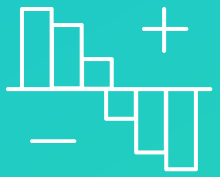
Greenhouse Gases Emissions Inventory 2021
ENGIE Brasil Energia



Institutional



Methodology



Results



ENGIE BRASIL ENERGIA

ENGIE Brazil Energy (EBE) is the largest private energy company in 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 68 plants and represents close to 6% of the national capacity. Moreover, 95.8% 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. GHW
in Power Installed Capacity

10
registered CDM Projects

400 thousand
seeds are annually donated and planted.

95,8%
of renewable energy

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

100 thousand
people in average are benefited by environmental educational program

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Our commitment to decarbonization

ENGIE is committed to improving its corporate actions and strategies to reduce its Greenhouse Gas (GHG) emissions, and transition to a new energy context. In doing so, it strives to effectively contribute toward slowing down and reducing the impacts of climate change, in line with the precepts of the Paris Agreement and the Sustainable Development Goals (SDGs).

To that end, ENGIE has incorporated a series of climate change initiatives, such as Science Based Targets (SBT), the World Alliance for Efficient Solutions, Caring for Climate, the Hydrogen Council, Terrawatt Initiative, Business Leadership Criteria on Carbon Pricing, and TFCD (Task Force on Climate-related Financial Disclosures).

As part of its commitment to climate change mitigation and adaptation, and to sustainable development, EBE actively develops low-carbon initiatives aligned with the strategic pillars of Decarbonization, Decentralization and Digitalization, and with the United Nations established Sustainable Development Goals (SDGs).

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Our commitment to decarbonization

EBE has been rigorously controlling its own emissions since 2010, by evaluating the carbon footprint of its activities and implementing actions to reduce it. In Brazil, the company maintains a predominantly renewable energy matrix and has plans to further increase this by prioritizing investments in renewable energy ventures, such as wind farms, and solar, hydroelectric and biomass power plants.

As part of its Decarbonization pillar, the company sold the Jorge Lacerda Thermoelectric Complex (in the state of Santa Catarina) in 2021. It also intends to sell the Pampa Sul Thermoelectric Power Plant (in the state of Rio Grande do Sul).

On a global scale, the group has two non-financial objectives when it comes to climate change: (I) To reduce electricity-generated greenhouse gas emissions from 149 Mt in 2016 to 43 Mt by 2023 (considering 80 Mt in 2019); (II) For renewable energy sources to make up 58% of its total production capacity by 2030, compared to just 20% in 2016 (this figure had reached 28% in 2019).

ENGIE offers its clients decarbonization solutions, such as: carbon credits, renewable energy contracts (ENGIE-REC), and renewable energy certificates (I-REC).

In 2016, the company created ENGIE Distributed Solar Generation, with a focus on providing decentralized solar energy generation in residences and businesses, thereby integrating itself into the distributed solar energy market.

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Our Mitigation Actions

ENGIE's commitment to sustainable development is reflected in its socioenvironmental practices. In addition to its commitment to developing a renewable energy matrix and eliminating high GHG emitting assets, ENGIE Brazil Energy's climate change policy incorporates measures to reduce the consumption of fossil fuels throughout its production chain.

With that in mind, for several years now ENGIE Brazil Energy has committed itself to either selling or disbanding the last two non-renewable assets from its portfolio. In 2021, it sold the Jorge Lacerda Thermoelectric Complex in Santa Catarina, and it expects to sell the Pampa Sul Thermoelectric Power Plant in 2022.

In 2021, EBE also took important steps to digitalize its processes by automating both the control and inventory of its emissions, thereby turning the process more robust and transparent. Further actions include prioritizing the use of biofuels in its automobiles, hiring shared transportation for its employees at most of its plants, carrying out frequent teleconferences and videoconferences to limit the need for displacement, and working from home office.

At the basis of ENGIE Brazil Energy's waste management program, implemented at all its units, is the adequate disposal of waste. The company requires that all businesses hired to collect and dispose of waste follow applicable environmental legislation, especially Law nº 12.305, of 2010, which regulates the National Solid Waste Policy.

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Our Mitigation Actions

Among its Climate Change Policy commitments, the company uses the fly ash from its coal-fired thermoelectric plants to manufacture cement. Additionally, ash from biomass plants is destined for use in agricultural activities. Heavy ash, in turn, can be used as a base for asphalt paving, and, given its high pH, as a soil acidity neutralizer in the recovery of old coal tailing deposits.

Another important action is the conservation of permanent preservation areas – RRPNs, such as forests, and the plantation of new areas by its enterprises. These green areas, maintained by the company, constitute GHG sinks, thereby sequestering GHGs from the atmosphere.

Despite the company's commitment and efforts to more sustainable and carbon-reducing actions, there is always room for improvement.

Considering other, less representative, emission sources, we can highlight other initiatives that seek to reduce emissions. With respect to the transportation of employees, raw materials and waste, biofuels are encouraged and prioritized over gasoline and diesel. With respect to the dislocation of collaborators and directors, teleconferencing is used and encouraged to reduce the amount of air travel, especially since the Covid-19 pandemic.

Another important point to consider is awareness and attentiveness of emissions reducing initiatives among employees and suppliers. To that end, we intend to develop sustainability training and actions to reduce emissions, as well as provide emissions feedback to important suppliers.

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Methodology

Inventory is calculated according to the concepts, principles and guidelines established in the Brazilian GHG Protocol Program's (PBGHGP) GHG Protocol methodology, 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, CO2 removal by green areas).

The report is structured according to the specifications laid out in the ISO 14.064:2007 - Greenhouse Gas Management System – International Organization Standardization, 2007.

Calculating Emissions

To digitalize and provide greater efficiency to its GHG emissions management system, 2021 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_v2022.0.1”.

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

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Inventory Period

This inventory covers all direct and some indirect emissions from activities carried out by Engie in 2021, from all the companies in the group that maintain operations.

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Methodological Changes compared to 2021

As determined by the Brazil GHG Protocol Program, GHG emission inventories developed from 2021 onward must use the global warming potential of each GHG, as published in the IPCC Fifth Assessment Report: Climate Change 2013 (AR5). Until 2020, the PBGHGP recommended using the IPCC Fourth Assessment Report: Climate Change 2007 (AR4).

This modification entails a need to recalculate the company's historical emissions, which will be done throughout 2022.

The results presented in this report for the years 2021 and 2020 already consider the global warming potential of AR5.

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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 Limitations

EBE accounts for all its scope 1 (direct) and scope 2 emissions, and the most important sources of scope 3 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.
- Fleeting: Unintentional releases of substances, such as sulfur hexafluoride (SF6) in electrical equipment, hydrofluorocarbons (HFCs) in refrigeration and air conditioning equipment, and CO2 in cylinders.
- Land Use Change: Emissions from licensed plant suppression of native forest.
- Agricultural Activities: Use of fertilizers in agricultural activities.
- Industrial Processes: CO2 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 the anaerobic treatment of liquid effluents treated within the organization's boundaries.

Scope 2 accounts for emissions from electricity acquisition.

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: Chartered transport used to transport people between their homes and work.
- Transportation and distribution (downstream): Vehicles either rented or contracted to transport people, raw materials, and/or products/by-products that are not paid for by the company.
- 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.

The inventory also accounts for avoided emissions, carbon removal 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.

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Organizational Limitations

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.

Plants/Offices	Initials	Installed Capacity (MW)	Institution that has Operational Control	Engie Equity Share
Headquarter - Engie (Florianópolis - Office)	SEDE	-	Engie	100%
Engie – Office SP	ESC SP	-	Engie	100%
Wind Power Plant Cacimbas	ECAA	18,9	Engie	100%
Wind Power Plant Campo Largo	CECL	326,7	Engie	100%
Wind Power Plant Estrela	EEST	29,7	Engie	100%
Wind Power Plant Fleixeiras I	UEFL	30	Engie	100%
Wind Power Plant Guajirú	UEGU	30	Engie	100%
Wind Power Plant Mundaú	UEMU	30	Engie	100%
Wind Power Plant Ouro Verde	EOVE	29,7	Engie	100%
Wind Power Plant Santa Mônica	ESMA	18,9	Engie	100%
Wind Power Plant Trairi	UETR	25	Engie	100%
Wind Power Plant Tubarão	UETB	2,1	Engie	100%
Wind Power Plant Umburanas	CEUR	360	Engie	100%
Photovoltaic Plant Assú V	FVAE	30	Engie	100%
Photovoltaic Plant Cidade Azul	UFCA	3	Engie	100%
Small Hydropower Plant José Gelazio da Rocha	PHJG	24	Engie	100%
Small Hydropower Plant Rondonópolis	PHRO	27	Engie	100%
Hydropower Plant Cana Brava	UHCB	450	Engie	100%
Hydropower Plant Estreito	UHET	1.087	Consórcio Estreito	40,07%
Hydropower Plant Itá	UHIT	1.450	Consórcio Itá	68,99%
Hydropower Plant Jaguara	UHJA	424	Engie	100%
Hydropower Plant Machadinho	UHMA	1.140	Consórcio Machadinho	19,29%
Hydropower Plant Miranda	UHMI	408	Engie	100%
Hydropower Plant Passo Fundo	UHPF	226	Engie	100%
Hydropower Plant Ponte de Pedra	UHPP	176	Engie	100%
Hydropower Plant Salto Osório	UHSO	1.078	Engie	100%
Hydropower Plant Salto Santiago	UHSS	1.420	Engie	100%
Hydropower Plant São Salvador	UHSA	243	Engie	100%
Thermal Complex Jorge Lacerda	CTJL	857	Engie	100%
Thermal Plant Pampa Sul	UTPS	345	Engie	100%
Cogeneration Unit Lages	UCLA	28	Engie	100%
Thermal Plant Ferrari	UTFE	80,5	Engie	100%
Thermal Plant Ibitiúva	UTIB	33	Engie	69,26%
Engie Energia Solar Distribuída	EGSD	N.A.	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



Offices



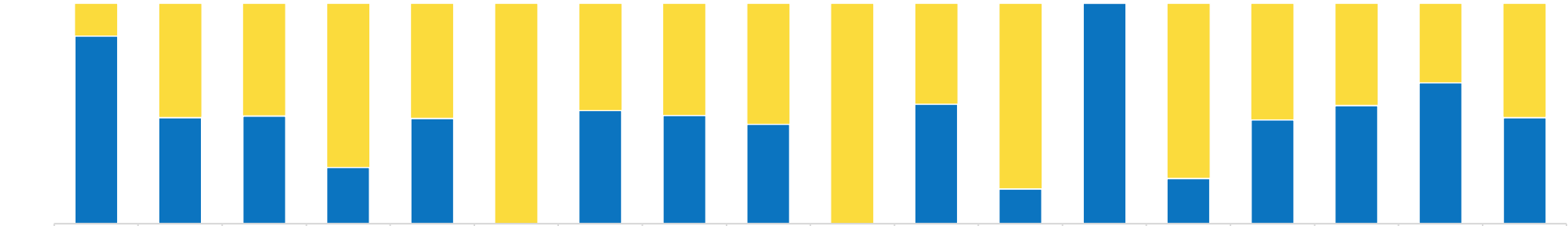
Renewable



Thermal

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Emissions Comparison - Operational Control 2021 x 2020 (tCO_2e)



	Agricultural Activities	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Land Use Change	Industrial Processes	Waste	Electricity Acquisition	Indirect Stationary Combustion	Commuting	Wastewater Treatment - Scope 03	Indirect Fugitive Emissions	Waste - Scope 03	Transport and Distribution (downstream)	Transport & Distribution (upstream)	Business Travel	Total
2020	1,43	5.835.744,	390,21	65,96	821,60	1.328,43	12.353,88	8,94	14.596,32	5,40	333,57	43,76	-	191,54	6.943,37	7.900,42	214,68	5.880.944,
2021	8,26	5.416.295,	372,47	22,56	751,71	0,14	13.020,10	8,63	11.991,96	-	395,08	8,20	0,03	49,27	6.187,99	9.141,48	380,97	5.458.634,

Analysis

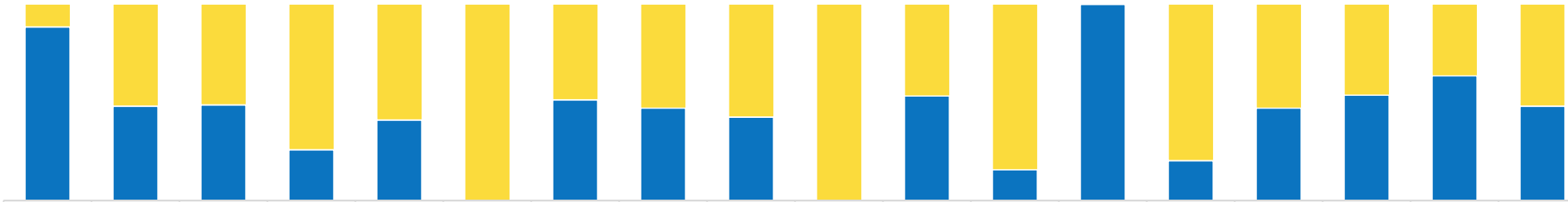
Corporate emissions decreased by 7.2% from 2021 to 2020. This decrease can mainly be attributed to a decrease in stationary coal-fired fuel emissions from CTJL (-9%), an asset traded by EBE in October 2021, and UTPS (-1%).

Also noteworthy are decreases in emissions related to legal deforestation of native forest (-99%) and energy consumption (by 26%), which are mainly linked to the non-accounting of hydroelectric plant energy consumption-related emissions while acting as synchronous condenser to the SIN.

After carrying out a regulatory analysis and benchmarking research, it was identified that these emissions should be accounted for within the energy losses of the SIN, rather than by the agents carrying out this role.

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Emissions Comparison - Equity Interest 2021 x 2020 (tCO_2e)



	Agricultural Activities	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Land Use Change	Industrial Processes	Waste	Electricity Acquisition	Indirect Stationary Combustion	Commuting	Wastewater Treatment - Scope 03	Indirect Fugitive Emissions	Waste - Scope 03	Transport and Distribution (downstream)	Transport & Distribution (upstream)	Business Travel	Total
2020	2,86	5.834.280	399,18	66,45	1.101,86	1.328,43	12.353,88	9,66	16.459,89	5,40	394,99	43,76	-	192,01	6.944,18	7.832,26	223,39	5.881.638
2021	22,01	5.415.388	379,13	23,20	767,97	0,14	13.020,10	8,63	12.170,51	-	450,88	8,20	0,03	49,00	6.187,99	9.116,14	391,22	5.457.983

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Total Emissions by Source and Scope (tCO_2e/ %)

Emission Sources	Operational Control		Equity Share	
	Total Emissions (tCO_2e)	%	Total Emissions (tCO_2e)	%
Escopo 1	**5.430.479,71**	**99,5%**	**5.429.609,62**	**99,5%**
Agricultural Activities	8,26	0,0%	22,01	0,0%
Stationary Combustion	5.416.295,85	99,2%	5.415.388,44	99,2%
Mobile Combustion	372,47	0,0%	379,13	0,0%
Wastewater Treatment	22,56	0,0%	23,20	0,0%
Fugitive Emissions	751,71	0,0%	767,97	0,0%
Land Use Change	0,14	0,0%	0,14	0,0%
Industrial Processes	13.020,10	0,2%	13.020,10	0,2%
Waste	8,63	0,0%	8,63	0,0%
Scope 2	**11.991,96**	**0,2%**	**12.170,51**	**0,2%**
Electricity Acquisition	11.991,96	0,2%	12.170,51	0,2%
Scope 3	**16.163,02**	**0,3%**	**16.203,47**	**0,3%**
Commuting	395,08	0,0%	450,88	0,0%
Wastewater Treatment - Scope 03	8,20	0,0%	8,20	0,0%
Indirect Fugitive Emissions	0,03	0,0%	0,03	0,0%
Waste - Scope 03	49,27	0,0%	49,00	0,0%
Transport and Distribution (downstream)	6.187,99	0,1%	6.187,99	0,1%
Transport & Distribution (upstream)	9.141,48	0,2%	9.116,14	0,2%
Business Travel	380,97	0,0%	391,22	0,0%
Total	**5.458.634,69**	**100%**	**5.457.983,59**	**100%**

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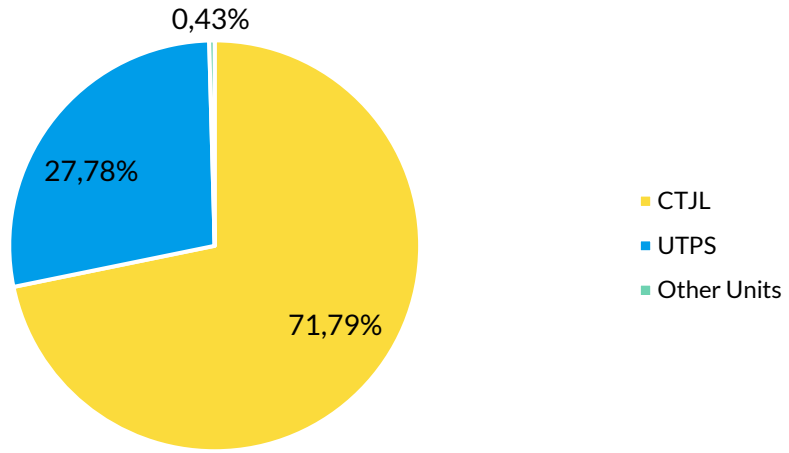
Analysis

Both CTJL and UTPS revealed decreases in 2021 as a result of lower emissions from stationary combustion. The hydroelectric plants that act as synchronous condensers to the SIN (UHSS, UHPF, and UHIT) revealed relevant decreases as a result of not accounting for the energy consumption emissions associated with this role. The biomass power plants (UTIB, UCLA, UTFE) also revealed a decrease in emissions as a result of reduced operational activities and, consequently, reduced consumption of biomass.

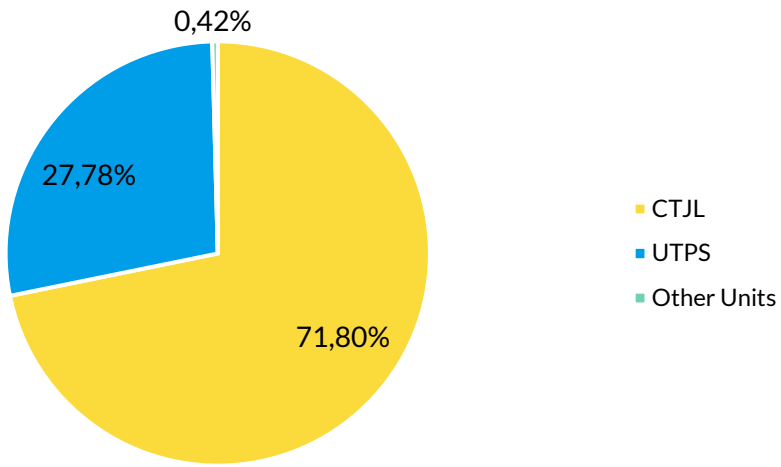
Business Units	Operational Control						Equity Share					
	Total Emissions				Variation		Total Emissions				Variation	
	2021		2020		2021 x 2020		2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%
CTJL	3.918.864,09	71,79%	4.317.594,88	73,4%	(398.730,79)	-9,2%	3.918.864,09	71,8%	4.317.594,88	73,4%	(398.730,79)	-9,2%
UTPS	1.516.264,25	27,8%	1.526.459,19	26,0%	(10.194,94)	-0,7%	1.516.264,25	27,8%	1.526.459,19	26,0%	(10.194,94)	-0,7%
UTFE	14.280,19	0,3%	15.543,90	0,3%	(1.263,72)	-8,1%	14.280,19	0,3%	15.543,90	0,3%	(1.263,72)	-8,1%
UTIB	3.257,88	0,1%	5.277,13	0,1%	(2.019,25)	-38,3%	2.256,41	0,0%	3.654,94	0,1%	(1.398,53)	-38,3%
UCLA	2.291,97	0,0%	3.117,67	0,1%	(825,70)	-26,5%	2.291,97	0,0%	3.117,67	0,1%	(825,70)	-26,5%
UHSO	1.169,80	0,0%	1.746,87	0,0%	(577,08)	-33,0%	1.169,80	0,0%	1.746,87	0,0%	(577,08)	-33,0%
SEDE	697,35	0,0%	493,07	0,0%	204,28	41,4%	697,35	0,0%	493,07	0,0%	204,28	41,4%
UHSS	530,80	0,0%	6.807,20	0,1%	(6.276,40)	-92,2%	530,80	0,0%	6.807,20	0,1%	(6.276,40)	-92,2%
UHJA	197,61	0,0%	90,71	0,0%	106,89	117,8%	197,61	0,0%	90,71	0,0%	106,89	117,8%
CEUR	140,98	0,0%	344,27	0,0%	(203,29)	-59,0%	140,98	0,0%	344,27	0,0%	(203,29)	-59,0%
CECL	137,98	0,0%	84,50	0,0%	53,48	63,3%	137,98	0,0%	84,50	0,0%	53,48	63,3%
FVAE	120,07	0,0%	48,43	0,0%	71,64	147,9%	120,07	0,0%	48,43	0,0%	71,64	147,9%
PHJG	110,47	0,0%	89,18	0,0%	21,29	23,9%	110,47	0,0%	89,18	0,0%	21,29	23,9%
UHPF	104,05	0,0%	2.849,90	0,0%	(2.745,85)	-96,3%	104,05	0,0%	2.849,90	0,0%	(2.745,85)	-96,3%
CETR	95,61	0,0%	118,02	0,0%	(22,41)	-19,0%	95,61	0,0%	118,02	0,0%	(22,41)	-19,0%
UHMI	89,48	0,0%	51,92	0,0%	37,56	72,4%	89,48	0,0%	51,92	0,0%	37,56	72,4%
UHPP	69,12	0,0%	55,32	0,0%	13,80	24,9%	69,12	0,0%	55,32	0,0%	13,80	24,9%
EGSD	67,42	0,0%	86,75	0,0%	(19,33)	-22,3%	67,42	0,0%	86,75	0,0%	(19,33)	-22,3%
UFCA	51,34	0,0%	3,69	0,0%	47,64	1289,8%	51,34	0,0%	3,69	0,0%	47,64	1289,8%
UHSA	47,40	0,0%	41,75	0,0%	5,65	13,5%	47,40	0,0%	41,75	0,0%	5,65	13,5%
UHCB	22,17	0,0%	21,98	0,0%	0,20	0,9%	22,17	0,0%	21,98	0,0%	0,20	0,9%
PHRO	10,02	0,0%	6,80	0,0%	3,21	47,2%	10,02	0,0%	6,80	0,0%	3,21	47,2%
UETB	7,48	0,0%	7,45	0,0%	0,03	0,4%	7,48	0,0%	7,45	0,0%	0,03	0,4%
ESC SAO	7,17	0,0%	3,89	0,0%	3,28	84,3%	7,17	0,0%	3,89	0,0%	3,28	84,3%
UHET	-	0,0%	-	0,0%	-	0,0%	80,83	0,0%	124,91	0,0%	(44,08)	-35,3%
UHIT	-	0,0%	-	0,0%	-	0,0%	243,21	0,0%	1.793,17	0,0%	(1.549,97)	-86,4%
UHMA	-	0,0%	-	0,0%	-	0,0%	26,34	0,0%	398,38	0,0%	(372,04)	-93,4%
Total	5.458.634,69	100,0%	5.880.944,49	100,0%	(422.309,80)	-7,2%	5.457.983,59	100,0%	5.881.638,76	100,0%	(423.655,17)	-7,2%

