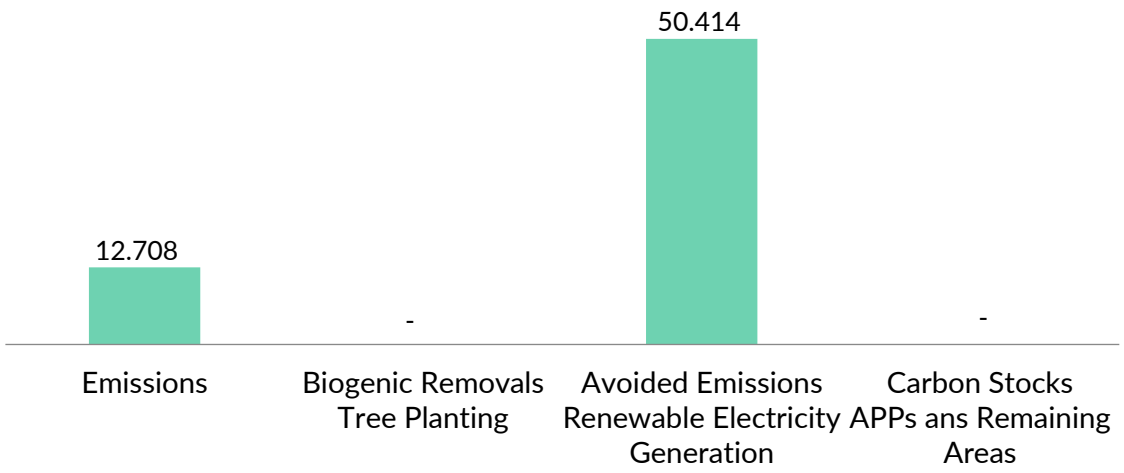


	Scope 1	Scope 2	Scope 3	Total
2014	9.953,05	73,44	5,75	10.032,25
2015	11.779,33	96,75	249,51	12.125,59
2016	12.621,98	27,16	835,41	13.484,55
2017	13.956,67	61,19	902,81	14.920,68
2018	14.013,70	56,6169	837,19	14.907,51
2019	14.927,17	78,04	800,46	15.805,67
2020	14.426,19	55,53	1.062,18	15.543,90
2021	13.516,23	96,38	667,57	14.280,19
2022	12.159,01	67,34	482,07	12.708,41

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Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**640.596,74**	**100,0%**	**711.546,64**	**100,0%**	**(70.949,90)**	**-10,0%**
Mobile Combustion	3,76	0,0%	3,47	0,0%	0,29	8,5%
Stationary Combustion	640.592,97	100,0%	711.543,17	100,0%	(70.950,20)	-10,0%
Scope 3	**49,22**	**0,0%**	**75,72**	**0,0%**	**(26,50)**	**-35,0%**
Transport and Distribution (upstream)	49,22	0,0%	75,49	0,0%	(26,27)	-34,8%
Business Travel	0,00	0,0%	0,23	0,0%	(0,23)	-99,9%
Total	**640.645,96**	**100,0%**	**711.622,36**	**100,0%**	**(70.976,40)**	**-10,0%**

Emissions Balance (tCO_2e)



Analysis

In 2022, there was a reduction in biogenic emissions (-10%), whose main reason was the reduction related to stationary combustion.

UTFE's renewable energy generation avoided the emission of 50,414 tCO_2e.

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GHG Emissions Comparative Operational Control - 2022 x 2021 (tCO_2e)



	Stationary Combustion	Mobile Combustion	Fugitive Emissions	Electricity Acquisition	Waste - Scope 03	Transport and distribution (upstream)	Business Travel	Total
2021	2.969,71	5,73	0,06	90,90	0,90	190,49	0,09	3.257,88
2022	4.288,35	2,98	0,06	25,89	0,87	388,45	-	4.706,60

GHG Emissions Comparative Equity Share - 2022 x 2021 (tCO_2e)



	Stationary Combustion	Mobile Combustion	Fugitive Emissions	Electricity Acquisition	Waste - Scope 03	Transport and distribution (upstream)	Business Travel	Total
2021	2.056,82	3,97	0,04	62,96	0,62	131,94	0,06	2.256,41
2022	2.970,11	2,06	0,04	17,93	0,60	269,04	-	3.259,79

Analysis

UTIB emissions increased 44% in 2022 compared to 2021, directly related to higher biomass consumption and the outsourced transportation of inputs associated with the operation. In this year, the plant's energy generation increased 27% compared to 2021.

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Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic emissions and Balance

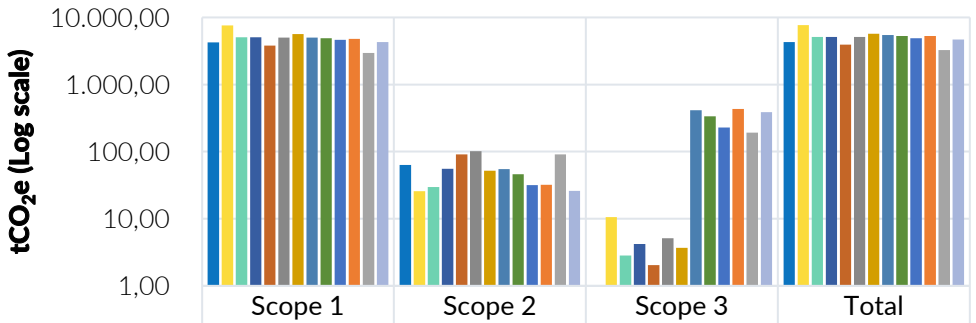
Emission Sources	Operational Control						Equity Share					
	Total Emissions				Variation		Total Emissions				Variation	
	2022		2021		2022 x 2021		2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**4.291,39**	**91,2%**	**2.975,50**	**91,3%**	**1.315,90**	**44,2%**	**2.972,22**	**91,2%**	**2.060,83**	**91,3%**	**911,39**	**44,2%**
Stationary Combustion	4.288,35	91,1%	2.969,71	91,2%	1.318,65	44,4%	2.970,11	91,1%	2.056,82	91,2%	913,30	44,4%
Mobile Combustion	2,98	0,1%	5,73	0,2%	(2,75)	-48,0%	2,06	0,1%	3,97	0,2%	(1,91)	-48,0%
Fugitive Emissions	0,06	0,001%	0,06	0,002%	-	-	0,04	0,001%	0,04	0,002%	-	-
Scope 2	**25,89**	**0,6%**	**90,90**	**2,8%**	**(65,02)**	**-71,5%**	**17,93**	**0,6%**	**62,96**	**2,8%**	**(45,03)**	**-71,5%**
Electricity Acquisition	25,89	0,6%	90,90	2,8%	(65,02)	-71,5%	17,93	0,6%	62,96	2,8%	(45,03)	-71,5%
Scope 3	**389,32**	**8,3%**	**191,48**	**5,9%**	**197,84**	**103,3%**	**269,64**	**8,3%**	**132,62**	**5,9%**	**137,02**	**103,3%**
Waste - Scope 03	0,87	0,02%	0,90	0,03%	(0,03)	-3,1%	0,60	0,02%	0,62	0,03%	(0,02)	-3,1%
Transport and distribution (upstream)	388,45	8,3%	190,49	5,8%	197,95	103,9%	269,04	8,3%	131,94	5,8%	137,10	103,9%
Business Travel	-	-	0,09	0,003%	(0,09)	-100,0%	-	-	0,06	0,003%	(0,06)	-100,0%
Total	**4.706,60**	**100%**	**3.257,88**	**100%**	**1.448,72**	**44%**	**3.259,79**	**100%**	**2.256,41**	**100%**	**1.003,38**	**44%**

Analysis

UTIB emissions increased by 44% in 2022 compared to 2021 in the operational control approach, as well as in the equity share approach, directly associated with the higher biomass consumption and the outsourced transportation of inputs associated with the operation.