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Business Units Relevance - Operational Control (%)



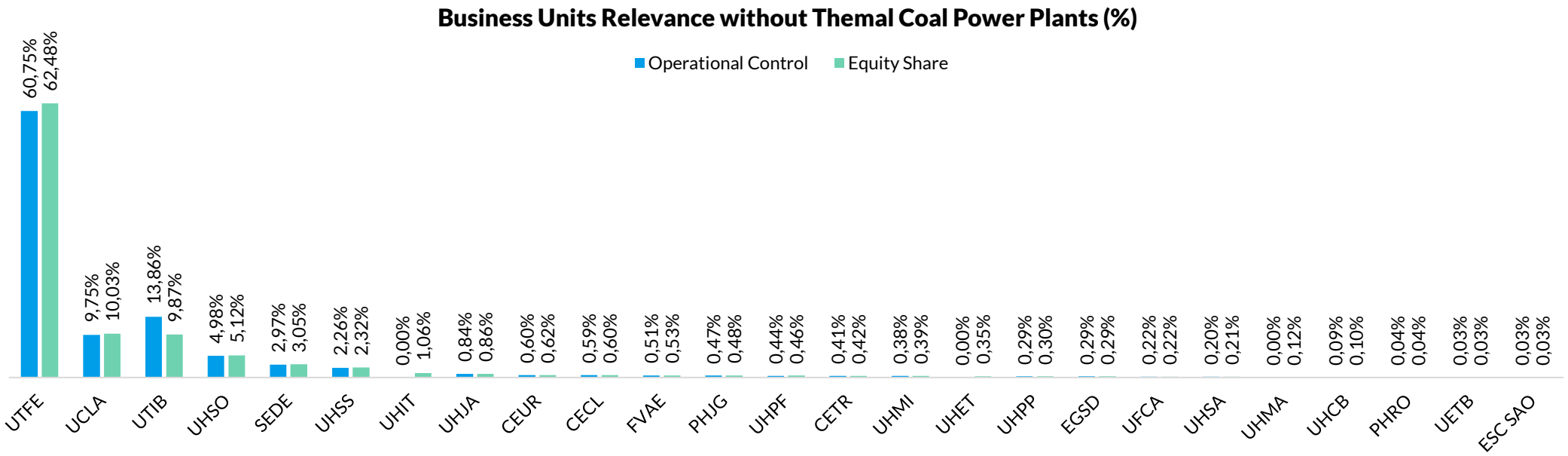
Business Units Relevance - Equity Share (%)



Analysis

Together, CTJL and UTPS are responsible for over 99% of EBE's emissions.

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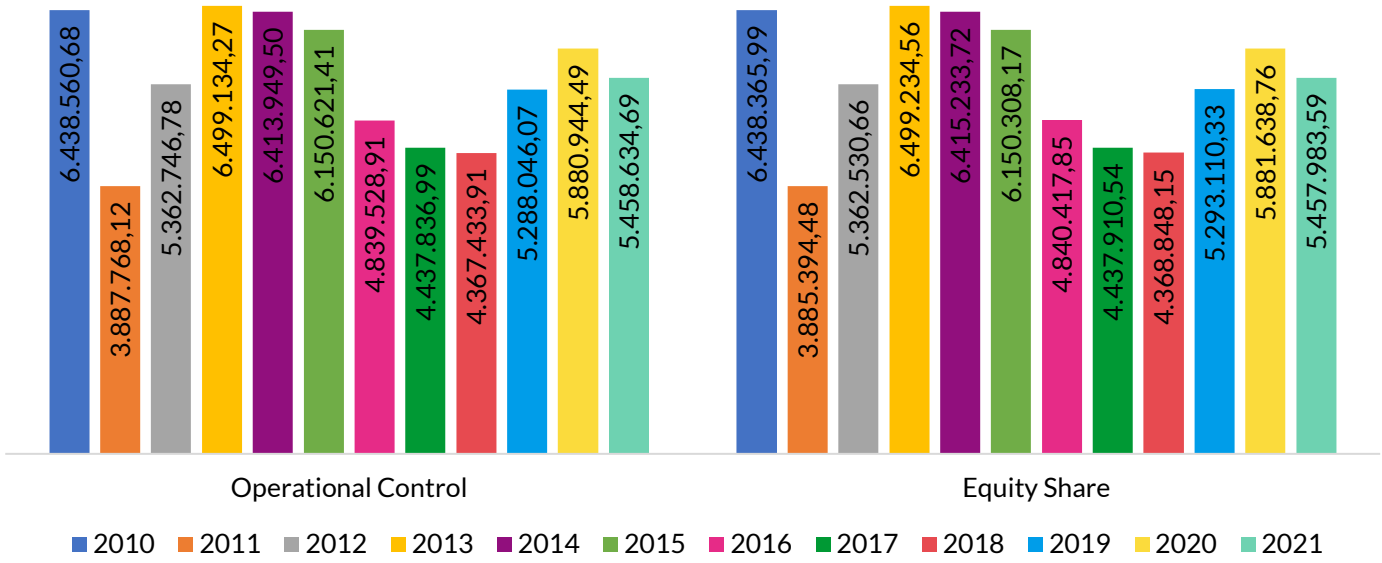


Analysis

In the absence of these assets, the biomass power plants (UTIB, UTFE and UCLA) are most responsible for the company's emissions, as a result of the CH4 and N2O emissions from the burning of biomass to generate energy.

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EBE Emissions Evolution - from 2010 to 2021 (tCO_2e)



Analysis

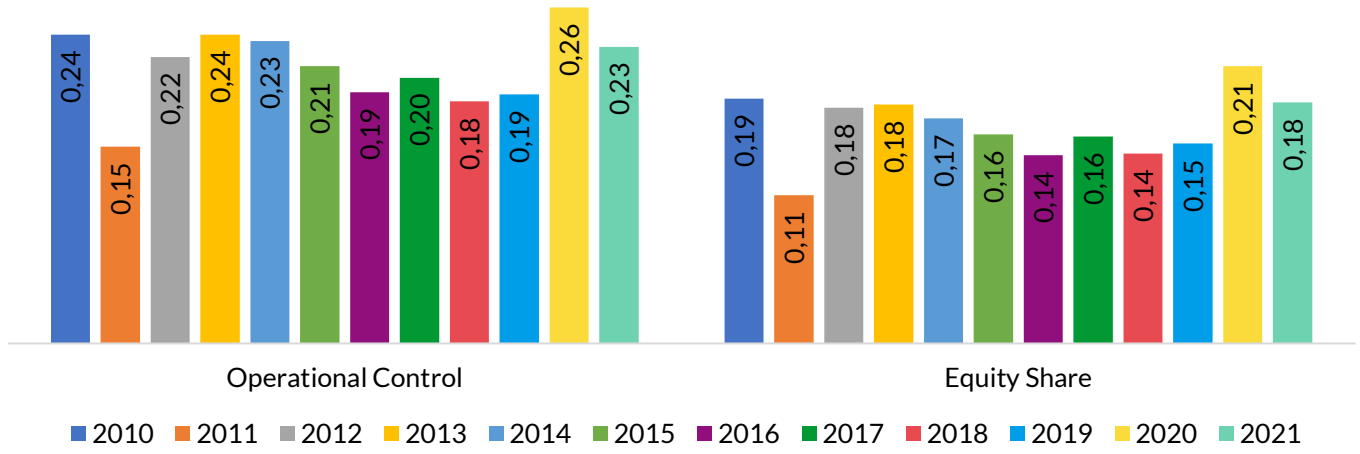
In addition to the 7% decrease in emissions since 2020, in 2021 EBE's emissions decreased by 15% relative to its baseline year (2010) as a result of lower coal-fired thermal power generation.

Developed by:
Ecofinance NEGÓCIOS

Indicator Emissions (tCO_2e)/ Net Electricity Generation (DEL-REC) (MWh) per Plant - Year 2021

Units	tCO_2/MWh - CO	tCO_2/MWh - PS
CECL	0,0001	0,0001
CETR	0,0001	0,0001
CEUR	0,0001	0,0001
CTJL	1,1774	1,1774
FVAE	0,0016	0,0016
PHJG	0,0022	0,0022
PHRO	0,0002	0,0002
UCLA	0,0449	0,0449
UETB	0,0074	0,0074
UHCB	0,0000	0,0000
UHET	-	0,0000
UHIT	-	0,0001
UHJA	0,0001	0,0001
UHMA	-	0,0000
UHMI	0,0001	0,0001
UHPF	0,0002	0,0002
UHPP	0,0001	0,0001
UHSA	0,0001	0,0001
UHSO	0,0004	0,0004
UHSS	0,0001	0,0001
UTFE	0,0518	0,0518
UTIB	0,0472	0,0327
UTPS	1,0877	1,0877
UFCA	0,0290	0,0290

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

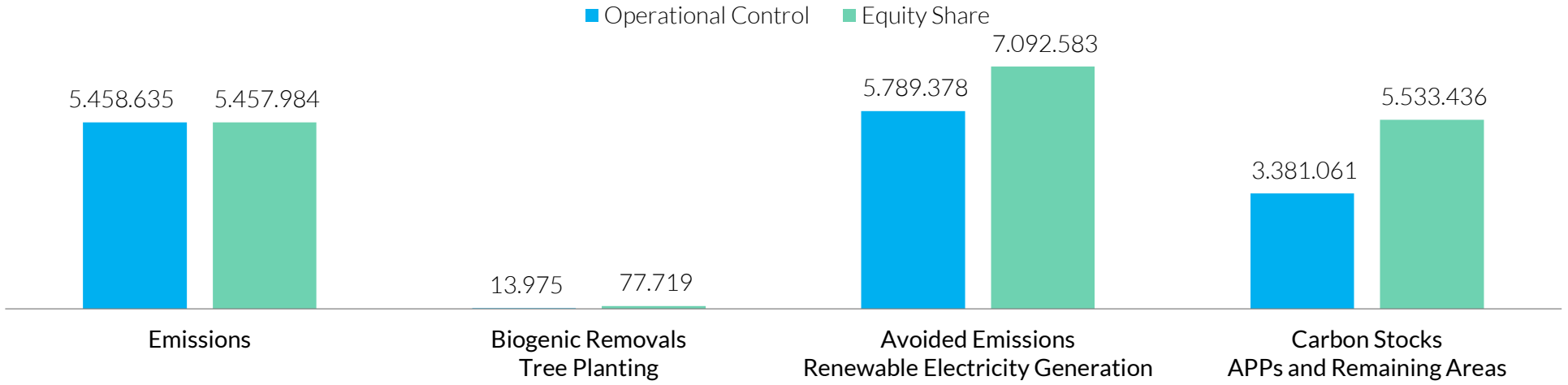


Analysis

Relative to 2020, the NET generation of emissions indicator decreased by 11% through its approach to operational control, and by 13% through its approach to equity ownership. Relative to the base year, these indicators are currently 3.8% and 1.1% lower, respectively.

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Emissions Balance (tCO_2e)



Analysis

The avoided emissions provided by EBE's renewable, clean energy generation enterprises exceed the company's emissions.

Furthermore, the company has a relevant biogenic carbon stock in both permanent preservation and remnant areas.

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Emissions per GHG (Metric Tonnes) - Operational Control

Units	Scope 1 (tGEE)							Scope 2 (tGEE)	Scope 3 (tGEE)		
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-32	SF_6	CO_2	CO_2	CH_4	N_2O
CECL	41,19	0,31	0,00	-	-	-	0,00	30,40	32,83	0,00	0,00
CETR	9,33	0,01	0,00	0,01	-	0,01	0,00	24,65	12,49	0,00	0,00
CEUR	2,91	0,15	0,00	-	-	-	0,00	32,54	18,82	0,00	0,00
CTJL	3.883.108,58	42,20	60,57	0,02	0,02	0,02	-	7.291,27	10.937,57	1,21	0,63
EGSD	49,65	0,02	0,01	-	-	-	-	0,78	14,73	0,00	0,00
ESC SAO	0,01	-	-	-	-	-	-	7,16	-	-	-
FVAE	7,42	0,01	0,00	0,01	-	0,01	-	84,22	0,27	0,00	0,00
PHJG	0,64	0,00	0,00	-	-	-	0,00	5,71	4,68	0,00	0,00
PHRO	0,24	0,00	0,00	-	-	-	-	4,81	4,73	0,00	0,00
SEDE	43,08	0,01	0,00	0,03	-	0,03	-	219,16	297,10	0,33	0,02
UCLA	142,16	26,73	3,57	0,01	-	0,01	-	158,10	260,75	0,14	0,02
UETB	-	-	-	-	-	-	-	7,48	-	-	-
UFCA	0,05	-	-	-	-	-	-	51,28	-	-	-
UHCB	1,27	0,02	0,01	-	-	-	-	0,33	17,83	0,01	0,00
UHET	-	-	-	-	-	-	-	-	-	-	-
UHIT	-	-	-	-	-	-	-	-	-	-	-
UHJA	6,64	0,08	0,00	0,00	-	0,00	-	120,29	60,83	0,08	0,00
UHMA	-	-	-	-	-	-	-	-	-	-	-
UHMI	6,81	0,01	0,00	0,00	-	0,00	-	24,96	43,19	0,04	0,00
UHPF	4,32	0,01	0,00	-	-	-	-	52,62	45,33	0,02	0,00
UHPP	19,87	0,02	0,00	0,00	-	0,00	-	0,08	45,19	0,01	0,00
UHSA	3,79	0,04	0,00	0,00	-	0,00	-	0,00	33,43	0,02	0,00
UHSO	10,98	0,01	0,00	0,00	0,01	0,00	-	988,00	134,76	0,12	0,01
UHSS	13,80	0,02	0,00	-	-	-	-	439,47	60,68	0,33	0,03
UTFE	4,44	213,34	28,45	-	-	-	-	96,38	656,86	0,05	0,04
UTIB	8,95	46,84	6,25	-	-	-	-	90,90	187,53	0,04	0,01
UTPS	1.504.535,48	15,24	22,11	0,03	0,04	0,03	-	2.261,37	2.968,61	0,36	0,16
Total	**5.388.021,59**	**345,06**	**120,97**	**0,11**	**0,07**	**0,11**	**0,01**	**11.991,96**	**15.838,20**	**2,77**	**0,93**

Developed by:
Ecofinance NEGÓCIOS

Emissions per GHG (Metric Tonnes) - Equity Share

Units	Scope 1 (tGEE)							Scope 2 (tGEE)	Scope 3 (tGEE)		
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-32	SF_6	CO_2	CO_2	CH_4	N_2O
CECL	41,19	0,31	0,00	-	-	-	0,00	30,40	32,83	0,00	0,00
CETR	9,33	0,01	0,00	0,01	-	0,01	0,00	24,65	12,49	0,00	0,00
CEUR	2,91	0,15	0,00	-	-	-	0,00	32,54	18,82	0,00	0,00
CTJL	3.883.108,58	42,20	60,57	0,02	0,02	0,02	-	7.291,27	10.937,57	1,21	0,63
EGSD	49,65	0,02	0,01	-	-	-	-	0,78	14,73	0,00	0,00
ESC SAO	0,01	-	-	-	-	-	-	7,16	-	-	-
FVAE	7,42	0,01	0,00	0,01	-	0,01	-	84,22	0,27	0,00	0,00
PHJG	0,64	0,00	0,00	-	-	-	0,00	5,71	4,68	0,00	0,00
PHRO	0,24	0,00	0,00	-	-	-	-	4,81	4,73	0,00	0,00
SEDE	43,08	0,01	0,00	0,03	-	0,03	-	219,16	297,10	0,33	0,02
UCLA	142,16	26,73	3,57	0,01	-	0,01	-	158,10	260,75	0,14	0,02
UETB	-	-	-	-	-	-	-	7,48	-	-	-
UFCA	0,05	-	-	-	-	-	-	51,28	-	-	-
UHCB	1,27	0,02	0,01	-	-	-	-	0,33	17,83	0,01	0,00
UHET	8,70	0,01	0,05	0,00	-	0,00	0,00	14,93	29,26	0,01	0,00
UHIT	6,88	0,02	0,00	-	-	-	-	179,69	54,63	0,01	0,00
UHJA	6,64	0,08	0,00	0,00	-	0,00	-	120,29	60,83	0,08	0,00
UHMA	0,75	0,00	0,00	-	-	-	-	11,88	13,36	0,00	0,00
UHMI	6,81	0,01	0,00	0,00	-	0,00	-	24,96	43,19	0,04	0,00
UHPF	4,32	0,01	0,00	-	-	-	-	52,62	45,33	0,02	0,00
UHPP	19,87	0,02	0,00	0,00	-	0,00	-	0,08	45,19	0,01	0,00
UHSA	3,79	0,04	0,00	0,00	-	0,00	-	0,00	33,43	0,02	0,00
UHSO	10,98	0,01	0,00	0,00	0,01	0,00	-	988,00	134,76	0,12	0,01
UHSS	13,80	0,02	0,00	-	-	-	-	439,47	60,68	0,33	0,03
UTFE	4,44	213,34	28,45	-	-	-	-	96,38	656,86	0,05	0,04
UTIB	6,20	32,44	4,33	-	-	-	-	62,96	129,88	0,03	0,01
UTPS	1.504.535,48	15,24	22,11	0,03	0,04	0,03	-	2.261,37	2.968,61	0,36	0,16
Total	**5.388.035,17**	**330,69**	**119,10**	**0,11**	**0,07**	**0,11**	**0,01**	**12.170,51**	**15.877,81**	**2,77**	**0,94**

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Biogenic Emissions by Source and Scope (tCO_2e/ %)

Emission Sources	Operational Control		Equity Share	
	Total Emissions (tCO_2e)	%	tCO_2e	%
Scope 1	**959.098,11**	**99,8%**	**911.107,92**	**99,8%**
Stationary Combustion	958.742,29	99,8%	910.729,42	99,7%
Land Use Change	-	0,0%	-	0,0%
Mobile Combustion	355,82	0,0%	378,50	0,0%
Scope 3	**1.998,78**	**0,2%**	**2.017,71**	**0,2%**
Transport and Distribution (upstream)	1.172,47	0,1%	1.184,51	0,1%
Transport and Distribution (downstream)	742,06	0,1%	742,06	0,1%
Commuting	55,14	0,0%	61,87	0,0%
Business Travel	29,11	0,0%	29,27	0,0%
Indirect Stationary Combustion	-	0,0%	-	0,0%
Total	**961.096,89**	**100%**	**913.125,63**	**100%**

Analysis

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

Analysis

In 2021, 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	%
CTJL	58,21	30,0%	58,21	27,28%
UTPS	57,56	29,6%	57,56	26,97%
UHSA	16,75	8,6%	16,75	7,85%
UHCB	13,20	6,8%	13,20	6,19%
PHRO	10,10	5,2%	10,10	4,73%
CETR	9,86	5,1%	9,86	4,62%
UHPP	9,22	4,7%	9,22	4,32%
UHMA	-	0,0%	7,44	3,48%
UHET	-	0,0%	6,11	2,86%
UHIT	-	0,0%	5,59	2,62%
SEDE	4,84	2,5%	4,84	2,27%
UHSS	4,75	2,4%	4,75	2,23%
FVAE	3,70	1,9%	3,70	1,73%
UCLA	2,46	1,3%	2,46	1,15%
PHJG	2,20	1,1%	2,20	1,03%
UHSO	1,41	0,7%	1,41	0,66%
Total	**194,26**	**100%**	**213,38**	**100%**

Developed by:
Ecofinance NEGÓCIOS

Head Office
Florianópolis

Office
São Paulo

EGSD
Engie Energia Solar Distribuída

Emissions by Source (tCO_2e) 2021 x 2020 | Annual Growth (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Stationary Combustion	Mobile Combustion	Fugitive Emissions	Waste	Electricity Acquisition	Wastewater Treatment - Scope 03	Waste - Scope 03	Business Travel	Total
2020	28,14	-	190,05	0,52	105,94	43,76	0,61	124,04	493,07
2021	26,32	17,55	123,26	0,00	219,16	8,20	0,01	302,85	697,35