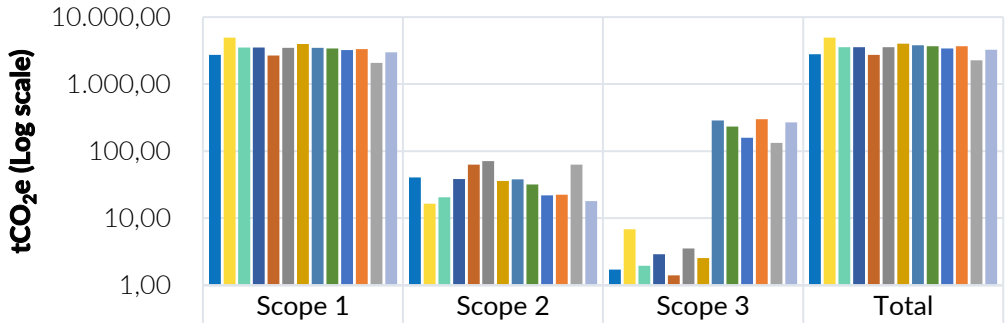
Emissions by Source (tCO_2e) 2022 x 2021 | **Annual Performance(tCO_2e)** | Biogenic emissions and Balance

Operational Control



	Scope 1	Scope 2	Scope 3	Total
2010	4.257,13	63,20	-	4.320,33
2011	7.647,88	25,61	10,62	7.684,11
2012	5.080,99	29,58	2,81	5.113,38
2013	5.081,93	55,69	4,20	5.141,81
2014	3.830,13	91,08	2,03	3.923,23
2015	5.007,13	102,09	5,12	5.114,34
2016	5.689,12	51,75	3,68	5.744,55
2017	5.017,23	54,70	415,01	5.486,94
2018	4.910,97	46,0701	337,37	5.294,42
2019	4.650,25	31,54	228,75	4.910,53
2020	4.811,48	32,20	433,45	5.277,13
2021	2.975,50	90,90	191,48	3.257,88
2022	4.291,39	25,89	389,32	4.706,60

Equity Share



	Scope 1	Scope 2	Scope 3	Total
2010	2.728,81	40,54	1,71	2.771,06
2011	4.905,35	16,43	6,81	4.928,59
2012	3.519,09	20,49	1,95	3.541,53
2013	3.519,74	38,57	2,91	3.561,22
2014	2.652,74	63,08	1,41	2.717,23
2015	3.467,94	70,71	3,54	3.542,19
2016	3.940,28	35,84	2,55	3.978,67
2017	3.474,93	37,89	287,43	3.800,25
2018	3.401,34	31,9081	233,66	3.666,91
2019	3.220,76	21,84	158,43	3.401,03
2020	3.332,43	22,30	300,21	3.654,94
2021	2.060,83	62,96	132,62	2.256,41
2022	2.972,22	17,93	269,64	3.259,79

Analysis

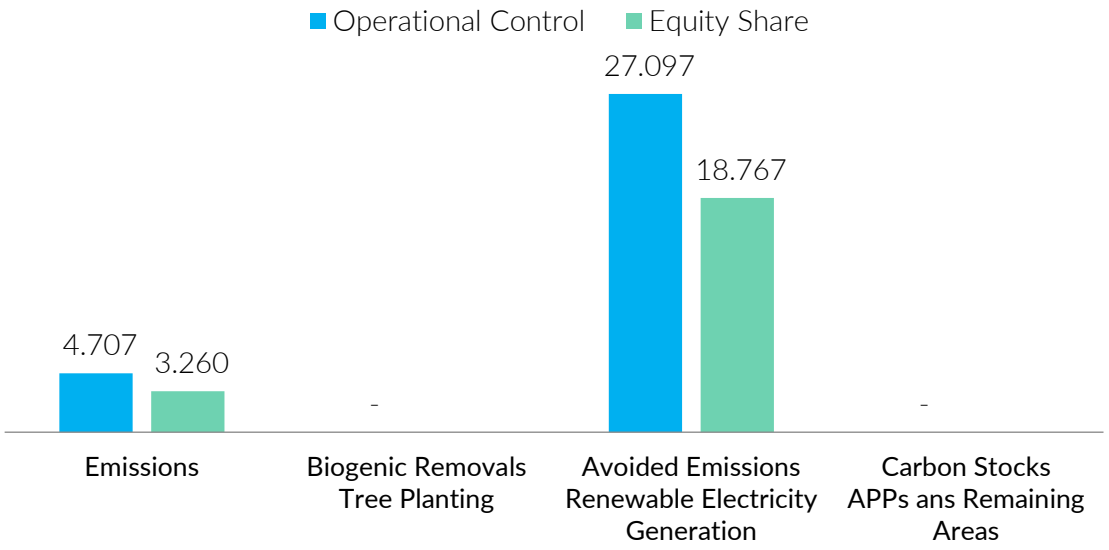
UTIB emissions increased by 9%, compared to the baseline year (2010), in the operational control approach and by 18% in the equity share approach.