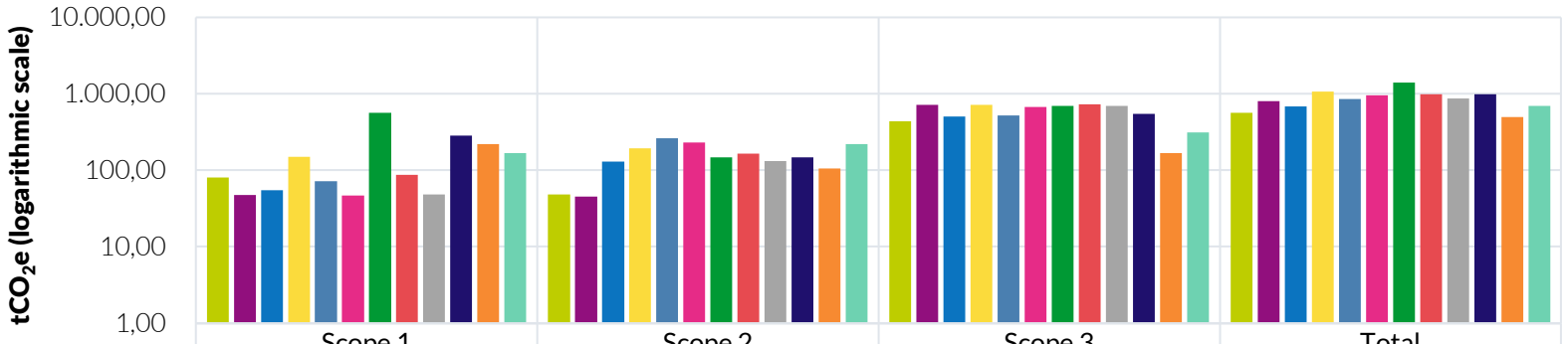
Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**167,13**	**24,0%**	**218,72**	**44,4%**	**(51,58)**	**-23,6%**
Stationary Combustion	26,32	3,8%	28,14	5,7%	(1,83)	-6,5%
Mobile Combustion	17,55	2,5%	-	0,0%	17,55	100,0%
Fugitive Emissions	123,26	17,7%	190,05	38,5%	(66,79)	-35,1%
Waste	0,00	0,0%	0,52	0,1%	(0,52)	-99,9%
Scope 2	**219,16**	**31,4%**	**105,94**	**21,5%**	**113,21**	**106,9%**
Electricity Acquisition	219,16	31,4%	105,94	21,5%	113,21	106,9%
Scope 3	**311,07**	**44,6%**	**168,41**	**34,2%**	**142,65**	**84,7%**
Wastewater Treatment - Scope 03	8,20	1,2%	43,76	8,9%	(35,56)	-81,3%
Waste - Scope 03	0,01	0,0%	0,61	0,1%	(0,61)	-98,6%
Business Travel	302,85	43,4%	124,04	25,2%	178,82	144,2%
Total	**697,35**	**100%**	**493,07**	**100%**	**204,28**	**41,4%**

Analysis

Emissions from the Florianópolis headquarters increased by 41% from 2020 to 2021. This increase can be associated with higher emissions from grid energy consumption (106%) as a result of an increase in the SIN emission factor (105%), and from increased business travel (144%) as a result of the pandemic cooling down. These increased emissions were offset by a decrease in fleeting emissions and effluents.

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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

Analysis

Emissions increased by 41% from 2020 to 2021 as a result of a return to in-person activities. Emissions increased by 22% relative to the base year (2010).

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Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**9,15**	**27,8%**	**3,35**	**30,4%**	**5,81**	**173,6%**
Mobile Combustion	6,10	18,5%	-	0,0%	6,10	100,0%
Stationary Combustion	3,05	9,3%	3,35	30,4%	(0,29)	-8,8%
Scope 3	**23,79**	**72,2%**	**7,66**	**69,6%**	**16,13**	**210,7%**
Business Travel	23,79	72,2%	7,66	69,6%	16,13	210,7%
Total	**32,95**	**100%**	**11,00**	**100%**	**21,94**	**199,4%**

Analysis

Relative to 2020, biogenic emissions increased as a result of increased emissions from business travel and mobile combustion.

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Emissions by Source (tCO_2e) 2021 x 2020 | Annual Growth (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Fugitive Emissions	Electricity Acquisition	Business Travel	Total Geral
2020	0,01	3,43	0,45	3,89
2021	0,01	7,16	-	7,17

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**0,01**	**0,1%**	**0,01**	**0,2%**	**-**	**0,0%**
Fugitive Emissions	0,01	0,1%	0,01	0,2%	-	0,0%
Scope 2	**7,16**	**99,9%**	**3,43**	**88,2%**	**3,73**	**108,8%**
Electricity Acquisition	7,16	99,9%	3,43	88,2%	3,73	108,8%
Scope 3	**-**	**0,0%**	**0,45**	**11,7%**	**(0,45)**	**-100,0%**
Business Travel	-	0,0%	0,45	11,7%	(0,45)	-100,0%
Total Geral	**7,17**	**100%**	**3,89**	**100%**	**3,28**	**84,3%**

Analysis

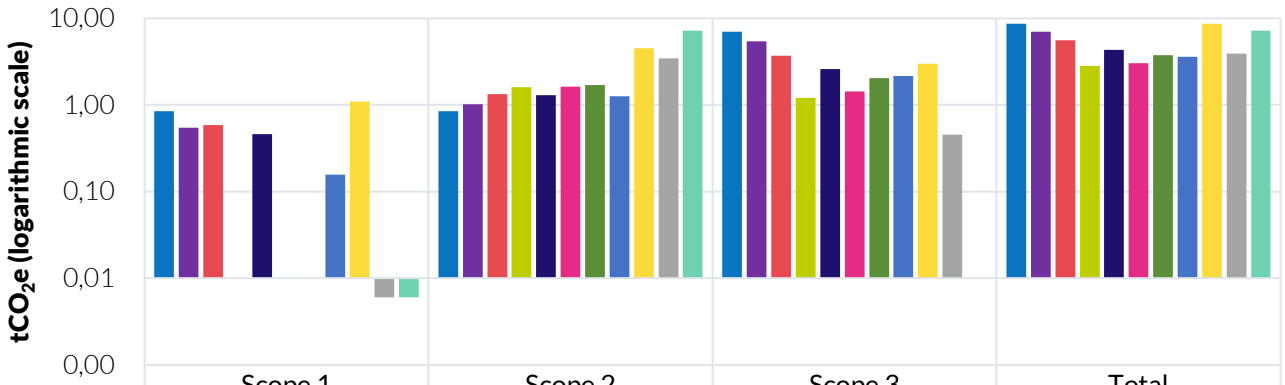
Emissions increased by 84% in 2021 due to the increase in the emissions factor (105%), offset by reduced emissions from business travel.

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Analysis

Increased emissions from energy consumption associated with the greater SIN emission factor, led to higher emission levels than the office's historical values.

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
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

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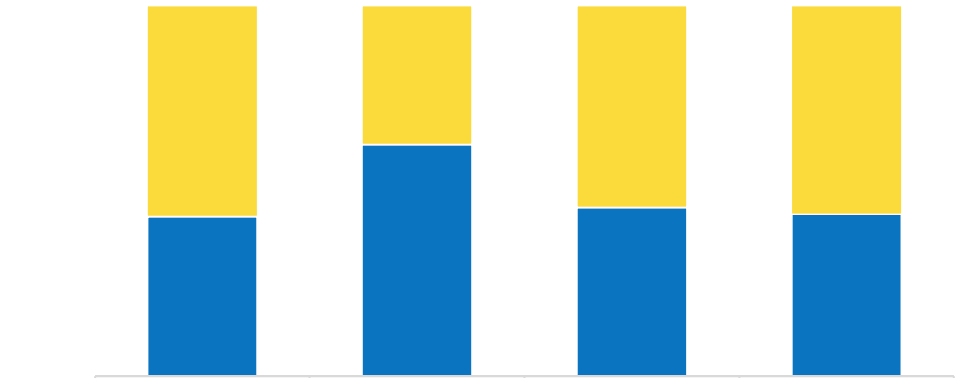
Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 3	**-**	**100,0%**	**0,03**	**100,0%**	**(0,03)**	**-100,0%**
Business Travel	-	100,0%	0,03	100,0%	(0,03)	-100,0%
Total Geral	**-**	**100%**	**0,03**	**100%**	**(0,03)**	**-100,0%**

Analysis

No biogenic emissions were reported for this office in 2021.

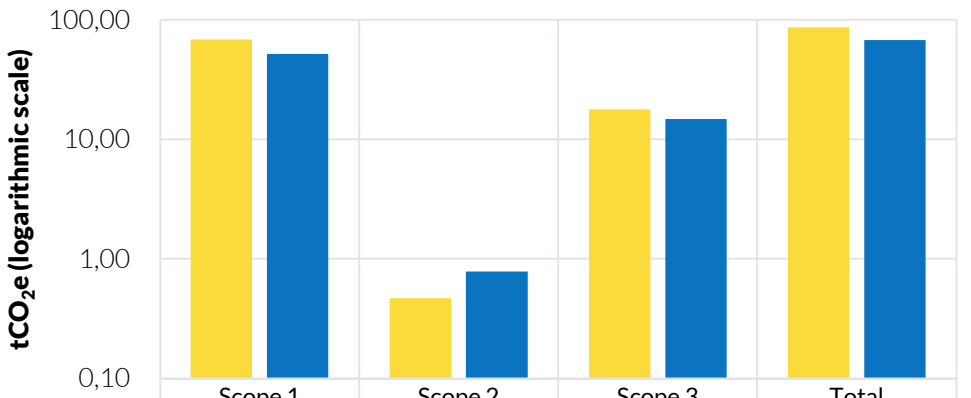
Emissions by Source (tCO_2e) 2021 x 2020 | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Mobile Combustion	Electricity Acquisition	Air Travel	Total
2020	68,51	0,47	17,77	86,75
2021	51,78	0,78	14,86	67,42

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



	Scope 1	Scope 2	Scope 3	Total
2020	68,51	0,47	17,77	86,75
2021	51,78	0,78	14,86	67,42

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**51,78**	**76,8%**	**68,51**	**79,0%**	**(16,73)**	**-24,4%**
Mobile Combustion	51,78	76,8%	68,51	79,0%	(16,73)	-24,4%
Scope 2	**0,78**	**1,2%**	**0,47**	**0,5%**	**0,31**	**66,9%**
Electricity Acquisition	0,78	1,2%	0,47	0,5%	0,31	66,9%
Scope 3	**14,86**	**22,0%**	**17,77**	**20,5%**	**(2,92)**	**-16,4%**
Air Travel	14,86	22,0%	17,77	20,5%	(2,92)	-16,4%
Total	**67,42**	**100%**	**86,75**	**100%**	**(19,33)**	**-22,3%**

Analysis

EGSD emissions decreased by 22% from 2020 to 2021, the former being the first year they were accounted for. Emissions from mobile combustion (24%) and business travel (16%) decreased significantly, attenuated by an increase in emissions from the purchase of grid energy (66%) as a result of an increase in the SIN emission factor (105%).

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Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**12,67**	**100,0%**	**8,19**	**100,0%**	**4,47**	**54,6%**
Mobile Combustion	12,67	100,0%	8,19	100,0%	4,47	54,6%
Total	**12,67**	**100%**	**8,19**	**100%**	**4,47**	**54,6%**

Analysis

Biogenic emissions from EGSD increased by 54% relative to 2020.

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REMG
Minas Gerais Regional

RERI
Rio Iguaçu Regional

RERT
Rio Tocantins Regional

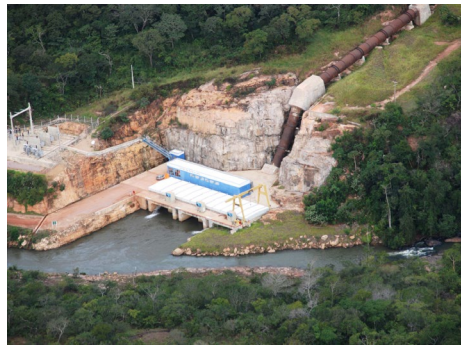
RERU
Rio Uruguai Regional

RRCR
Renováveis do Ceará e do Rio Grande do Norte Regional

RRBA
Renováveis da Bahia 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) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO2e)



	Stationary Combustion	Mobile Combustion	Fugitive Emissions	Waste	Electricity Acquisition	Waste - Scope 03	Transport and Distribution (upstream)	Total
2020	0,56	0,66	81,78	0,01	1,52	0,03	4,62	89,18
2021	0,23	0,47	99,18	-	5,71	0,00004	4,87	110,47

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**99,89**	**90,4%**	**83,01**	**93,1%**	**16,88**	**20,3%**
Stationary Combustion	0,23	0,2%	0,56	0,6%	(0,33)	-58,5%
Mobile Combustion	0,47	0,4%	0,66	0,7%	(0,19)	-28,7%
Fugitive Emissions	99,18	89,8%	81,78	91,7%	17,40	21,3%
Waste	-	0,0%	0,01	0,0%	(0,01)	-100,0%
Scope 2	**5,71**	**5,2%**	**1,52**	**1,7%**	**4,19**	**275,9%**
Electricity Acquisition	5,71	5,2%	1,52	1,7%	4,19	275,9%
Scope 3	**4,87**	**4,4%**	**4,65**	**5,2%**	**0,22**	**4,8%**
Waste - Scope 03	0,00004	0,0%	0,03	0,0%	(0,03)	-99,8%
Transport and Distribution (upstream)	4,87	4,4%	4,62	5,2%	0,25	5,4%
Total	**110,47**	**100%**	**89,18**	**100%**	**21,29**	**23,9%**

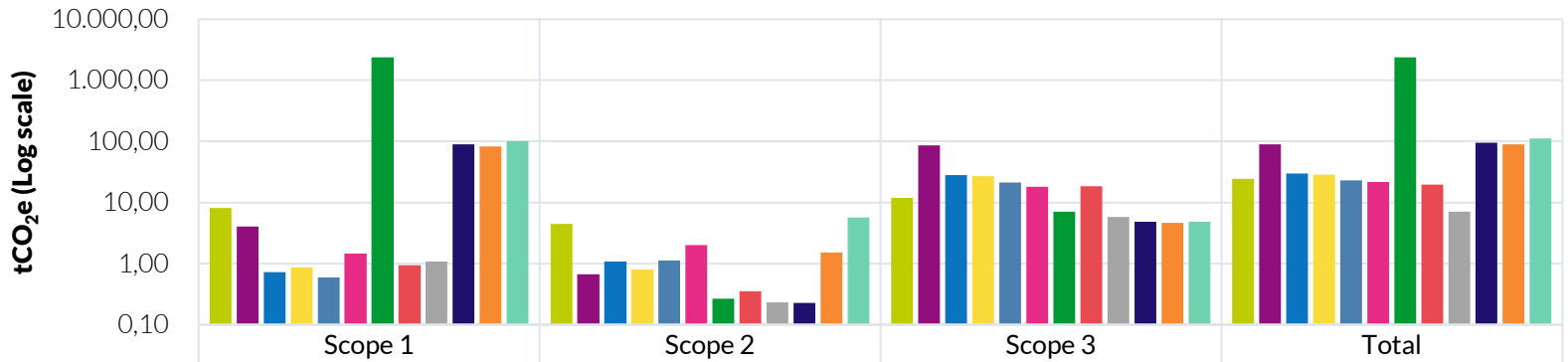
Analysis

In 2021, PHJG emissions increased by 24% relative to 2020, which is mainly attributed to fleeting emissions (21%).

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | **Emissions by scope (tCO_2e) - Annual Growth** | Biogenic Emissions and Balance

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	0,2342	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

Analysis

PHJG emissions increased by 352% from the EBE inventory base year (2010).

Greenhouse Gases Emissions Inventory 2021

Institutional

Methodology

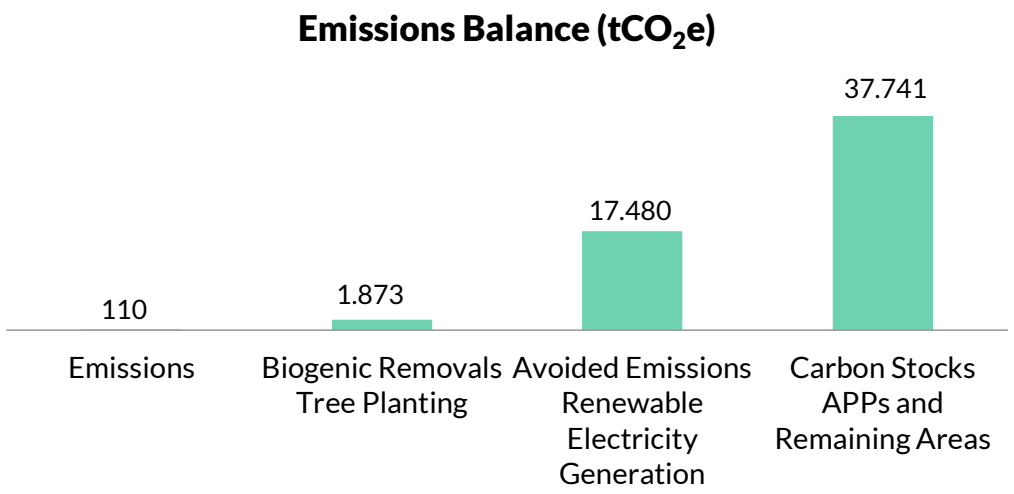
Results

Return

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**5,61**	**82,7%**	**5,34**	**85,1%**	**0,28**	**5,2%**
Mobile Combustion	5,58	82,3%	5,27	84,0%	0,31	5,9%
Stationary Combustion	0,03	0,4%	0,07	1,1%	(0,04)	-55,9%
Scope 3	**1,17**	**17,3%**	**0,94**	**14,9%**	**0,23**	**25,0%**
Transport and Distribution (upstream)	1,17	17,3%	0,94	14,9%	0,23	25,0%
Total	**6,78**	**100%**	**6,27**	**100%**	**0,51**	**8,1%**



Analysis

PHJG's biogenic emissions increased by 8% in 2021 and is attributed to transportation by both owned and outsourced vehicles. Tree planting carried out in 2021 resulted in the biogenic removal of 1,873 tCO_2e. The maintenance and preservation of remnant areas and APPs amounts to a biogenic carbon stock of 37,741 tCO_2e.

Greenhouse Gases Emissions Inventory 2021
Institutional
Methodology
Results
Return

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO2e)



	Stationary Combustion	Mobile Combustion	Fugitive Emissions	Electricity Acquisition	Waste - Scope 03	Transport and Distribution (upstream)	Total
2020	0,47	0,16	-	1,52	0,03	4,62	6,80
2021	0,23	0,04	0,01	4,81	0,0001	4,93	10,02

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**0,28**	**2,8%**	**0,63**	**9,3%**	**(0,35)**	**-55,6%**
Stationary Combustion	0,23	2,3%	0,47	6,9%	(0,24)	-50,2%
Mobile Combustion	0,04	0,4%	0,16	2,4%	(0,12)	-74,6%
Fugitive Emissions	0,01	0,1%	-	0,0%	0,01	100,0%
Scope 2	**4,81**	**48,0%**	**1,52**	**22,4%**	**3,28**	**216,0%**
Electricity Acquisition	4,81	48,0%	1,52	22,4%	3,28	216,0%
Scope 3	**4,93**	**49,2%**	**4,65**	**68,4%**	**0,28**	**6,0%**
Waste - Scope 03	0,0001	0,0%	0,03	0,4%	(0,03)	-99,7%
Transport and Distribution (upstream)	4,93	49,2%	4,62	68,0%	0,31	6,6%
Total	**10,02**	**100%**	**6,80**	**100%**	**3,21**	**47,2%**

Analysis

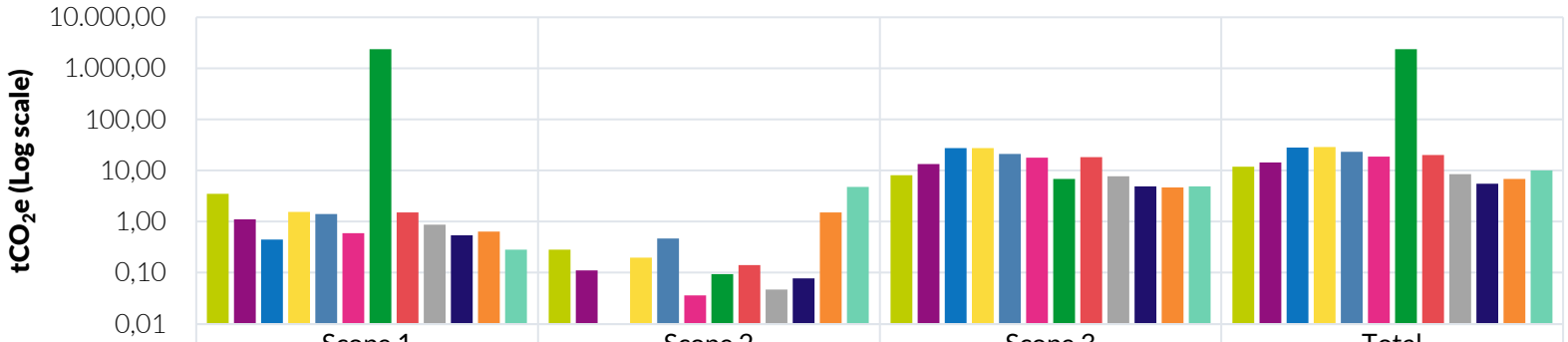
Emissions at PHRO increased by 47% in 2021, which is attributed to grid energy consumption and an increase in the SIN emission factor (105%).

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Analysis

PHRO's 2021 emissions increased by 47% relative to 2020 and decreased by 15% relative to the EBE inventory base year, 2010.

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



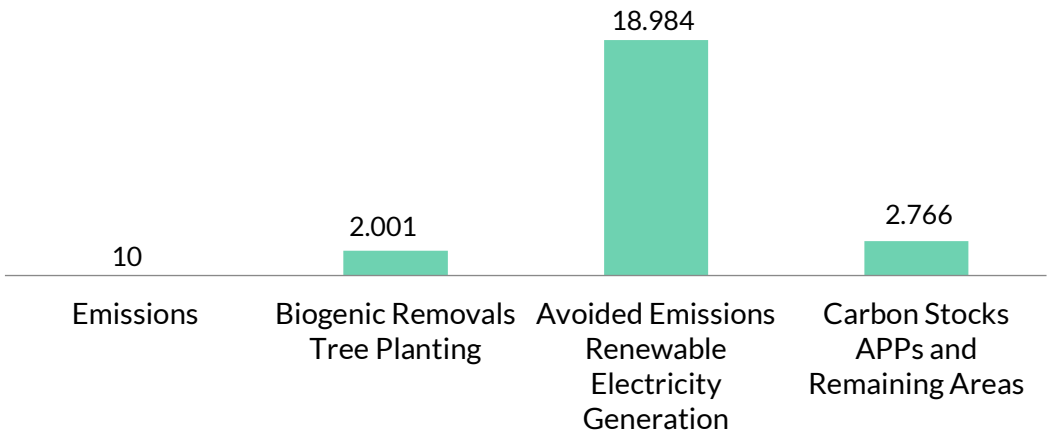
	Scope 1	Scope 2	Scope 3	Total
2010	3,49	0,28	8,02	11,79
2011	1,11	0,11	13,26	14,48
2012	0,45	-	27,79	28,24
2013	1,54	0,20	27,36	29,10
2014	1,42	0,47	21,15	23,04
2015	0,60	0,04	18,00	18,64
2016	2.350,13	0,09	6,88	2.357,11
2017	1,52	0,14	18,25	19,91
2018	0,87	0,0474	7,66	8,57
2019	0,54	0,08	4,87	5,48
2020	0,63	1,52	4,65	6,80
2021	0,28	4,81	4,93	10,02

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by Scope (tCO_2e) - Annual Growth | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**4,30**	**78,4%**	**4,51**	**82,8%**	**(0,21)**	**-4,7%**
Mobile Combustion	4,27	77,8%	4,45	81,8%	(0,19)	-4,2%
Stationary Combustion	0,03	0,5%	0,06	1,0%	(0,03)	-47,1%
Scope 3	**1,18**	**21,6%**	**0,94**	**17,2%**	**0,25**	**26,5%**
Transport and Distribution (upstream)	1,18	21,6%	0,94	17,2%	0,25	26,5%
Total	**5,48**	**100%**	**5,44**	**100%**	**0,04**	**0,6%**

Emissions Balance (tCO_2e)



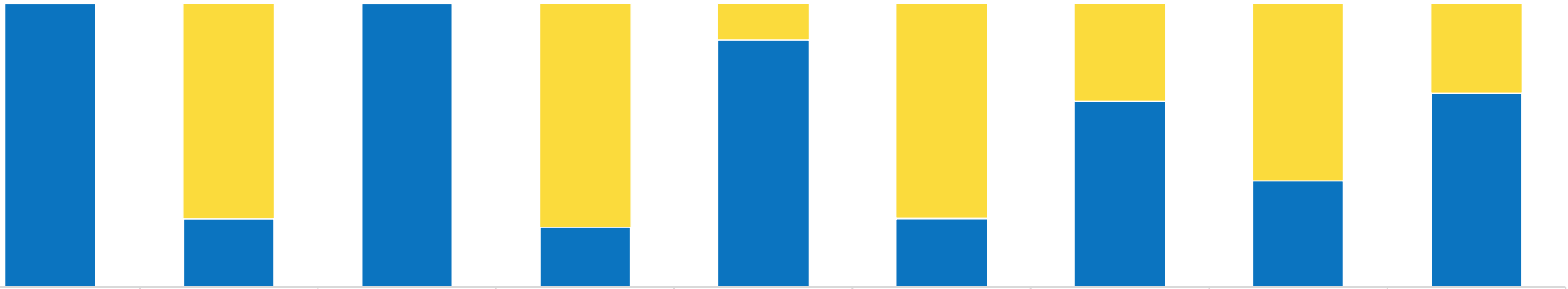
Analysis

PHRO's biogenic emissions increased by 0.6% in 2021, which is attributed to fuel consumption by outsourced transportation. Tree planting carried out in 2021 resulted in the biogenic removal of 2,001 tCO_2e. The maintenance and preservation of remnant areas and APPs amounts to a biogenic carbon stock of 2,766 tCO_2e.

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Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO2e)



	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Electricity Acquisition	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2020	-	18,21	-	15,70	17,51	5,85	31,87	1,58	90,71
2021	1,08	5,82	2,27	4,20	120,29	1,88	61,12	0,95	197,61

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**13,37**	**6,8%**	**33,90**	**37,4%**	**(20,53)**	**-60,6%**
Stationary Combustion	1,08	0,5%	-	0,0%	1,08	100,0%
Mobile Combustion	5,82	2,9%	18,21	20,1%	(12,39)	-68,1%
Wastewater Treatment	2,27	1,2%	-	0,0%	2,27	100,0%
Fugitive Emissions	4,20	2,1%	15,70	17,3%	(11,50)	-73,2%
Scope 2	**120,29**	**60,9%**	**17,51**	**19,3%**	**102,78**	**587,0%**
Electricity Acquisition	120,29	60,9%	17,51	19,3%	102,78	587,0%
Scope 3	**63,95**	**32,4%**	**39,30**	**43,3%**	**24,65**	**62,7%**
Waste - Scope 03	1,88	1,0%	5,85	6,4%	(3,97)	-67,9%
Transport and Distribution (upstream)	61,12	30,9%	31,87	35,1%	29,25	91,8%
Business Travel	0,95	0,5%	1,58	1,7%	(0,63)	-39,8%
Total	**197,61**	**100%**	**90,71**	**100%**	**106,89**	**117,8%**

Analysis

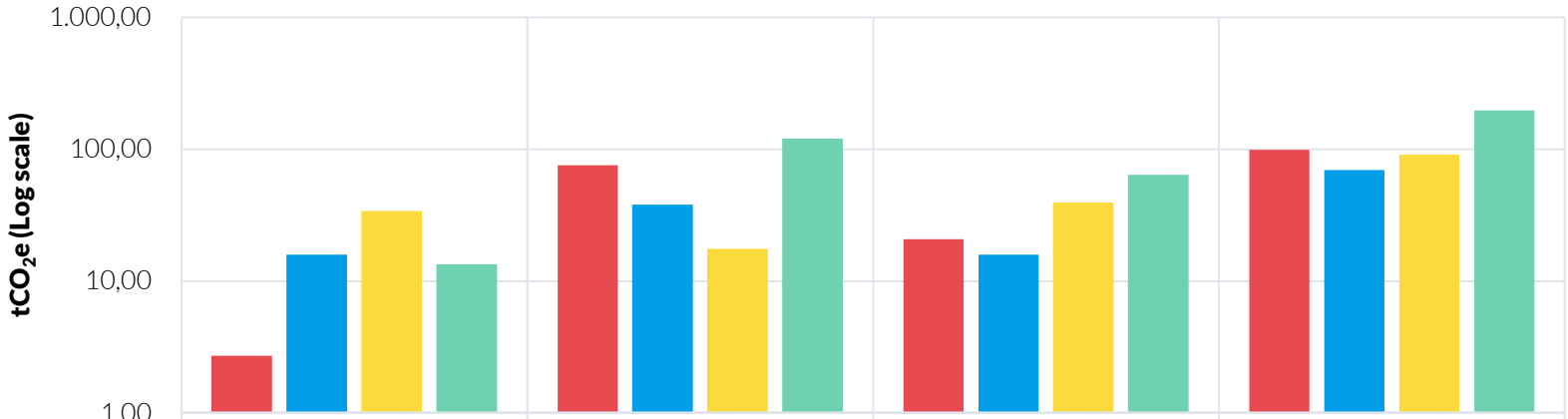
From 2020 to 2021, emissions at UHJA increased by 118% as a result of buying power from the grid (587%) and the transportation of outsourced services (91%).

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Analysis

In 2021, UHJA recorded its highest level of emissions, with a 99% increase over the plant's first year of operations (2018).

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

Developed by: Ecofinance NEGÓCIOS

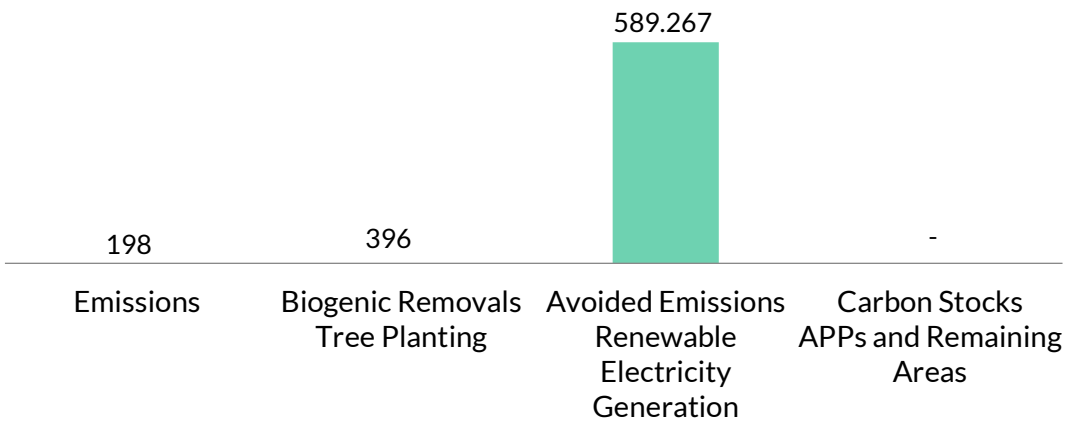
Emissions by Source (tCO_2e) 2021 x 2020

Emissions by scope (tCO_2e) - Annual Growth

Biogenic Emissions and Balance

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**32,86**	**48,6%**	**6,54**	**32,1%**	**26,33**	**402,8%**
Mobile Combustion	32,59	48,2%	6,54	32,1%	26,05	398,6%
Stationary Combustion	0,27	0,4%	-	0,0%	0,27	100,0%
Scope 3	**34,78**	**51,4%**	**13,83**	**67,9%**	**20,95**	**151,4%**
Transport and Distribution (upstream)	34,68	51,3%	13,83	67,9%	20,84	150,7%
Business Travel	0,10	0,2%	-	0,0%	0,10	100,0%
Total	**67,64**	**100%**	**20,37**	**100%**	**47,27**	**232,1%**

Emissions Balance (tCO_2e)



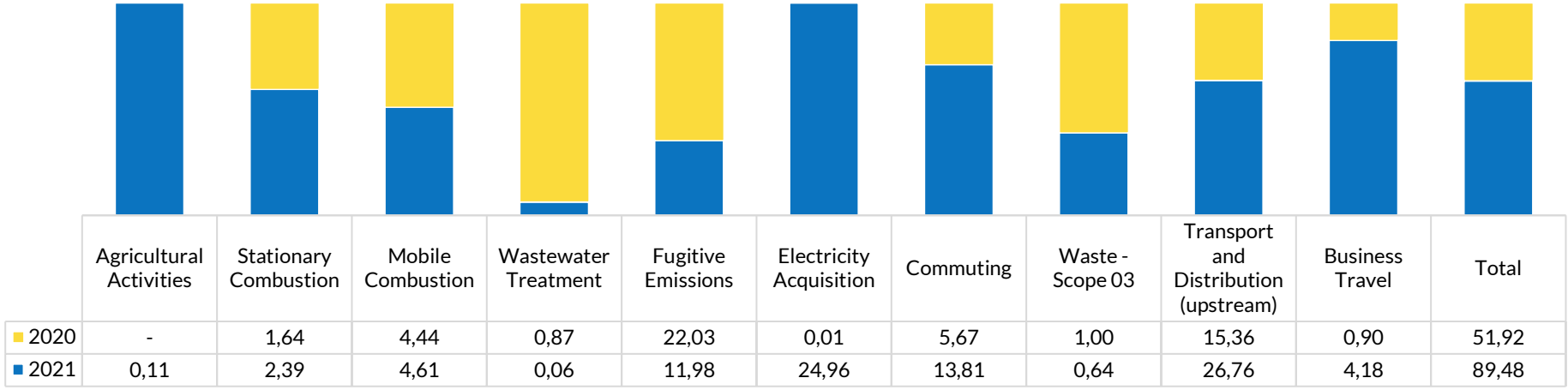
Analysis

UHJA's biogenic emissions increased by 232% in 2021, which can be attributed to fuel consumption by outsourced transportation and mobile combustion from plant-controlled vehicles. Tree planting carried out in 2021 resulted in the biogenic removal of 396 tCO_2e. By generating renewable energy, UHJA avoided the emission of 589,267 tCO_2e.

Developed by:
Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO2e)



	Agricultural Activities	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Electricity Acquisition	Commuting	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2020	-	1,64	4,44	0,87	22,03	0,01	5,67	1,00	15,36	0,90	51,92
2021	0,11	2,39	4,61	0,06	11,98	24,96	13,81	0,64	26,76	4,18	89,48

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**19,14**	**21,4%**	**28,97**	**55,8%**	**(9,83)**	**-33,9%**
Agricultural Activities	0,11	0,1%	-	0,0%	0,11	100,0%
Stationary Combustion	2,39	2,7%	1,64	3,2%	0,75	45,8%
Mobile Combustion	4,61	5,1%	4,44	8,5%	0,17	3,8%
Wastewater Treatment	0,06	0,1%	0,87	1,7%	(0,81)	-93,3%
Fugitive Emissions	11,98	13,4%	22,03	42,4%	(10,05)	-45,6%
Scope 2	**24,96**	**27,9%**	**0,01**	**0,02%**	**24,95**	**224750,1%**
Electricity Acquisition	24,96	27,9%	0,01	0,02%	24,95	224750,1%
Scope 3	**45,38**	**50,7%**	**22,93**	**44,2%**	**22,45**	**97,9%**
Commuting	13,81	15,4%	5,67	10,9%	8,14	143,6%
Waste - Scope 03	0,64	0,7%	1,00	1,9%	(0,37)	-36,4%
Transport and Distribution (upstream)	26,76	29,9%	15,36	29,6%	11,39	74,2%
Business Travel	4,18	4,7%	0,90	1,7%	3,28	365,7%
Total	**89,48**	**100%**	**51,92**	**100%**	**37,56**	**72,4%**

Analysis

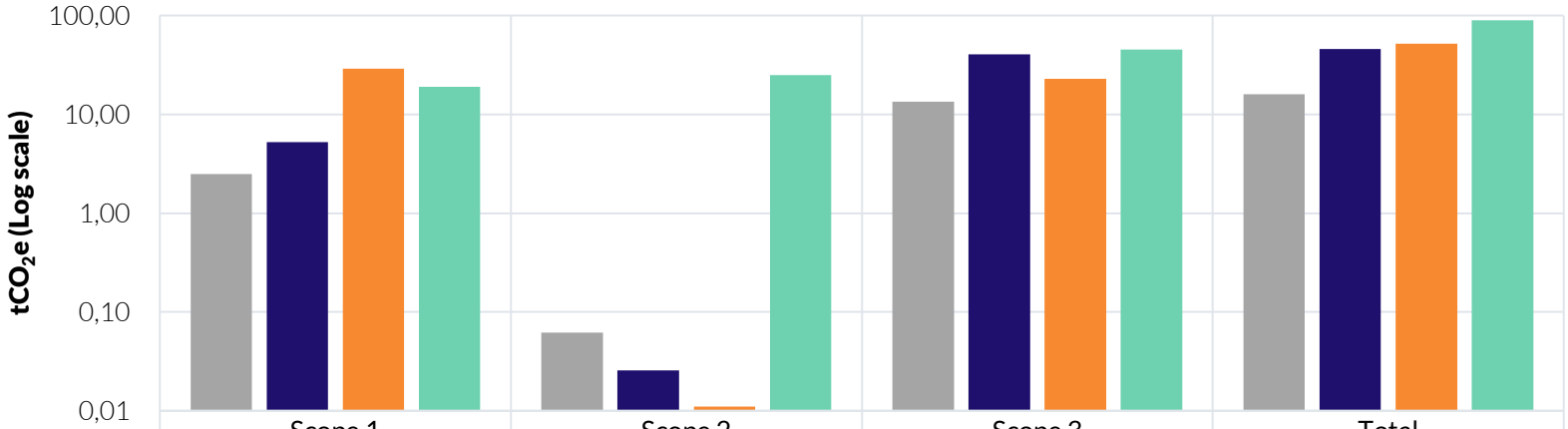
UHMI emissions increased by 72% from 2020 to 2021, which can mainly be attributed to emissions from energy purchases, outsourced transportation, and employee commutes.

Developed by:
Ecofinance NEGÓCIOS

Analysis

In 2021, UHMI emissions increased by 72% relative to 2020, and by 460% relative to 2018, which was the first year of operations at the plant.

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



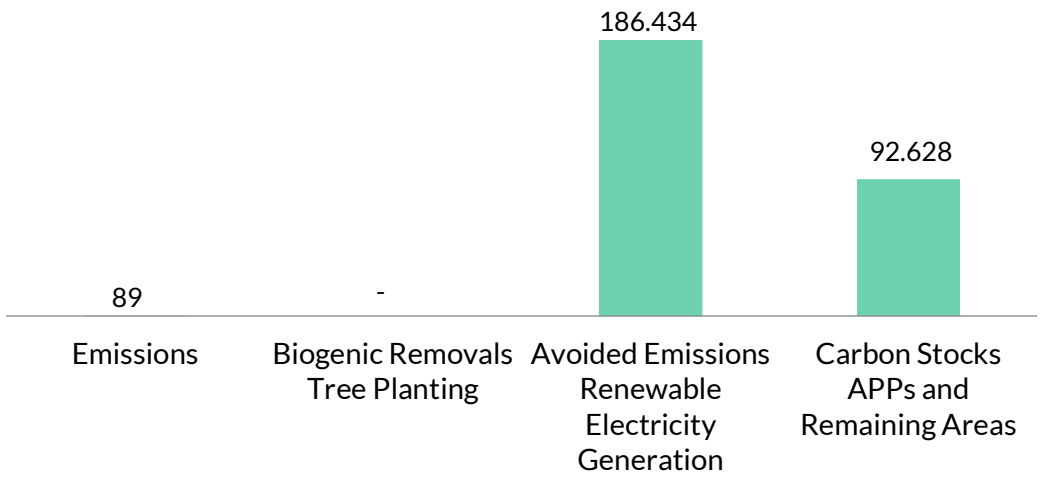
	Scope 1	Scope 2	Scope 3	Total
2018	2,50	0,06	13,41	15,97
2019	5,28	0,03	40,75	46,05
2020	28,97	0,01	22,93	51,92
2021	19,14	24,96	45,38	89,48

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**17,33**	**42,2%**	**14,60**	**69,8%**	**2,72**	**18,7%**
Mobile Combustion	17,09	41,6%	14,41	68,8%	2,68	18,6%
Stationary Combustion	0,24	0,6%	0,19	0,9%	0,04	21,1%
Scope 3	**23,78**	**57,8%**	**6,33**	**30,2%**	**17,44**	**275,4%**
Transport and Distribution (upstream)	21,81	53,1%	5,68	27,1%	16,13	284,3%
Commuting	1,61	3,9%	0,66	3,1%	0,95	144,2%
Business Travel	0,36	0,9%	-	0,0%	0,36	100,0%
Total	**41,11**	**100%**	**20,94**	**100%**	**20,17**	**96,3%**

Emissions Balance (tCO_2e)



Analysis

UHMI biogenic emissions increased by 96% in 2021, which can mainly be attributed to emissions from outsourced vehicles. By generating renewable energy, UHMI avoided the emission of 186,434 tCO_2e. Tree planting carried out in 2021 resulted in the biogenic removal of 910 tCO_2e. The maintenance and preservation of remnant areas and APPs amounts to a biogenic carbon stock of 92,628 tCO_2e.