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Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | **Biogenic emissions and Balance**

Emission Sources	Operational Control						Equity Share					
	Biogenic Emissions				Variation		Biogenic Emissions				Variation	
	2022		2021		2022 x 2021		2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**225.375,66**	**100,0%**	**156.193,17**	**100,0%**	**69.182,49**	**44,3%**	**156.095,18**	**100,0%**	**108.179,39**	**100,0%**	**47.915,79**	**44,3%**
Mobile Combustion	2,38	0,001%	0,94	0,001%	1,45	154,7%	1,65	0,001%	0,65	0,001%	1,00	154,7%
Stationary Combustion	225.373,28	100,0%	156.192,24	100,0%	69.181,04	44,3%	156.093,53	100,0%	108.178,74	100,0%	47.914,79	44,3%
Scope 3	**39,67**	**0,02%**	**20,85**	**0,0%**	**18,82**	**90,3%**	**27,47**	**0,02%**	**14,44**	**0,01%**	**13,04**	**90,3%**
Transport and distribution (upstream)	39,67	0,02%	20,82	0,01%	18,84	90,5%	27,47	0,02%	14,42	0,01%	13,05	90,5%
Business Travel	-	-	0,02	0,00001%	(0,02)	-100,0%	-	-	0,01	0,00001%	(0,01)	-100,0%
Total	**225.415,33**	**100%**	**156.214,02**	**100%**	**69.201,31**	**44%**	**156.122,65**	**100%**	**108.193,83**	**100%**	**47.928,82**	**44%**

Emissions Balance (tCO_2e)



Analysis

Biogenic emissions increased 44% in 2022, associated with higher biomass consumption.

With the generation of renewable energy, UTIB avoided the emission of 27,097 tCO_2e, in the operational control approach, and 18,767 tCO_2e, in the equity share approach.

Emissions by Source (tCO_2e) 2022 x 2021 Biogenic Emissions and Balance

Emission Sources	Total Emission 2022	
	tCO_2e	%
Scope 1	**0,22**	**0,2%**
Mobile Combustion	0,22	0,2%
Scope 2	**66,74**	**60,5%**
Electricity Acquisition	66,74	60,5%
Scope 3	**43,38**	**39,3%**
Transport & Distribution (upstream)	21,32	19,3%
Business Travel	18,07	16,4%
Indirect Stationary Combustion	2,63	2,4%
Commuting	1,36	1,2%
Total	**110,34**	**100%**

Analysis

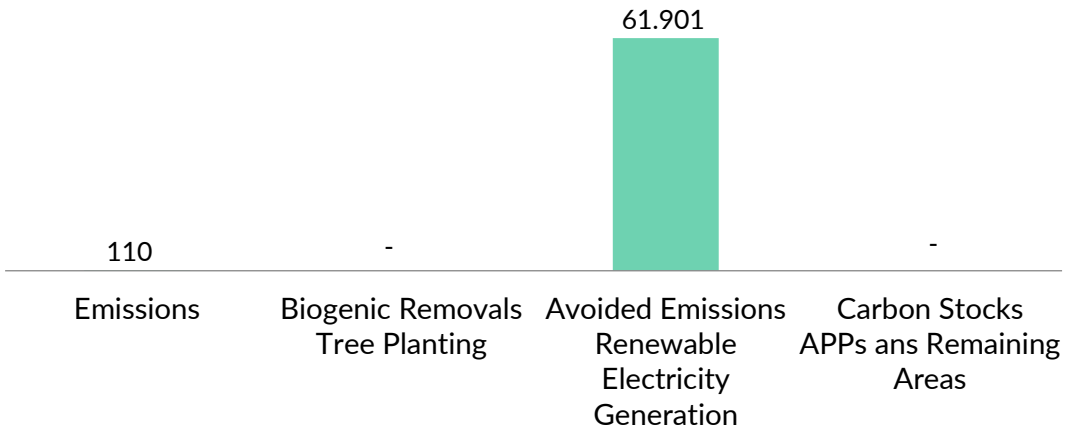
In 2022, the first year of data reporting for the plant, CFPA emitted 110.34 tCO_2e, with electricity acquisition being the unit's main source of emissions, accounting for 60.5% of its emissions. Also relevant were emissions from outsourced transportation and distribution (19.3%) and business travel by the unit's employees (16.4%).