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Mobile Combustion	Fugitive Emissions	Waste	Wastewater Treatment	Stationary Combustion	Electricity Acquisition	Transport and Distribution (upstream)	Commuting	Business Travel	Waste - Scope 03	Total
2020	12,09	-	0,15	0,67	5,79	0,03	29,19	5,71	1,47	0,22	55,32
2021	12,94	1,77	0,00	0,28	7,32	0,08	34,64	10,31	1,79	0,00	69,12

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**22,31**	**32,3%**	**18,71**	**33,8%**	**3,60**	**19,3%**
Mobile Combustion	12,94	18,7%	12,09	21,9%	0,85	7,0%
Fugitive Emissions	1,77	2,6%	-	0,0%	1,77	100,0%
Waste	0,00	0,0%	0,15	0,3%	(0,15)	-99,6%
Wastewater Treatment	0,28	0,4%	0,67	1,2%	(0,39)	-58,4%
Stationary Combustion	7,32	10,6%	5,79	10,5%	1,52	26,3%
Scope 2	**0,08**	**0,1%**	**0,03**	**0,05%**	**0,05**	**179,8%**
Electricity Acquisition	0,08	0,1%	0,03	0,05%	0,05	179,8%
Scope 3	**46,74**	**67,6%**	**36,59**	**66,1%**	**10,15**	**27,7%**
Transport and Distribution (upstream)	34,64	50,1%	29,19	52,8%	5,45	18,7%
Commuting	10,31	14,9%	5,71	10,3%	4,60	80,6%
Business Travel	1,79	2,6%	1,47	2,7%	0,32	21,9%
Waste - Scope 03	0,00	0,0%	0,22	0,4%	(0,22)	-99,9%
Total	**69,12**	**100%**	**55,32**	**100%**	**13,80**	**24,9%**

Analysis

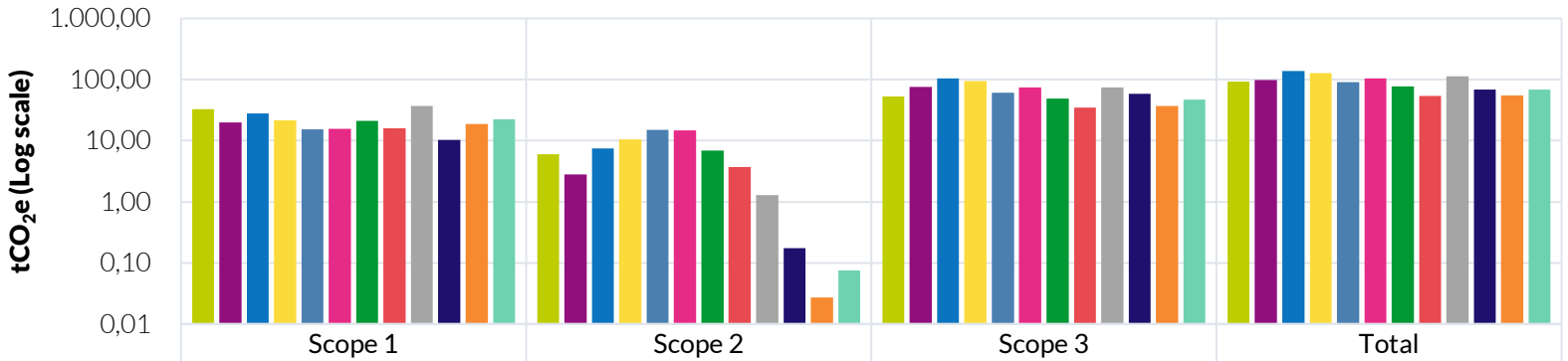
UHPP emissions increased by 25% in 2021, as a result of increased emissions from outsourced vehicles (19%), and employee commutes (80%).

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Analysis

UHPP's 2021 emissions increased by 25% relative to 2020 and decreased by 25% relative to the EBE inventory base year, 2010.

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

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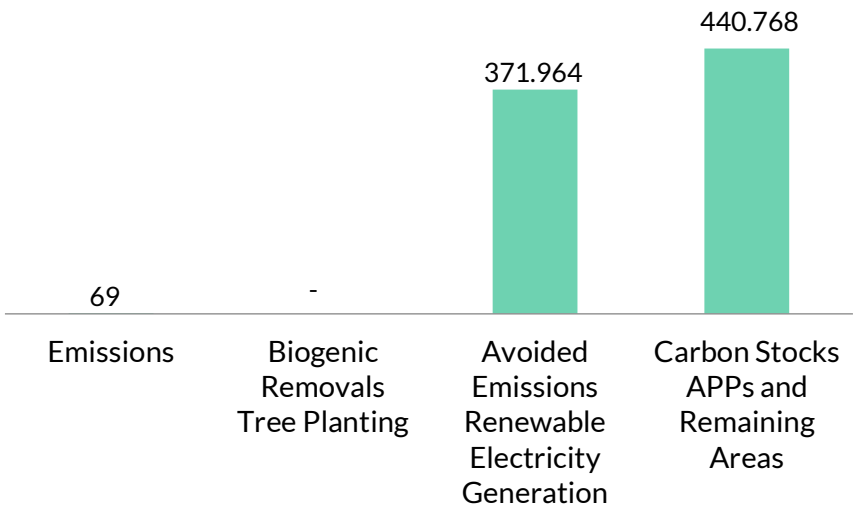
Emissions by Source (tCO_2e) 2021 x 2020

Emissions by scope (tCO_2e) - Annual Growth

Biogenic Emissions and Balance

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**31,05**	**68,8%**	**23,75**	**73,4%**	**7,31**	**30,8%**
Mobile Combustion	30,24	67,0%	23,06	71,2%	7,18	31,2%
Stationary Combustion	0,81	1,8%	0,69	2,1%	0,12	17,9%
Scope 3	**14,08**	**31,2%**	**8,62**	**26,6%**	**5,46**	**63,4%**
Transport and Distribution (upstream)	12,77	28,3%	7,87	24,3%	4,90	62,3%
Commuting	1,19	2,6%	0,66	2,0%	0,52	79,2%
Business Travel	0,12	0,3%	0,08	0,3%	0,04	45,9%
Total	**45,13**	**100%**	**32,36**	**100%**	**12,77**	**39,5%**

Emissions Balance (tCO_2e)



Analysis

UHPP emissions increased by 39% in 2021, which can be attributed to fuel consumption in both plant-controlled and outsourced vehicles. By generating renewable energy, UHPP avoided the emission of 371,964 tCO_2e. The maintenance and preservation of remnant areas and APPs amounts to a biogenic carbon stock of 440,768 tCO_2e.

Developed by:
Ecofinance NEGÓCIOS



UHSO
Salto Osório
Hydroelectric Power Plant



UHSS
Salto Santiago
Hydroelectric Power Plant

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Land Use Change	Fugitive Emissions	Mobile Combustion	Stationary Combustion	Wastewater Treatment	Agricultural Activities	Electricity Acquisition	Transport and Distribution (upstream)	Commuting	Waste - Scope 03	Business Travel	Indirect Stationary Combustion	Indirect Fugitive Emissions	Total
2020	161,30	45,33	8,83	0,95	0,22	0,05	1.381,61	108,22	29,49	6,59	2,43	1,85	-	1.746,87
2021	-	30,09	9,33	1,55	0,09	0,05	988,00	102,82	31,56	2,58	3,69	-	0,03	1.169,80

Emission Sources	Total Emission 2021		Total Emission 2020		Variation 2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**41,11**	**3,5%**	**216,69**	**12,4%**	**(175,58)**	**-81,0%**
Land Use Change	-	0,0%	161,30	9,2%	(161,30)	-100,0%
Fugitive Emissions	30,09	2,6%	45,33	2,6%	(15,24)	-33,6%
Mobile Combustion	9,33	0,8%	8,83	0,5%	0,50	5,6%
Stationary Combustion	1,55	0,1%	0,95	0,1%	0,60	63,7%
Wastewater Treatment	0,09	0,0%	0,22	0,0%	(0,14)	-62,0%
Agricultural Activities	0,05	0,0%	0,05	0,0%	0,00	4,1%
Scope 2	**988,00**	**84,5%**	**1.381,61**	**79,1%**	**(393,61)**	**-28,5%**
Electricity Acquisition	988,00	84,5%	1.381,61	79,1%	(393,61)	-28,5%
Scope 3	**140,69**	**12,0%**	**148,58**	**8,5%**	**(7,89)**	**-5,3%**
Transport and Distribution (upstream)	102,82	8,8%	108,22	6,2%	(5,40)	-5,0%
Commuting	31,56	2,7%	29,49	1,7%	2,07	7,0%
Waste - Scope 03	2,58	0,2%	6,59	0,4%	(4,01)	-60,8%
Business Travel	3,69	0,3%	2,43	0,1%	1,26	52,0%
Indirect Stationary Combustion	-	0,0%	1,85	0,1%	(1,85)	-100,0%
Indirect Fugitive Emissions	0,03	0,0%	-	0,0%	0,03	100,0%
Total	**1.169,80**	**100%**	**1.746,87**	**100%**	**(577,08)**	**-33,0%**

Analysis

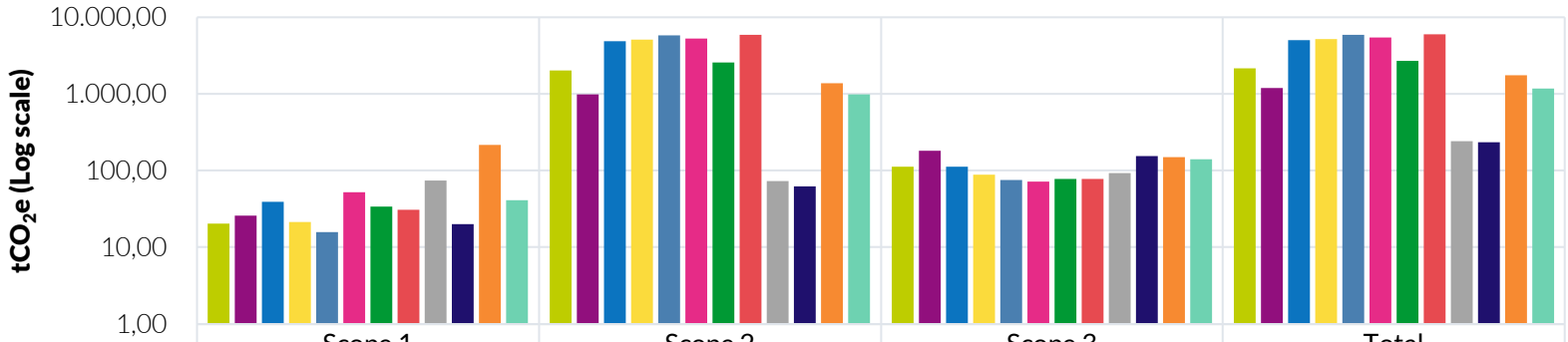
In 2021, UHSO decreased its emissions by 33%, which can mainly be attributed to not accounting for emissions from the energy consumption of running the synchronous condenser to the SIN, and not performing vegetal suppression.

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Analysis

UHSO emissions were 45% lower than in the base year (2010).

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



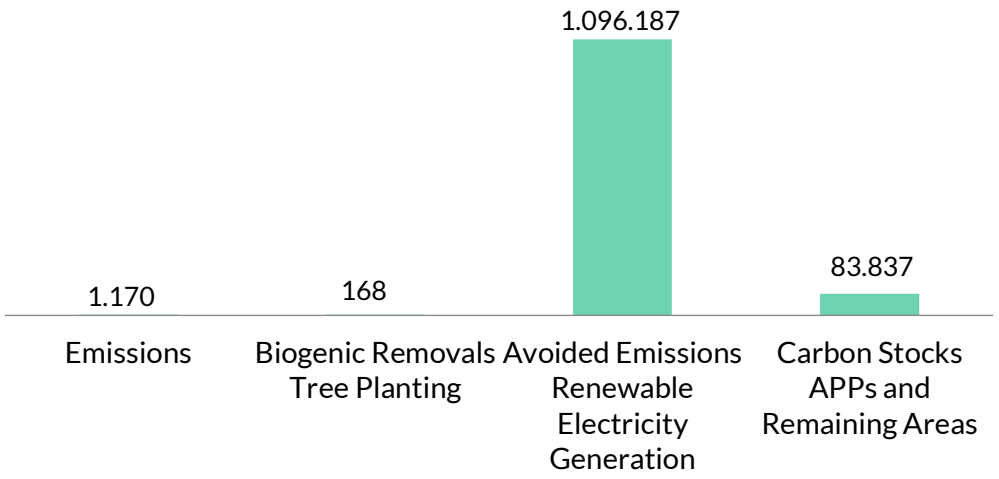
	Scope 1	Scope 2	Scope 3	Total
2010	20,34	2.010,32	111,44	2.142,10
2011	25,79	985,06	180,16	1.191,01
2012	38,90	4.841,48	112,94	4.993,32
2013	21,41	5.103,80	88,65	5.213,86
2014	15,68	5.837,95	75,02	5.928,66
2015	52,14	5.298,14	71,24	5.421,52
2016	33,65	2.565,19	77,99	2.676,83
2017	30,75	5.852,30	77,19	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

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**26,19**	**48,2%**	**180,79**	**79,1%**	**(154,60)**	**-85,5%**
Land Use Change	-	0,0%	161,30	70,6%	(161,30)	-100,0%
Mobile Combustion	25,85	47,6%	19,37	8,5%	6,47	33,4%
Stationary Combustion	0,35	0,6%	0,11	0,0%	0,23	208,5%
Scope 3	**28,15**	**51,8%**	**47,63**	**20,9%**	**(19,48)**	**-40,9%**
Transport and Distribution (upstream)	23,19	42,7%	42,71	18,7%	(19,51)	-45,7%
Commuting	4,58	8,4%	4,43	1,9%	0,15	3,4%
Indirect Stationary Combustion	-	0,0%	0,48	0,2%	(0,48)	-100,0%
Business Travel	0,38	0,7%	0,02	0,0%	0,36	1883,0%
Total	**54,34**	**100%**	**228,42**	**100%**	**(174,08)**	**-76,2%**

Emissions Balance (tCO_2e)

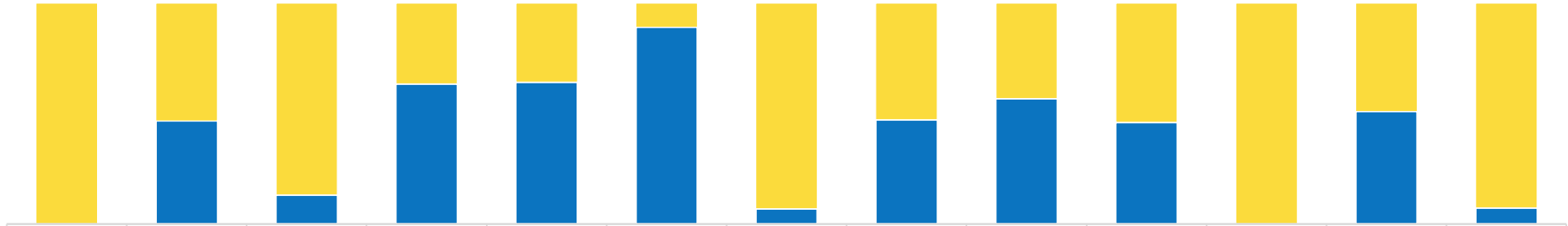


Analysis

Biogenic emissions from UHSO decreased by 76% in 2021, which can mainly be attributed to land use changes. By generating renewable energy, UHSO avoided the emission of 1,096,187 tCO_2e. Tree planting carried out in 2021 contributed to the biogenic removal of 168 tCO_2e. The maintenance and preservation of remnant areas and APPs amounts to a biogenic carbon stock of 83,837 tCO_2e.

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Land Use Change	Mobile Combustion	Fugitive Emissions	Stationary Combustion	Wastewater Treatment	Agriculture activities	Electricity Acquisition	Transport and distribution (upstream)	Commuting	Waste - Scope 03	Indirect Stationary Combustion	Business Travel	Total
2020	735,43	10,11	5,51	2,50	0,19	0,01	5.974,58	31,61	23,37	17,24	3,55	3,10	6.807,20
2021	0,14	8,84	0,83	4,34	0,34	0,09	439,47	28,20	30,66	14,66	-	3,23	530,80

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**14,58**	**2,7%**	**753,76**	**11,1%**	**(739,17)**	**-98,1%**
Land Use Change	0,14	0,0%	735,43	10,8%	(735,29)	-100,0%
Mobile Combustion	8,84	1,7%	10,11	0,1%	(1,27)	-12,6%
Fugitive Emissions	0,83	0,2%	5,51	0,1%	(4,68)	-84,9%
Stationary Combustion	4,34	0,8%	2,50	0,0%	1,84	73,4%
Wastewater Treatment	0,34	0,1%	0,19	0,0%	0,15	79,0%
Agriculture activities	0,09	0,0%	0,01	0,0%	0,08	719,4%
Scope 2	**439,47**	**82,8%**	**5.974,58**	**87,8%**	**(5.535,11)**	**-92,6%**
Electricity Acquisition	439,47	82,8%	5.974,58	87,8%	(5.535,11)	-92,6%
Scope 3	**76,75**	**14,5%**	**78,87**	**1,2%**	**(2,12)**	**-2,7%**
Transport and distribution (upstream)	28,20	5,3%	31,61	0,5%	(3,40)	-10,8%
Commuting	30,66	5,8%	23,37	0,3%	7,29	31,2%
Waste - Scope 03	14,66	2,8%	17,24	0,3%	(2,58)	-15,0%
Indirect Stationary Combustion	-	0,0%	3,55	0,1%	(3,55)	-100,0%
Business Travel	3,23	0,6%	3,10	0,0%	0,12	3,9%
Total	**530,80**	**100%**	**6.807,20**	**100%**	**(6.276,40)**	**-92,2%**

Analysis

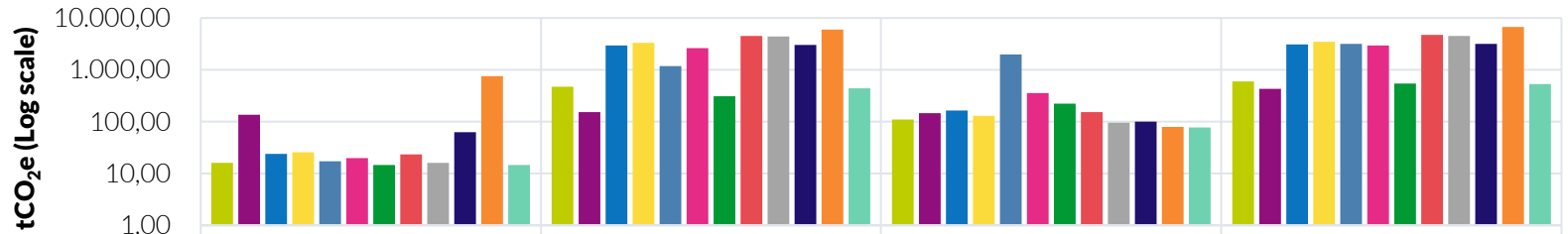
In 2021, UHSS emissions decreased by 92% as a result of not accounting for emissions from the energy consumption of running the synchronous condenser to the SIN. Also noteworthy is the decrease in emissions related to legal deforestation of native forest (-99.98%).

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Analysis

Throughout the whole time series, UHSS emissions in 2021 were lower than all other years, except for 2011 (432.34 tCO_2e). Relative to 2010, the base year for the SBS inventory, emissions were 11% lower.

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



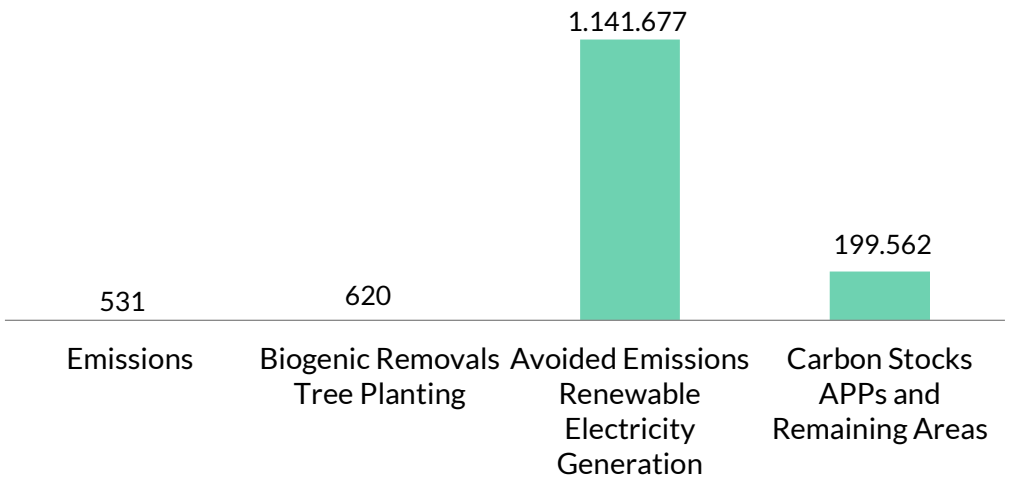
	Scope 1	Scope 2	Scope 3	Total
2010	15,78	469,07	111,20	596,05
2011	135,11	151,99	145,24	432,34
2012	24,09	2.938,79	163,23	3.126,11
2013	25,58	3.352,19	128,78	3.506,55
2014	16,94	1.182,46	1.973,33	3.172,73
2015	19,91	2.603,50	360,48	2.983,89
2016	14,59	311,21	224,51	550,31
2017	23,26	4.571,20	151,52	4.745,99
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

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Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**19,99**	**66,1%**	**15,61**	**52,6%**	**4,37**	**28,0%**
Mobile Combustion	18,99	62,8%	15,32	51,6%	3,67	24,0%
Stationary Combustion	1,00	3,3%	0,30	1,0%	0,70	236,5%
Scope 3	**10,25**	**33,9%**	**14,07**	**47,4%**	**(3,82)**	**-27,2%**
Transport and distribution (upstream)	6,54	21,6%	8,39	28,3%	(1,84)	-22,0%
Commuting	3,52	11,6%	4,44	14,9%	(0,92)	-20,8%
Indirect Stationary Combustion	-	0,0%	0,92	3,1%	(0,92)	-100,0%
Business Travel	0,19	0,6%	0,33	1,1%	(0,13)	-41,2%
Total	**30,24**	**100%**	**29,69**	**100%**	**0,55**	**1,9%**

Emissions Balance (tCO_2e)



Analysis

UHSS Biogenic emissions increased by 1.9% in 2021, from fuel consumption in vehicles controlled by the plant. By generating renewable energy, UHSS avoided the emission of 1,141,677 tCO_2e. Tree planting carried out in 2021 resulted in the biogenic removal of 620 tCO_2e. The preservation of remaining areas and APPs amounts to a biogenic carbon stock of 199,562 tCO_2e.