Emissions by Source (tCO_2e) 2022 x 2021

Biogenic Emissions and Balance

Emission Sources	Biogenic Emissions 2022	
	tCO_2e	%
Scope 1	**3,31**	**14,6%**
Mobile Combustion	3,31	14,6%
Scope 3	**19,41**	**85,4%**
Transport & Distribution (upstream)	16,66	73,3%
Business Travel	1,93	8,5%
Indirect Stationary Combustion	0,68	3,0%
Commuting	0,14	0,6%
Total	**22,73**	**100,0%**

Emissions Balance (tCO_2e)



Analysis

CFPA's main source of biogenic emissions in 2022 was transportation and distribution not controlled by the company (73%).

CFPA's renewable energy generation avoided emissions of 61,901 tCO_2e in 2022.



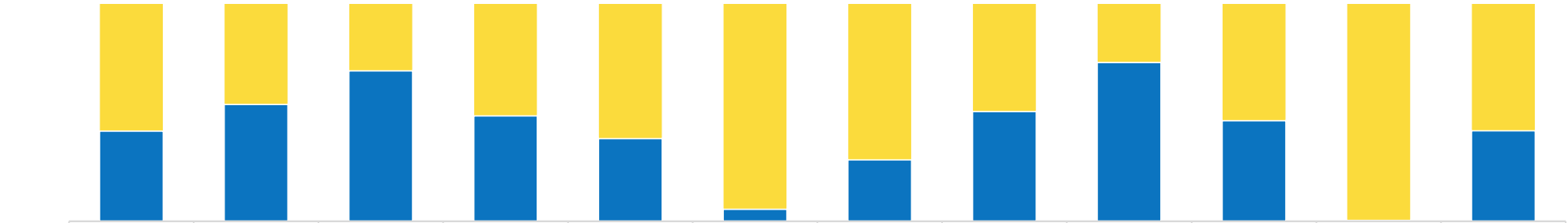
RSSE / **UTPS**

South/Southeast Regional **Pampa Sul Thermoelectric Plant**

Developed by:
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Emissions by Source (tCO_2e) 2022 x 2021 | Annual Performance (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2022 x 2021 (tCO_2e)



	Stationary Combustion	Industrial Processes	Fugitive Emissions	Mobile Combustion	Wastewater Treatment	Agriculture activities	Electricity Acquisition	Transport and Distribution (upstream)	Commuting	Business Travel	Waste - Scope 03	Total
2021	1.497.754,0	13.020,10	159,88	37,51	4,52	4,54	2.261,37	2.844,26	166,61	7,62	3,82	1.516.264,2
2022	1.056.805,6	15.076,36	357,56	35,22	2,77	0,27	886,46	2.889,27	449,05	6,52	0,01	1.076.509,1

Emission Sources	Total Emission 2022		Total Emission 2021		Variation 2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**1.072.277,86**	**99,6%**	**1.510.980,57**	**99,7%**	**(438.702,71)**	**-29,0%**
Stationary Combustion	1.056.805,69	98,2%	1.497.754,01	98,8%	(440.948,32)	-29,4%
Industrial Processes	15.076,36	1,4%	13.020,10	0,9%	2.056,26	15,8%
Fugitive Emissions	357,56	0,0%	159,88	0,0%	197,68	123,6%
Mobile Combustion	35,22	0,0%	37,51	0,0%	(2,29)	-6,1%
Wastewater Treatment	2,77	0,0%	4,52	0,0%	(1,75)	-38,7%
Agriculture activities	0,27	0,0%	4,54	0,0%	(4,28)	-94,1%
Scope 2	**886,46**	**0,1%**	**2.261,37**	**0,1%**	**(1.374,91)**	**-60,8%**
Electricity Acquisition	886,46	0,1%	2.261,37	0,1%	(1.374,91)	-60,8%
Scope 3	**3.344,85**	**0,3%**	**3.022,31**	**0,2%**	**322,54**	**10,7%**
Transport and Distribution (upstream)	2.889,27	0,3%	2.844,26	0,2%	45,00	1,6%
Commuting	449,05	0,0%	166,61	0,0%	282,44	169,5%
Business Travel	6,52	0,0%	7,62	0,0%	(1,10)	-14,4%
Waste - Scope 03	0,01	0,0%	3,82	0,0%	(3,81)	-99,6%
Total	**1.076.509,18**	**100%**	**1.516.264,25**	**100%**	**(439.755,07)**	**-29,0%**