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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) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Agricultural Activities	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Waste	Electricity Acquisition	Commuting	Waste - Scope 03	Transport and Distribution (downstream)	Transport and Distribution (upstream)	Business Travel	Total
2020	1,13	2,29	0,23	0,08	0,01	0,11	0,05	4,20	6,02	6,24	-	1,60	21,98
2021	1,67	-	0,93	0,40	0,55	0,0005	0,33	9,72	0,00	-	6,43	2,14	22,17

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**3,55**	**16,0%**	**3,86**	**17,6%**	**(0,31)**	**-8,0%**
Agricultural Activities	1,67	7,5%	1,13	5,2%	0,54	47,5%
Stationary Combustion	-	0,0%	2,29	10,4%	(2,29)	-100,0%
Mobile Combustion	0,93	4,2%	0,23	1,0%	0,70	306,0%
Wastewater Treatment	0,40	1,8%	0,08	0,4%	0,32	377,4%
Fugitive Emissions	0,55	2,5%	0,01	0,1%	0,54	4508,3%
Waste	0,0005	0,0%	0,11	0,5%	(0,11)	-99,6%
Scope 2	**0,33**	**1,5%**	**0,05**	**0,2%**	**0,28**	**537,7%**
Electricity Acquisition	0,33	1,5%	0,05	0,2%	0,28	537,7%
Scope 3	**18,29**	**82,5%**	**18,06**	**82,2%**	**0,23**	**1,3%**
Commuting	9,72	43,8%	4,20	19,1%	5,51	131,1%
Waste - Scope 03	0,00	0,0%	6,02	27,4%	(6,02)	-100,0%
Transport and Distribution (downstream)	-	0,0%	6,24	28,4%	(6,24)	-100,0%
Transport and Distribution (upstream)	6,43	29,0%	-	0,0%	6,43	100,0%
Business Travel	2,14	9,7%	1,60	7,3%	0,55	34,3%
Total	**22,17**	**100%**	**21,98**	**100%**	**0,20**	**0,9%**

Analysis

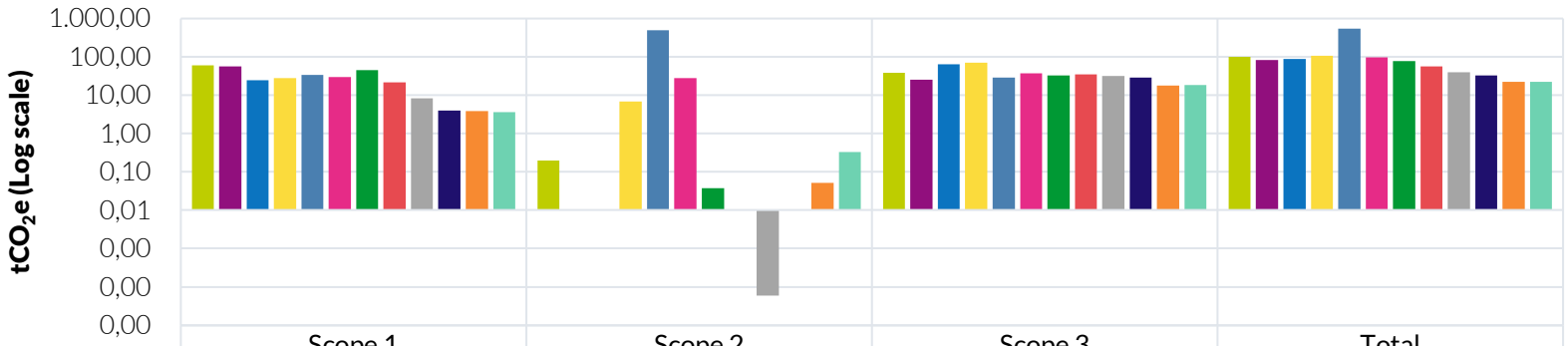
In 2021, UHCB emissions increased by 1% as a result of outsourced transportation, which wasn't reported in 2020, and employee commutes, both of which were partially offset by a decrease in scope 3 waste.

Developed by: Ecofinance NEGÓCIOS

Analysis

UHCB emissions increased by 1% from 2020 to 2021 but decreased overall relative to all other years. Emissions decreased by 78% in 2021 relative to the EBE inventory base year, 2010.

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

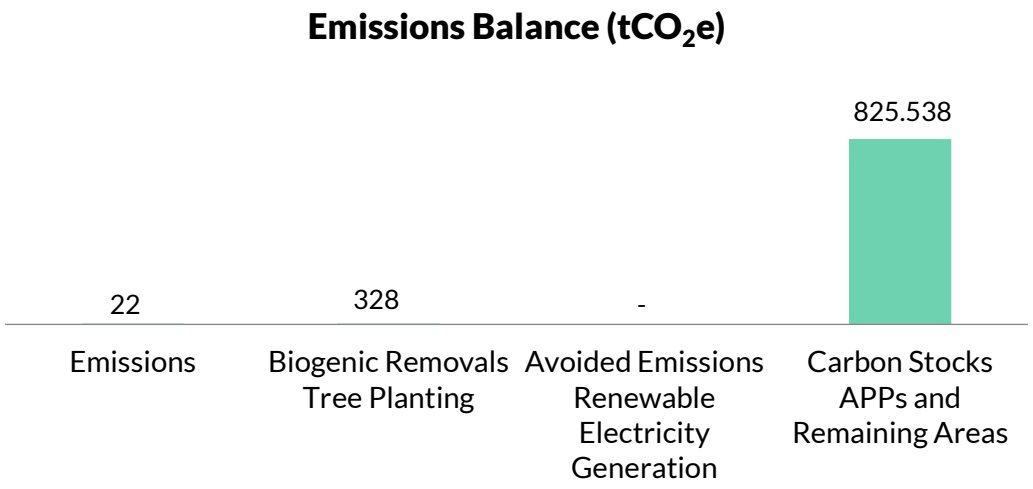
Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020

Emissions by scope (tCO_2e) - Annual Growth

Biogenic Emissions and Balance

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**19,56**	**57,3%**	**15,07**	**63,0%**	**4,50**	**29,8%**
Mobile Combustion	19,56	57,3%	14,79	61,8%	4,77	32,2%
Stationary Combustion	-	0,0%	0,27	1,1%	(0,27)	-100,0%
Scope 3	**14,59**	**42,7%**	**8,85**	**37,0%**	**5,74**	**64,8%**
Transport and Distribution (downstream)	-	0,0%	8,31	34,7%	(8,31)	-100,0%
Transport and Distribution (upstream)	13,34	39,1%	-	0,0%	13,34	100,0%
Commuting	1,13	3,3%	0,49	2,0%	0,64	130,9%
Business Travel	0,13	0,4%	0,05	0,2%	0,07	137,8%
Total	**34,15**	**100%**	**23,92**	**100%**	**10,23**	**42,8%**



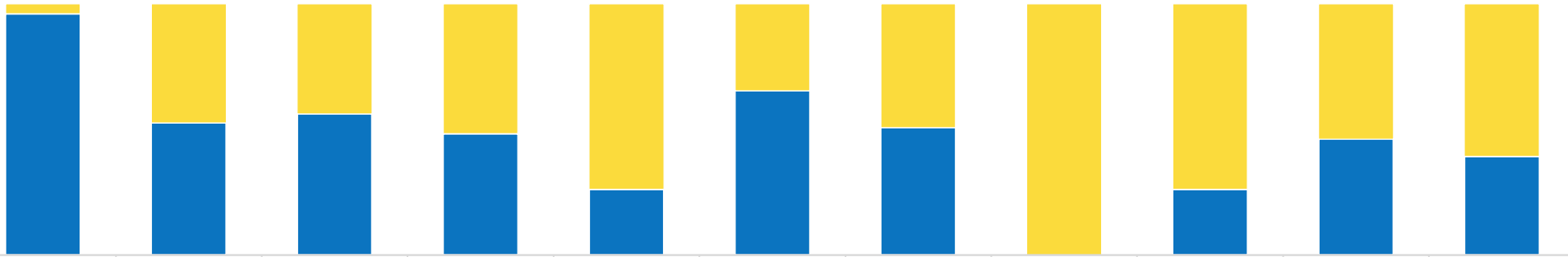
Analysis

UHCB's biogenic emissions increased by 43% in 2021, which is attributed to fuel consumption by both outsourced vehicles and those controlled by the plant. Tree planting carried out in 2021 resulted in the biogenic removal of 328 tCO_2e. The maintenance and preservation of remnant areas and APPs amounts to a biogenic carbon stock of 825,538 tCO_2e.

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Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Agricultural Activities	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Electricity Acquisition	Commuting	Transport and Distribution (downstream)	Transport and Distribution (upstream)	Business Travel	Total
2020	0,55	4,91	0,83	0,09	44,56	7,86	5,12	0,80	52,92	6,91	124,91
2021	13,45	5,48	1,07	0,08	15,78	14,93	5,29	-	18,81	5,94	80,83

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**35,86**	**44,4%**	**51,29**	**41,1%**	**(15,43)**	**-30,1%**
Agricultural Activities	13,45	16,6%	0,55	0,4%	12,90	2338,2%
Stationary Combustion	5,48	6,8%	4,91	3,9%	0,57	11,5%
Mobile Combustion	1,07	1,3%	0,83	0,7%	0,24	28,6%
Wastewater Treatment	0,08	0,1%	0,09	0,1%	(0,01)	-6,4%
Fugitive Emissions	15,78	19,5%	44,56	35,7%	(28,77)	-64,6%
Scope 2	**14,93**	**18,5%**	**7,86**	**6,3%**	**7,06**	**89,8%**
Electricity Acquisition	14,93	18,5%	7,86	6,3%	7,06	89,8%
Scope 3	**30,04**	**37,2%**	**65,76**	**52,6%**	**(35,71)**	**-54,3%**
Commuting	5,29	6,5%	5,12	4,1%	0,17	3,3%
Transport and Distribution (downstream)	-	0,0%	0,80	0,6%	(0,80)	-100,0%
Transport and Distribution (upstream)	18,81	23,3%	52,92	42,4%	(34,12)	-64,5%
Business Travel	5,94	7,4%	6,91	5,5%	(0,97)	-14,0%
Total	**80,83**	**100%**	**124,91**	**100%**	**(44,08)**	**-35,3%**

Analysis

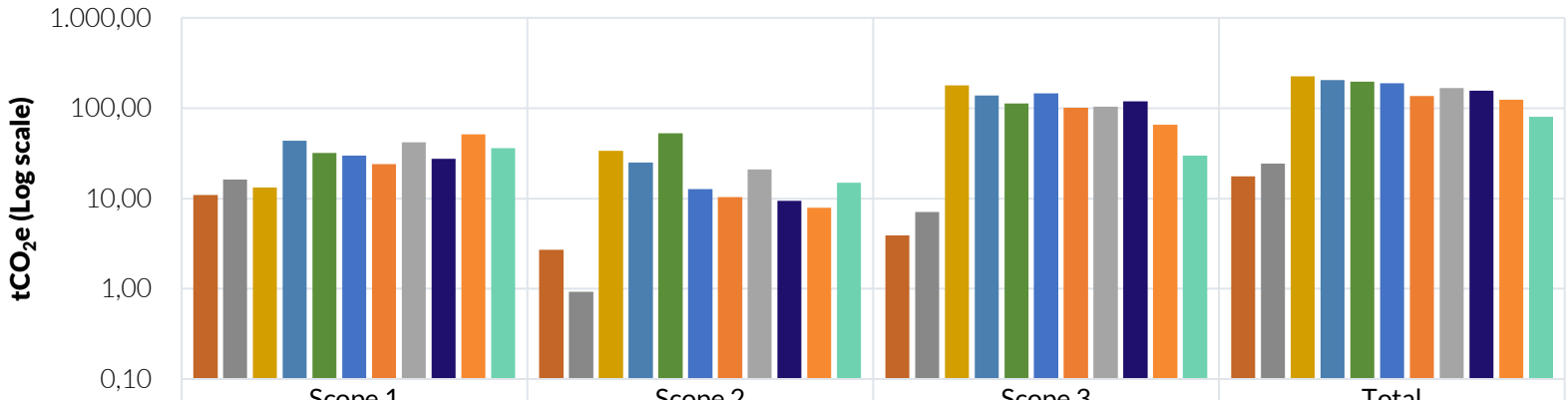
In 2021 UHET reduced its emissions by 35%. Emissions associated with outsourced transportation and fugitive emissions decreased by 64% and were partially offset by an increase in agricultural activities.

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Ecofinance NEGÓCIOS

Analysis

In 2021, UHET emissions decreased by 35% relative to 2020, and increased by 362% relative to the EBE inventory base year, 2010.

GHG Emission Evolution - Equity Share (tCO_2e)



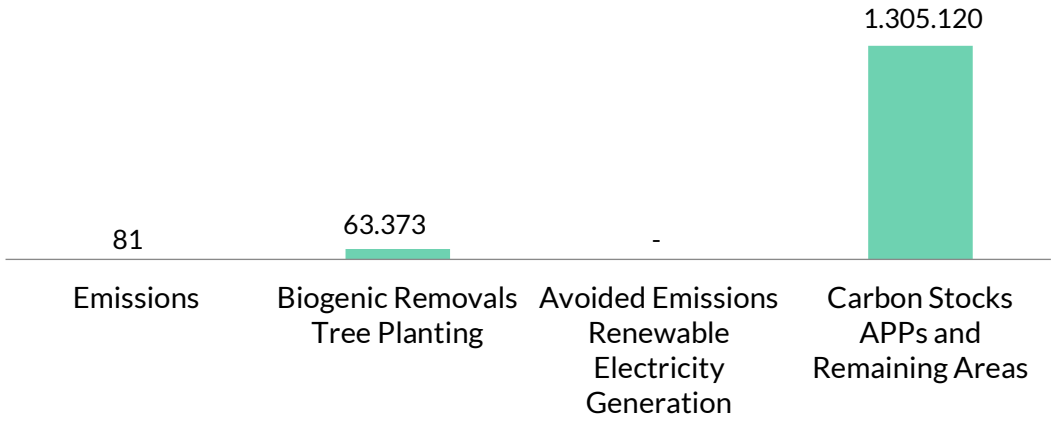
	Scope 1	Scope 2	Scope 3	Total
2011	10,92	2,69	3,88	17,49
2012	16,26	0,92	7,12	24,30
2013	13,30	33,57	179,97	226,84
2014	43,38	24,92	138,11	206,41
2015	32,06	53,09	112,20	197,35
2016	29,92	12,70	145,49	188,11
2017	24,05	10,37	101,72	136,15
2018	41,62	20,97	104,52	167,11
2019	27,41	9,40	119,46	156,27
2020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

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**11,74**	**41,1%**	**9,16**	**36,6%**	**2,58**	**28,1%**
Mobile Combustion	11,11	38,9%	8,58	34,3%	2,53	29,5%
Stationary Combustion	0,63	2,2%	0,58	2,3%	0,05	7,7%
Escopo 3	**16,84**	**58,9%**	**15,85**	**63,4%**	**0,99**	**6,3%**
Commuting	0,90	3,1%	0,75	3,0%	0,15	19,6%
Transport and Distribution (downstream)	-	0,0%	0,20	0,8%	(0,20)	-100,0%
Transport and Distribution (upstream)	15,87	55,5%	14,42	57,7%	1,46	10,1%
Business Travel	0,07	0,2%	0,48	1,9%	(0,41)	-85,3%
Total	**28,58**	**100%**	**25,01**	**100%**	**3,57**	**14,3%**

Emissions Balance (tCO_2e)



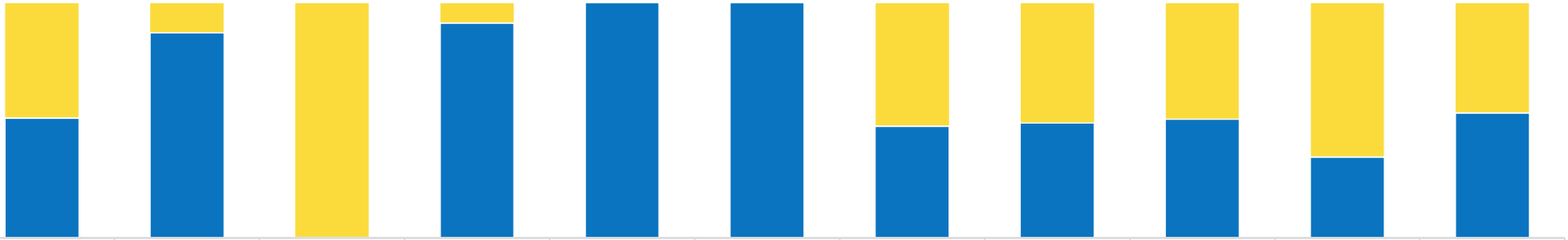
Analysis

UHET's biogenic emissions increased by 14% in 2021, which can be attributed to increased fuel consumption among plant-controlled vehicles. Tree planting carried out in 2021 resulted in the biogenic removal 63,373 tCO_2e. The maintenance and preservation of remnant areas and APPs amounts to a biogenic carbon stock of 1,305,120 tCO_2e.

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Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Mobile Combustion	Fugitive Emissions	Waste	Wastewater Treatment	Stationary Combustion	Electricity Acquisition	Transport and Distribution (upstream)	Commuting	Business Travel	Waste - Scope 03	Total
2020	2,46	1,13	0,16	0,11	-	-	23,57	13,12	0,74	0,47	41,75
2021	2,56	7,67	0,00	1,18	1,19	0,000004	21,28	12,53	0,75	0,25	47,40

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**12,60**	**26,6%**	**3,86**	**9,2%**	**8,74**	**226,5%**
Mobile Combustion	2,56	5,4%	2,46	5,9%	0,09	3,8%
Fugitive Emissions	7,67	16,2%	1,13	2,7%	6,55	582,0%
Waste	0,00	0,0%	0,16	0,4%	(0,16)	-99,8%
Wastewater Treatment	1,18	2,5%	0,11	0,3%	1,06	949,9%
Stationary Combustion	1,19	2,5%	-	0,0%	1,19	100,0%
Scope 2	**0,000004**	**0,0%**	**-**	**-**	**0,000004**	**100,0%**
Electricity Acquisition	0,000004	0,0%	-	-	0,000004	100,0%
Scope 3	**34,80**	**73,4%**	**37,89**	**90,8%**	**(3,09)**	**-8,1%**
Transport and Distribution (upstream)	21,28	44,9%	23,57	56,5%	(2,29)	-9,7%
Commuting	12,53	26,4%	13,12	31,4%	(0,59)	-4,5%
Business Travel	0,75	1,6%	0,74	1,8%	0,01	1,9%
Waste - Scope 03	0,25	0,5%	0,47	1,1%	(0,22)	-47,5%
Total	**47,40**	**100%**	**41,75**	**100%**	**5,65**	**13,5%**

Analysis

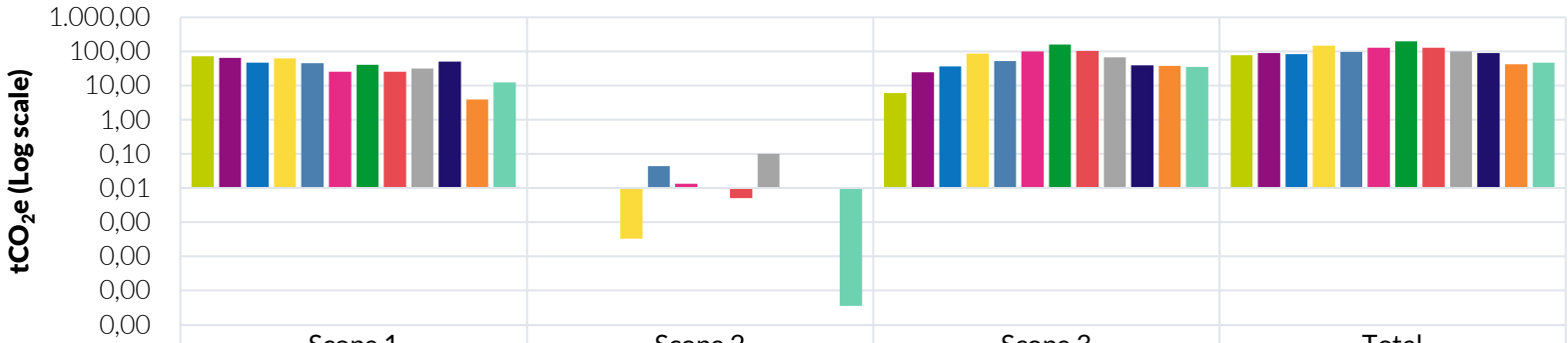
UHSA emissions increased by 14% in 2021, which can mainly be attributed to replacing the gas in its fire extinguishers and air conditioners (582%).

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Analysis

With respect to the time series, in 2021 UHSA emissions were lower than those in every other year, except for 2020. Emissions decreased by 40% relative to the base year (2010).