Analysis

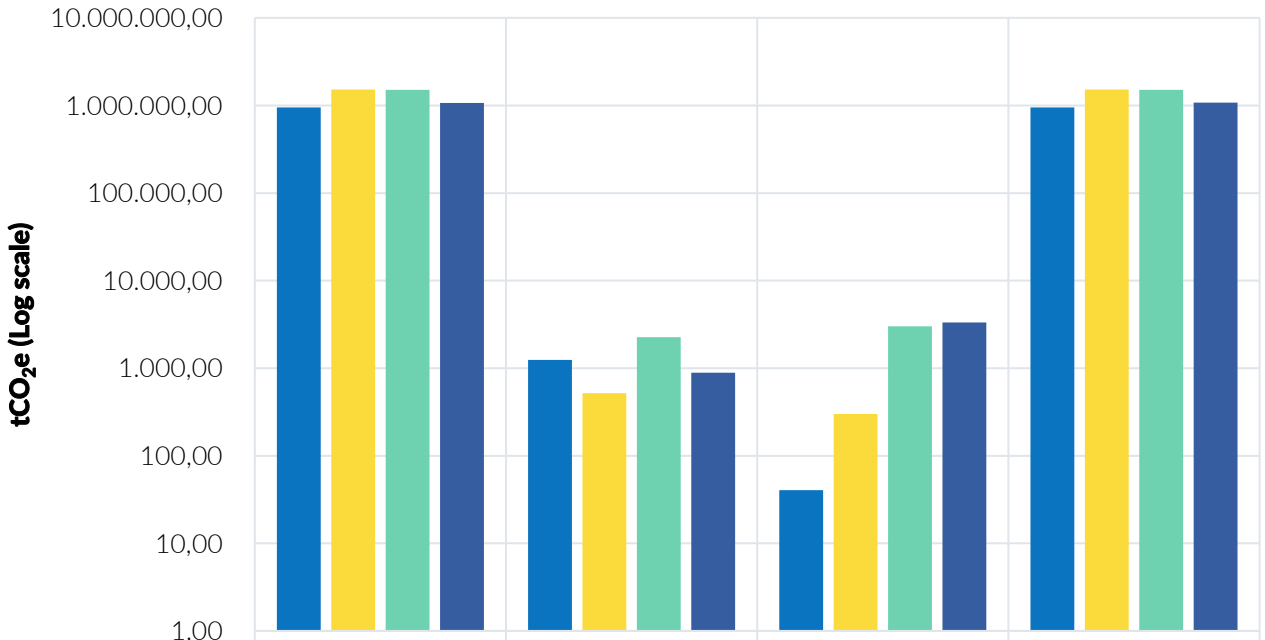
The UTPS reduced, in 2022, 29.0% of its total emissions, provided mainly by the reduction in coal consumption. There was, however, an increase in emissions related to the process of desulfurization of gases, partially offset by the reduction of emissions from energy consumption.

Developed by: Ecofinance Negocios

Analysis

UTPS emissions were reduced by 29% in 2022 with respect to 2021 and increased by 12.8% with respect to 2019, the first year of accounting of the plant's emissions.

GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)

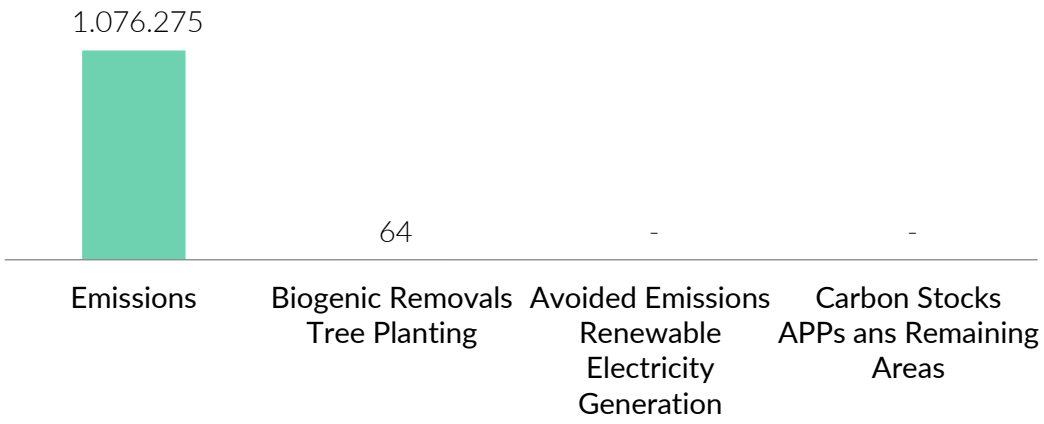


	Scope 1	Scope 2	Scope 3	Total
2019	953.206,43	1.241,23	40,42	954.488,08
2020	1.525.639,62	519,46	300,11	1.526.459,19
2021	1.510.980,57	2.261,37	3.022,31	1.516.264,25
2022	1.072.277,86	886,46	3.344,85	1.076.509,18

Developed by: Ecofinance NEGOCIOS

Emission Sources	Biogenic Emissions				Variation	
	2022		2021		2022 x 2021	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**268,24**	**43,1%**	**311,04**	**46,8%**	**(42,80)**	**-13,8%**
Stationary Combustion	261,04	42,0%	303,11	45,6%	(42,08)	-13,9%
Mobile Combustion	7,20	1,2%	7,93	1,2%	(0,72)	-9,1%
Scope 3	**353,86**	**56,9%**	**354,10**	**53,2%**	**(0,24)**	**-0,1%**
Transport and Distribution (upstream)	300,33	48,3%	327,19	49,2%	(26,86)	-8,2%
Commuting	52,85	8,5%	25,63	3,9%	27,22	106,2%
Business Travel	0,68	0,1%	1,28	0,2%	(0,59)	-46,3%
Total	**622,10**	**100%**	**665,13**	**100%**	**(43,04)**	**-6,5%**

Emissions Balance (tCO_2e)



Analysis

Biogenic emissions were reduced by 6.5%, mainly by reducing emissions from stationary source equipment and outsourced vehicles.

Tree planting executed in 2022 provided biogenic removals of 64 tCO_2e.

Developed by:
Ecofinance NEGOCIOS



STGA
Gralha Azul
Transmission System



STNE
Novo Estado
Transmission System

Developed by:
Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2022 x 2021 Biogenic Emissions and Balance

Emission Sources	Total Emission 2022	
	tCO_2e	%
Scope 1	**29,25**	**0,6%**
Mobile Combustion	23,46	0,5%
Stationary Combustion	5,80	0,1%
Scope 2	**4.899,46**	**96,6%**
Electricity Acquisition	4.840,27	95,5%
Transmission and Distribution Losses	59,19	1,2%
Scope 3	**140,92**	**2,8%**
Transport & Distribution (upstream)	84,07	1,7%
Business Travel	49,57	1,0%
Waste - Scope 03	7,28	0,1%
Total	**5.069,64**	**100%**

Analysis

STGA, unit that had its first emissions accounting in 2022, emitted 5,069.64 tCO_2e, with 95.5% of these emissions concentrated in Electricity Transmission Losses.