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



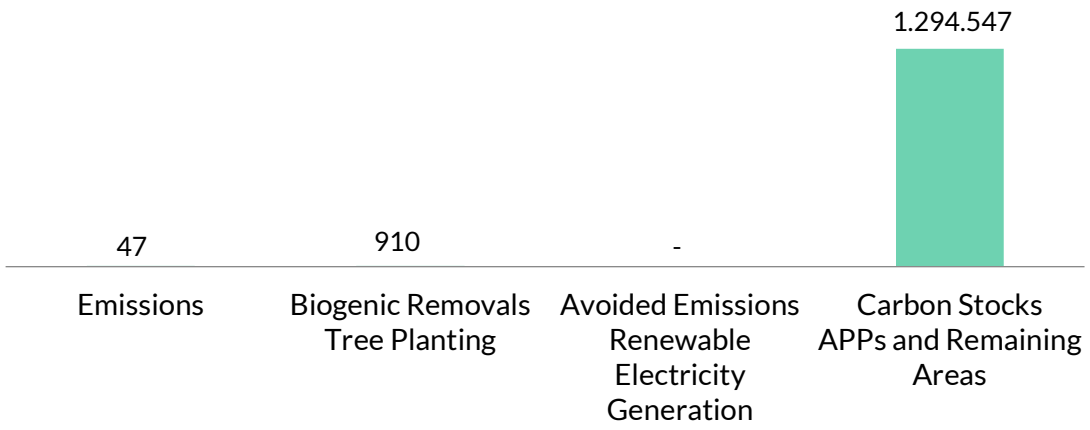
	Scope 1	Scope 2	Scope 3	Total
2010	72,73	-	6,13	78,86
2011	64,52	-	24,46	88,98
2012	47,29	-	35,92	83,21
2013	61,36	0,0003	87,60	148,97
2014	45,48	0,04	52,30	97,83
2015	25,68	0,01	101,29	126,98
2016	40,19	-	159,20	199,39
2017	25,80	0,01	104,58	130,39
2018	31,62	0,10	67,03	98,75
2019	50,71	-	38,81	89,53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

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**27,47**	**56,9%**	**20,32**	**47,6%**	**7,14**	**35,1%**
Mobile Combustion	27,35	56,7%	20,32	47,6%	7,03	34,6%
Stationary Combustion	0,12	0,2%	-	0,0%	0,12	100,0%
Scope 3	**20,77**	**43,1%**	**22,41**	**52,4%**	**(1,64)**	**-7,3%**
Transport and Distribution (upstream)	19,14	39,7%	20,88	48,9%	(1,74)	-8,3%
Commuting	1,44	3,0%	1,52	3,6%	(0,08)	-5,3%
Business Travel	0,18	0,4%	-	0,0%	0,18	100,0%
Total	**48,23**	**100%**	**42,73**	**100%**	**5,50**	**12,9%**

Emissions Balance (tCO_2e)



Analysis

UHSA's biogenic emissions increased by 13% in 2021, which can be attributed to fuel consumption in company-controlled vehicles. Tree planting carried out in 2021 resulted in the biogenic removal of 910 tCO_2e. The maintenance and preservation of remnant areas and APPs amounts to a biogenic carbon stock of 1,294,547 tCO_2e.

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UHIT
Itá
Hydroelectric Power Plant



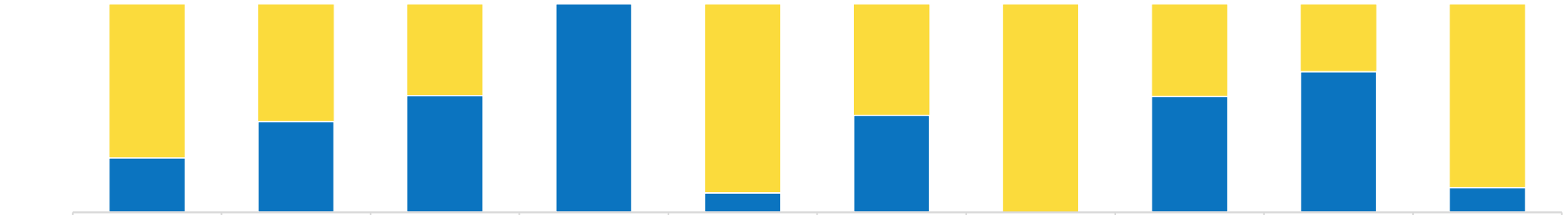
UHMA
Machadinho
Hydroelectric Plant



UHPF
Passo Fundo
Hydroelectric Power Plant

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Agircultural Activities	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Electricity Acquisition	Commuting	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2020	0,87	8,73	0,37	-	1.725,20	45,38	0,70	9,92	1,76	1.793,17
2021	0,31	6,74	0,47	0,33	179,69	39,56	0,001	12,45	3,65	243,21

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**7,85**	**3,2%**	**10,22**	**0,6%**	**(2,37)**	**-23,2%**
Agircultural Activities	0,31	0,1%	0,87	0,0%	(0,56)	-64,5%
Mobile Combustion	6,74	2,8%	8,73	0,5%	(1,99)	-22,7%
Wastewater Treatment	0,47	0,2%	0,37	0,0%	0,10	28,0%
Fugitive Emissions	0,33	0,1%	-	0,0%	0,33	100,0%
Scope 2	**179,69**	**73,9%**	**1.725,20**	**96,2%**	**(1.545,51)**	**-89,6%**
Electricity Acquisition	179,69	73,9%	1.725,20	96,2%	(1.545,51)	-89,6%
Scope 3	**55,66**	**22,9%**	**57,75**	**3,2%**	**(2,09)**	**-3,6%**
Commuting	39,56	16,3%	45,38	2,5%	(5,81)	-12,8%
Waste - Scope 03	0,001	0,0%	0,70	0,0%	(0,70)	-99,9%
Transport and Distribution (upstream)	12,45	5,1%	9,92	0,6%	2,53	25,5%
Business Travel	3,65	1,5%	1,76	0,1%	1,89	107,4%
Total	**243,21**	**100%**	**1.793,17**	**100%**	**(1.549,97)**	**-86,4%**

Analysis

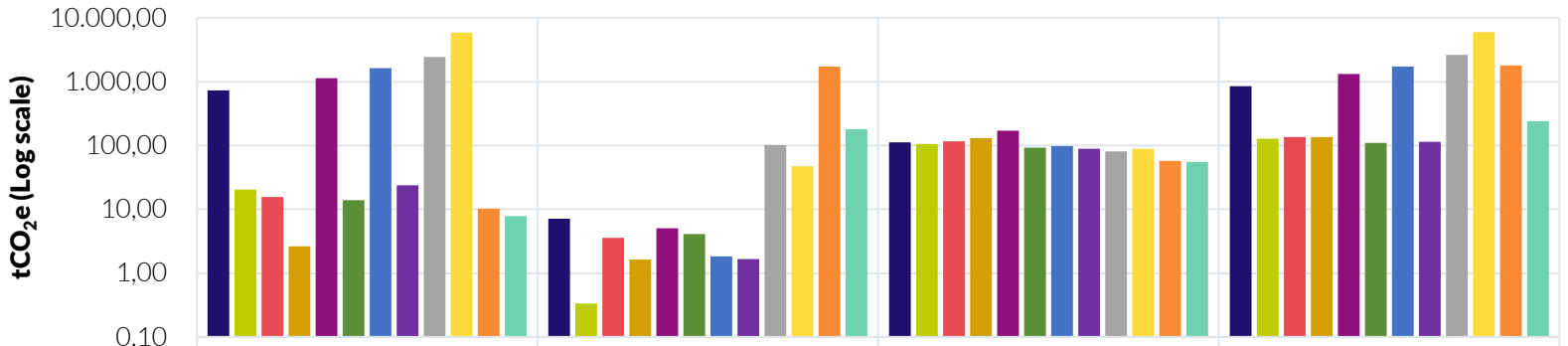
In 2021, UHIT emissions decreased by 86% as a result of not accounting for emissions from the energy consumption of running the synchronous condenser to the SIN

Developed by: Ecofinance NEGÓCIOS

Analysis

In 2021, UHIT emissions decreased by 86% relative to 2020, and by 72% relative to the EBE inventory base year, 2010.

GHG Emission Evolution - Equity Share (tCO_2e)



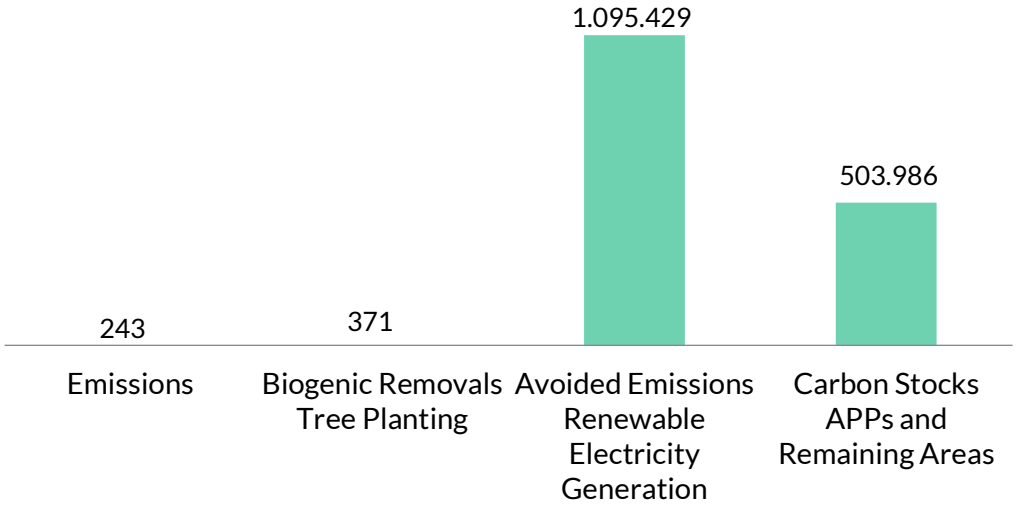
	Scope 1	Scope 2	Scope 3	Total
2010	737,66	7,10	113,11	857,87
2011	20,44	0,33	106,56	127,33
2012	15,50	3,56	116,12	135,18
2013	2,62	1,62	130,18	134,43
2014	1.137,84	5,00	169,09	1.311,93
2015	13,94	4,07	92,95	110,96
2016	1.636,35	1,82	98,43	1.736,60
2017	23,82	1,67	89,19	114,69
2018	2.455,03	101,36	81,06	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

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**9,27**	**57,5%**	**9,24**	**55,5%**	**0,03**	**0,3%**
Mobile Combustion	9,27	57,5%	9,24	55,5%	0,03	0,3%
Scope 3	**6,86**	**42,5%**	**7,41**	**44,5%**	**(0,55)**	**-7,4%**
Commuting	4,56	28,3%	5,27	31,7%	(0,71)	-13,4%
Transport and Distribution (upstream)	2,22	13,7%	1,86	11,2%	0,36	19,3%
Business Travel	0,08	0,5%	0,28	1,7%	(0,20)	-70,8%
Total	**16,13**	**100%**	**16,65**	**100%**	**(0,52)**	**-3,1%**

Emissions Balance (tCO_2e)



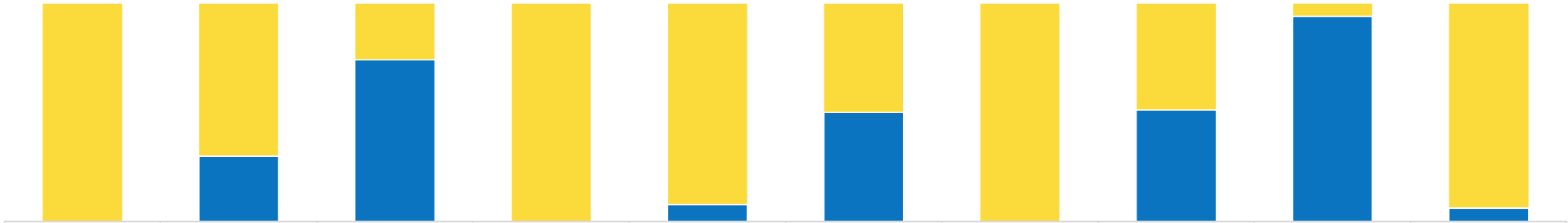
Analysis

In 2021, UHIT's biogenic emissions decreased by 3%, which is attributed to fuel consumption from employee commutes and business travel. Tree planting carried out in 2021 resulted in the biogenic removal of 371 tCO_2e. By generating renewable energy, UHIT avoided the emission of 1,095,429 tCO_2e. The maintenance and preservation of remnant areas and APPs amounts to a biogenic carbon stock of 503,986 tCO_2e.

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Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Electricity Acquisition	Commuting	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2020	7,68	1,44	0,03	235,72	140,41	10,92	0,14	1,88	0,04	398,38
2021	-	0,62	0,08	0,17	11,88	10,95	0,00	1,97	0,69	26,34

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**0,86**	**3,3%**	**244,99**	**61,5%**	**(244,13)**	**-99,6%**
Stationary Combustion	-	0,0%	7,68	1,9%	(7,68)	-100,0%
Mobile Combustion	0,62	2,3%	1,44	0,4%	(0,82)	-57,2%
Wastewater Treatment	0,08	0,3%	0,03	0,0%	0,05	187,7%
Fugitive Emissions	0,17	0,6%	235,72	59,2%	(235,56)	-99,9%
Scope 2	**11,88**	**45,1%**	**140,41**	**35,2%**	**(128,53)**	**-91,5%**
Electricity Acquisition	11,88	45,1%	140,41	35,2%	(128,53)	-91,5%
Scope 3	**13,60**	**51,6%**	**12,98**	**3,3%**	**0,62**	**4,8%**
Commuting	10,95	41,6%	10,92	2,7%	0,02	0,2%
Waste - Scope 03	0,00	0,0%	0,14	0,0%	(0,14)	-99,9%
Transport and Distribution (upstream)	1,97	7,5%	1,88	0,5%	0,09	4,9%
Business Travel	0,69	2,6%	0,04	0,0%	0,64	1492,6%
Total	**26,34**	**100%**	**398,38**	**100%**	**(372,04)**	**-93,4%**

Analysis

In 2021, UHMA emissions decreased by 93%, which can mainly be attributed to not accounting for emissions from the energy consumption of running the synchronous condenser to the SIN

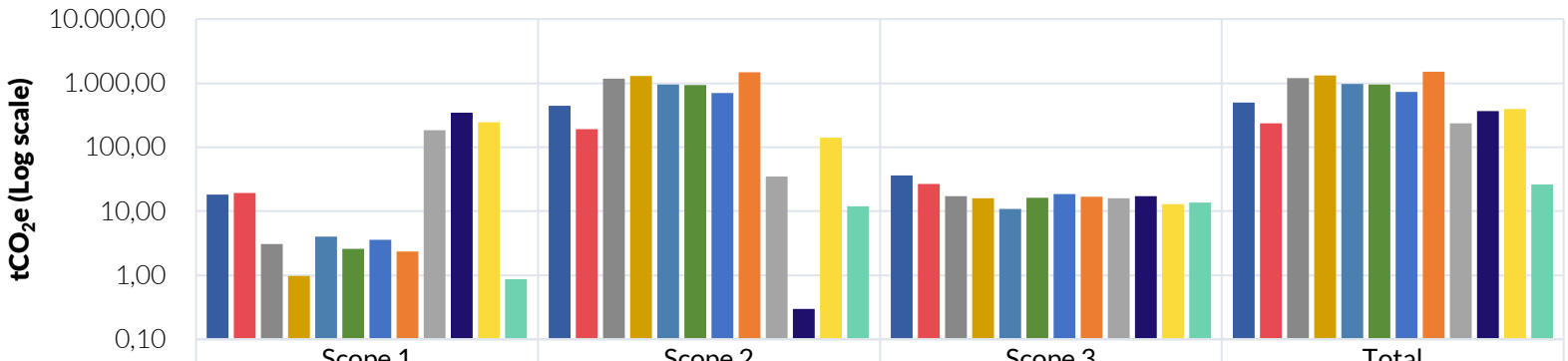
Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | **Emissions by scope (tCO_2e) - Annual Growth** | Biogenic Emissions and Balance

Analysis

Since emissions accounting began (2010), 2021 was the year with the lowest level of emissions at UHMA. UHMA's emissions have decreased by 95% since the EBE inventory base year, 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

Greenhouse Gases Emissions Inventory 2021

Institutional

Methodology

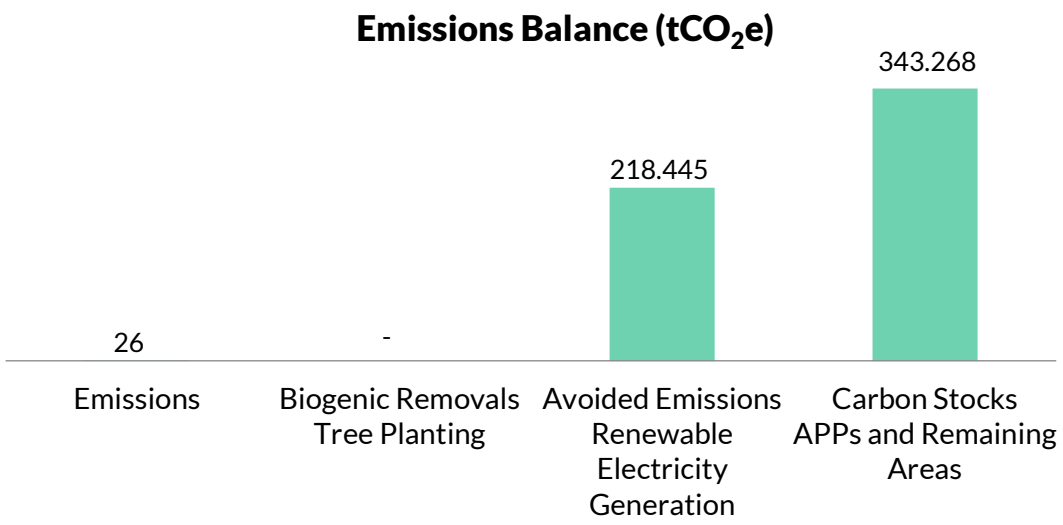
Results

Return

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**2,59**	**61,3%**	**3,32**	**67,5%**	**(0,74)**	**-22,2%**
Mobile Combustion	2,59	61,3%	2,41	49,0%	0,18	7,3%
Stationary Combustion	-	0,0%	0,91	18,6%	(0,91)	-100,0%
Scope 3	**1,63**	**38,7%**	**1,60**	**32,5%**	**0,04**	**2,2%**
Commuting	1,27	30,0%	1,27	25,8%	(0,00)	-0,3%
Transport and Distribution (upstream)	0,35	8,4%	0,33	6,7%	0,02	7,2%
Business Travel	0,01	0,3%	-	0,0%	0,01	100,0%
Total	**4,22**	**100%**	**4,92**	**100%**	**(0,70)**	**-14,3%**



Analysis

By generating renewable energy, UHMA avoided the emission of 218,445 tCO_2e. The maintenance and preservation of remnant areas and APPs amounts to a biogenic carbon stock of 343,268 tCO_2e.

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Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Agricultural Activities	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Land Use Change	Waste	Electricity Acquisition	Commuting	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2020	0,10	0,52	6,13	0,08	-	431,70	0,51	2.367,42	25,10	0,61	17,74	-	2.849,90
2021	0,08	0,19	4,11	0,15	0,18	-	0,001	52,62	10,75	0,00	33,90	2,09	104,05

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**4,70**	**4,5%**	**439,03**	**15,4%**	**(434,33)**	**-98,9%**
Agricultural Activities	0,08	0,1%	0,10	0,0%	(0,02)	-24,2%
Stationary Combustion	0,19	0,2%	0,52	0,0%	(0,32)	-63,0%
Mobile Combustion	4,11	3,9%	6,13	0,2%	(2,02)	-33,0%
Wastewater Treatment	0,15	0,1%	0,08	0,0%	0,06	75,6%
Fugitive Emissions	0,18	0,2%	-	0,0%	0,18	100,0%
Land Use Change	-	0,0%	431,70	15,1%	(431,70)	-100,0%
Waste	0,001	0,0%	0,51	0,0%	(0,51)	-99,9%
Scope 2	**52,62**	**50,6%**	**2.367,42**	**83,1%**	**(2.314,80)**	**-97,8%**
Electricity Acquisition	52,62	50,6%	2.367,42	83,1%	(2.314,80)	-97,8%
Scope 3	**46,74**	**44,9%**	**43,45**	**1,5%**	**3,28**	**7,6%**
Commuting	10,75	10,3%	25,10	0,9%	(14,35)	-57,2%
Waste - Scope 03	0,00	0,0%	0,61	0,0%	(0,61)	-100,0%
Transport and Distribution (upstream)	33,90	32,6%	17,74	0,6%	16,16	91,1%
Business Travel	2,09	2,0%	-	0,0%	2,09	100,0%
Total	**104,05**	**100%**	**2.849,90**	**100%**	**(2.745,85)**	**-96,3%**

Analysis

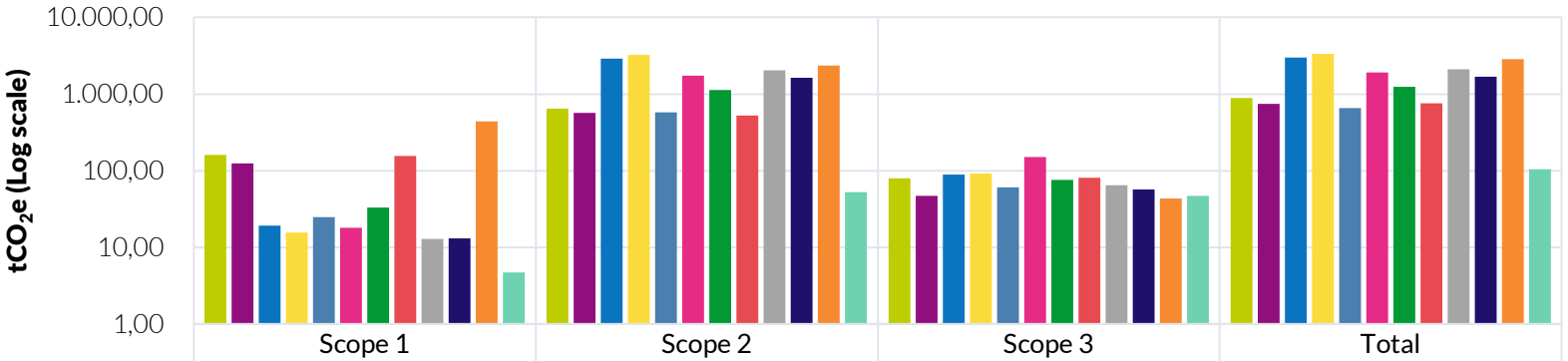
In 2021, UHPF emissions decreased by 96% as a result of not accounting for emissions from the energy consumption of running the synchronous condenser to the SIN. Also noteworthy is the decrease in emissions related to legal deforestation of native forest (100%).