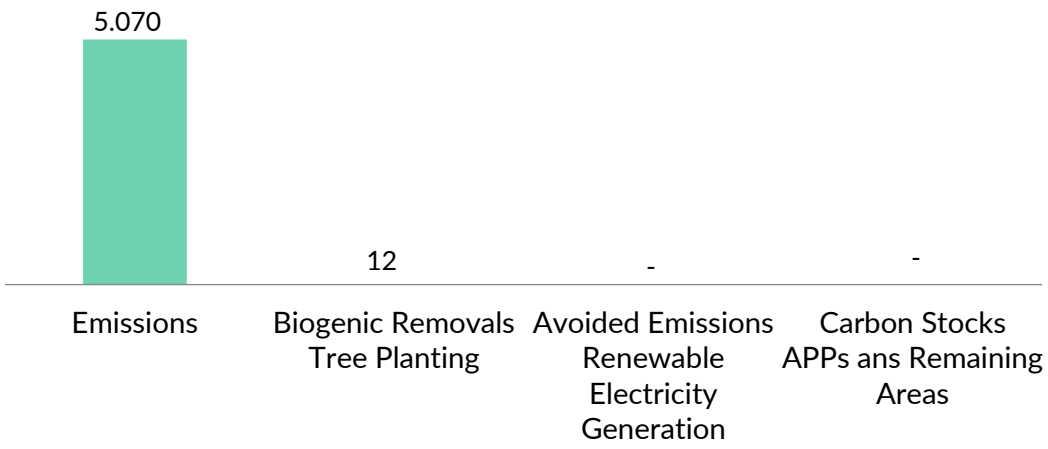
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Emissions by Source (tCO_2e) 2022 x 2021

Biogenic Emissions and Balance

Emission Sources	Biogenic Emissions 2022	
	tCO_2e	%
Scope 1	**7,74**	**23,6%**
Mobile Combustion	7,14	21,8%
Stationary Combustion	0,60	1,8%
Scope 3	**25,05**	**76,4%**
Transport & Distribution (upstream)	15,02	45,8%
Business Travel	10,03	30,6%
Total	**32,80**	**100,0%**

Emissions Balance (tCO_2e)



Analysis

In 2022, the main sources of biogenic emissions were from contractors used for transportation and distribution (15.02 tCO_2e) and the business trips of the unit's employees (10.03 tCO_2e).

Tree planting carried out in 2022 provided biogenic removals of 12 tCO_2e.

Emissions by Source (tCO_2e) 2022 x 2021 Biogenic Emissions and Balance

Emission Sources	Total Emission 2022	
	tCO_2e	%
Scope 1	**226,76**	**12,2%**
Stationary Combustion	5,05	0,3%
Mobile Combustion	203,24	10,9%
Scope 2	**1.564,27**	**84,2%**
Electricity Acquisition	266,50	14,3%
Transmission and Distribution Losses	1.297,77	69,9%
Scopo 3	**66,59**	**3,6%**
Transport & Distribution (upstream)	50,04	2,7%
Business Travel	16,09	0,9%
Waste - Scope 03	0,46	0,0%
Total	**1.857,62**	**100%**

Analysis

STNE started reporting its emissions in 2022. In this year, its main emission sources were in scope 2 (84.2%), the most relevant being emissions from electricity losses in transmission, corresponding to 1,297.77 tCO_2e (69.9%).

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Ecofinance NEGÓCIOS

Emission Sources	Biogenic Emissions 2022	
	tCO_2e	%
Escope 1	**26,25**	**72,4%**
Mobile Combustion	25,73	71,0%
Stationary Combustion	0,52	1,4%
Escope 3	**9,99**	**27,6%**
Transport & Distribution (upstream)	7,51	20,7%
Business Travel	2,48	6,8%
Total	**36,24**	**100,0%**

Analysis

The main source of biogenic emissions from the unit was the use of biofuels in vehicles controlled by the company (71%) and in vehicles controlled by third parties (20.7%).

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Ecofinance NEGOCIOS

Inventory Verification

In order to ensure the completeness and accuracy of the results achieved and the compliance of this GHG emissions inventory with the previously established methodologies, Engie Brasil Energia contracted SGS ICS Certificadora Ltda (SGS) to carry out a Third Party Verification.

SGS carried out the verification activities in accordance with the Verification Specifications of the Brazilian GHG Protocol Program and the ABNT NBR ISO 14064-3: 2007 standard.

The third-party verification process took place in February and March 2023, and included document analysis, interviews, and on-site visits. At the end of the process, SGS certified the results declared by Engie Brasil Energia with a limited level of confidence.

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