Developed by: Ecofinance NEGÓCIOS

Analysis

Since the emissions accounting began (2010), 2021 was the year with the lowest registered level of emissions at UHPF. Emissions decreased by 88% relative to the inventory base year (2010).

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



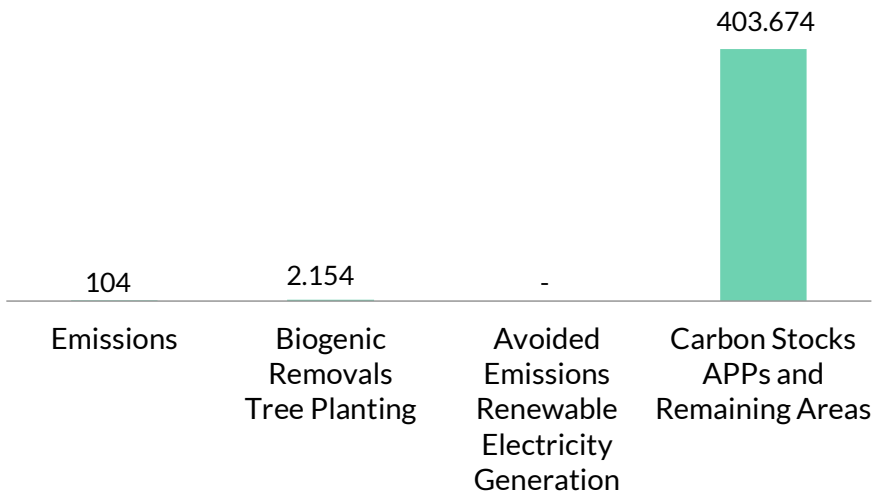
	Scope 1	Scope 2	Scope 3	Total
2010	160,97	644,58	79,56	885,11
2011	124,60	570,73	47,24	742,57
2012	19,35	2.883,34	88,83	2.991,52
2013	15,55	3.226,38	92,25	3.334,19
2014	25,02	574,82	61,04	660,88
2015	17,91	1.730,16	150,38	1.898,45
2016	33,05	1.132,56	75,94	1.241,55
2017	155,38	527,43	80,46	763,27
2018	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

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**9,38**	**52,0%**	**349,59**	**98,2%**	**(340,21)**	**-97,3%**
Land Use Change	-	0,0%	336,05	94,4%	(336,05)	-100,0%
Mobile Combustion	9,36	51,9%	13,48	3,8%	(4,12)	-30,6%
Stationary Combustion	0,02	0,1%	0,06	0,0%	(0,04)	-69,3%
Scope 3	**8,67**	**48,0%**	**6,34**	**1,8%**	**2,33**	**36,7%**
Transport and Distribution (upstream)	7,31	40,5%	3,42	1,0%	3,89	113,6%
Commuting	1,24	6,9%	2,92	0,8%	(1,67)	-57,3%
Business Travel	0,11	0,6%	-	0,0%	0,11	100,0%
Total	**18,04**	**100%**	**355,93**	**100%**	**(337,88)**	**-94,9%**

Emissions Balance (tCO_2e)



Analysis

Biogenic emissions from the UHPF decreased by 94% in 2021, as a result of land use changes. Tree planting carried out in 2021 resulted in the biogenic removal of 2,154 tCO_2e. The maintenance and preservation of remnant areas and APPs amounts to a biogenic carbon stock 403,674 tCO_2e.

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CETR

Trairi
Wind Power Plant



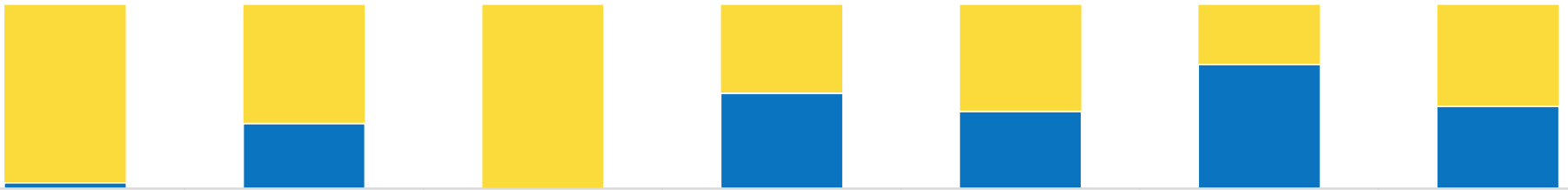
FVAE

Assú V
Photovoltaic Power Plant

Developed by:
Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Stationay Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Electricity Acquisition	Business Travel	Total
2020	0,80	15,31	15,52	46,29	33,99	6,11	118,02
2021	0,03	8,39	-	49,87	24,65	12,67	95,61

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**58,29**	**61,0%**	**77,91**	**66,0%**	**(19,62)**	**-25,2%**
Stationay Combustion	0,03	0,0%	0,80	0,7%	(0,77)	-96,5%
Mobile Combustion	8,39	8,8%	15,31	13,0%	(6,91)	-45,2%
Wastewater Treatment	-	0,0%	15,52	13,1%	(15,52)	-100,0%
Fugitive Emissions	49,87	52,2%	46,29	39,2%	3,58	7,7%
Scope 2	**24,65**	**25,8%**	**33,99**	**28,8%**	**(9,34)**	**-27,5%**
Electricity Acquisition	24,65	25,8%	33,99	28,8%	(9,34)	-27,5%
Scope 3	**12,67**	**13,3%**	**6,11**	**5,2%**	**6,56**	**107,4%**
Business Travel	12,67	13,3%	6,11	5,2%	6,56	107,4%
Total	**95,61**	**100%**	**118,02**	**100%**	**(22,41)**	**-19,0%**

Analysis

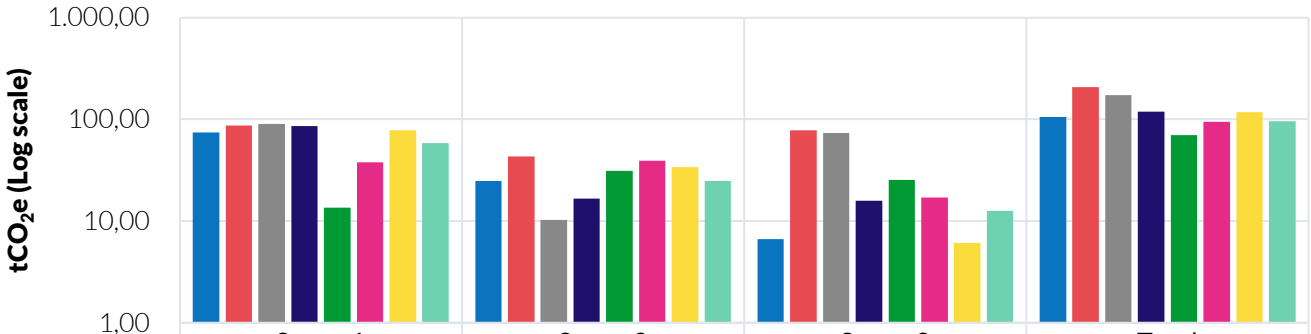
CETR emissions in 2021 decreased by 19% relative to 2020. This decrease can be attributed to wastewater treatment reporting, decreased grid energy consumption, and mobile combustion from company-controlled vehicles.

Developed by: Ecofinance NEGÓCIOS

Analysis

CETR emissions decreased by 9% in 2021 relative to the plant's first year of data reporting, 2014.

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



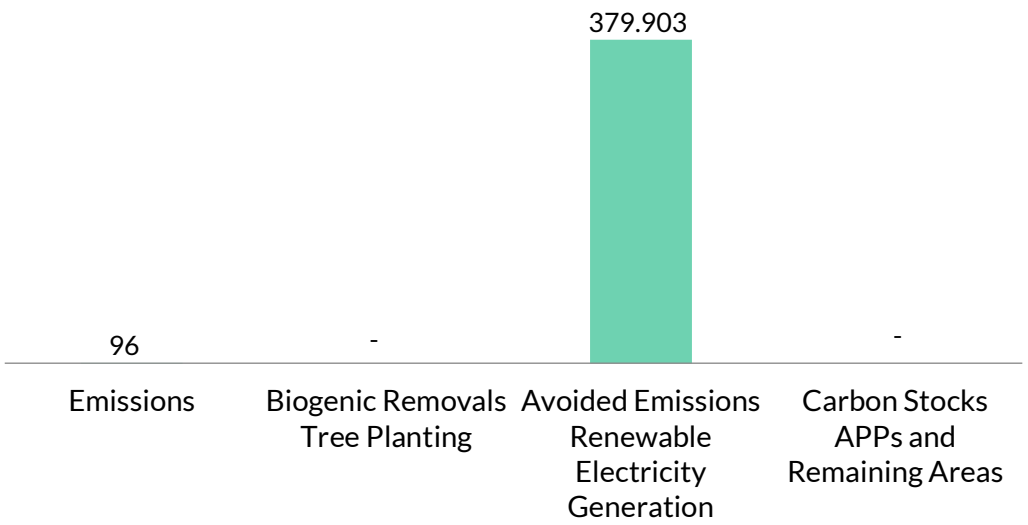
	Scope 1	Scope 2	Scope 3	Total
2014	73,97	24,86	6,65	105,49
2015	87,20	43,10	77,69	207,98
2016	89,78	10,30	73,79	173,87
2017	85,86	16,59	15,94	118,39
2018	13,59	31,1924	25,52	70,30
2019	37,77	39,36	17,09	94,23
2020	77,91	33,99	6,11	118,02
2021	58,29	24,65	12,67	95,61

Inventário de Emissões 2021
Institutional
Methodology
Results
Return

Developed by:
Ecofinance NEGÓCIOS

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**22,25**	**97,7%**	**17,33**	**100,0%**	**4,91**	**28,4%**
Mobile Combustion	22,24	97,7%	17,24	99,4%	5,00	29,0%
Stationary Combustion	0,01	0,0%	0,10	0,6%	(0,09)	-92,4%
Scope 3	**0,52**	**2,3%**	**-**	**0,0%**	**0,52**	**100,0%**
Business Travel	0,52	2,3%	-	0,0%	0,52	100,0%
Total	**22,77**	**100%**	**17,33**	**100%**	**5,44**	**31,4%**

Emissions Balance (tCO_2e)



Analysis

Increased biogenic emissions (31%) can be attributed to an increase in both the consumption of renewable fuel in company-controlled vehicles and business travel. The generation of renewable energy at CETR resulted in 379,903 tCO_2e of avoided emissions.

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Electricity Acquisition	Business Travel	Total
2020	7,43	4,02	-	36,97	-	48,43
2021	7,28	0,20	28,10	84,22	0,28	120,07

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**35,57**	**29,6%**	**11,46**	**23,7%**	**24,12**	**210,6%**
Mobile Combustion	7,28	6,1%	7,43	15,3%	(0,15)	-2,0%
Wastewater Treatment	0,20	0,2%	4,02	8,3%	(3,82)	-95,1%
Fugitive Emissions	28,10	23,4%	-	0,0%	28,10	100,0%
Scope 2	**84,22**	**70,1%**	**36,97**	**76,3%**	**47,24**	**127,8%**
Electricity Acquisition	84,22	70,1%	36,97	76,3%	47,24	127,8%
Scope 3	**0,28**	**0,2%**	**-**	**0,0%**	**0,28**	**100,0%**
Business Travel	0,28	0,2%	-	0,0%	0,28	100,0%
Total	**120,07**	**100%**	**48,43**	**100%**	**71,64**	**147,9%**

Analysis

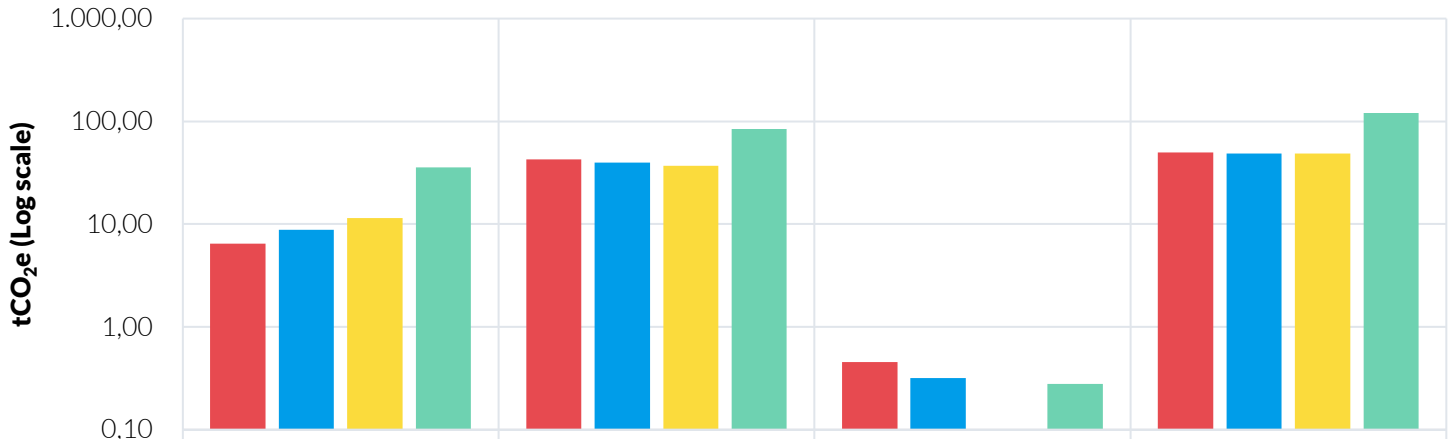
From 2020 to 2021 FVAE emissions increased by 148%, which is attributed to the purchase of gird energy, an increase in the SIN emission factor (105%), and fleeting emissions that weren't reported in 2020.

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Analysis

In 2021, FVAE emissions reached an all-time high, with a 142% increase over the plant's first year in operation (2018).

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



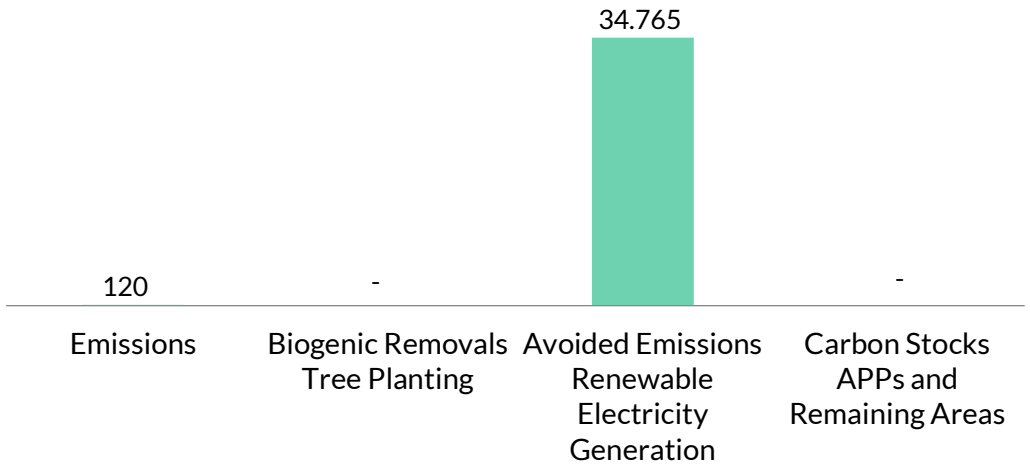
	Scope 1	Scope 2	Scope 3	Total
2018	6,42	42,6398	0,45	49,51
2019	8,84	39,62	0,32	48,78
2020	11,46	36,97	-	48,43
2021	35,55	84,22	0,28	120,05

Developed by:
Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**1,73**	**96,2%**	**1,19**	**100,0%**	**0,54**	**45,7%**
Mobile Combustion	1,73	96,2%	1,19	100,0%	0,54	45,7%
Scope 3	**0,07**	**3,8%**	**-**	**0,0%**	**0,07**	**100,0%**
Business Travel	0,07	3,8%	-	0,0%	0,07	100,0%

Emissions Balance (tCO_2e)



Analysis

In 2021, FVAE's biogenic emissions increased by 51%, which is attributed to fuel consumption by company-controlled vehicles and from business travel. The generation of renewable energy at FVAE resulted in 34,765 tCO_2e of avoided emissions.

Greenhouse Gases Emissions Inventory 2021

Institutional

Methodology

Results

Return

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CECL

Campo Largo
Wind Power Plant



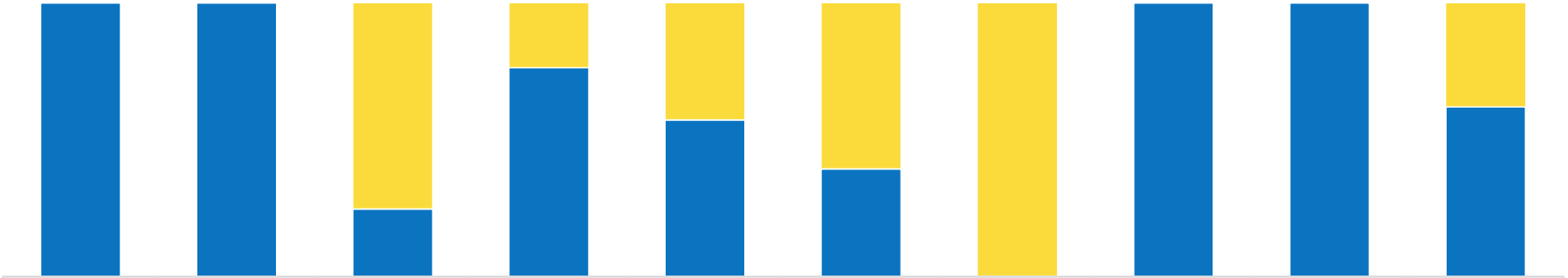
CEUR

Umburanas
Wind Power Plant

Developed by:
Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Agricultural Activities	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Electricity Acquisition	Commuting	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2020	-	-	24,87	7,31	22,69	28,53	1,10	-	-	84,50
2021	0,001	42,48	8,15	23,57	30,40	18,53	0,00	3,16	11,68	137,98

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**74,20**	**53,8%**	**32,18**	**38,1%**	**42,02**	**130,6%**
Agricultural Activities	0,001	0,0%	-	0,0%	0,00	100,0%
Mobile Combustion	42,48	30,8%	-	0,0%	42,48	100,0%
Wastewater Treatment	8,15	5,9%	24,87	29,4%	(16,72)	-67,2%
Fugitive Emissions	23,57	17,1%	7,31	8,7%	16,26	222,4%
Scope 2	**30,40**	**22,0%**	**22,69**	**26,8%**	**7,72**	**34,0%**
Electricity Acquisition	30,40	22,0%	22,69	26,8%	7,72	34,0%
Scope 3	**33,38**	**24,2%**	**29,64**	**35,1%**	**3,74**	**12,6%**
Commuting	18,53	13,4%	28,53	33,8%	(10,00)	-35,0%
Waste - Scope 03	0,00	0,0%	1,10	1,3%	(1,10)	-99,7%
Transport and Distribution (upstream)	3,16	2,3%	-	0,0%	3,16	100,0%
Business Travel	11,68	8,5%	-	0,0%	11,68	100,0%
Total	**137,98**	**100%**	**84,50**	**100%**	**53,48**	**63,3%**

Analysis

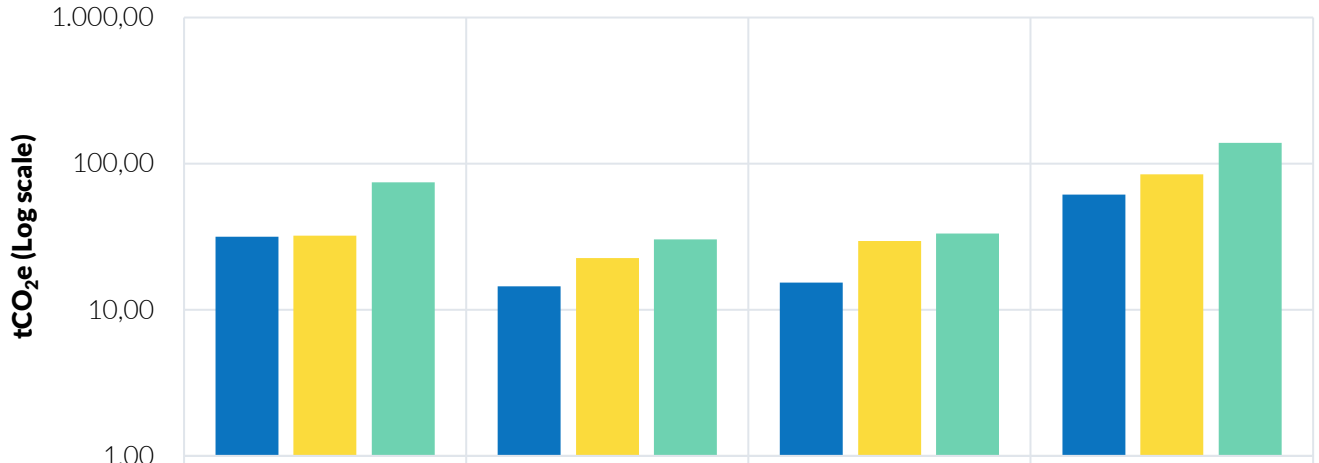
CECL emissions in 2021 increased by 63% relative to 2020 and is mainly attributed to fuel consumption from company-controlled vehicles and business travel, which were not reported in 2020, and from increased fleeting emissions.

Developed by: Ecofinance NEGÓCIOS

Analysis

CECL's emissions increased by 125% relative to its first year of its data reporting (2019).

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



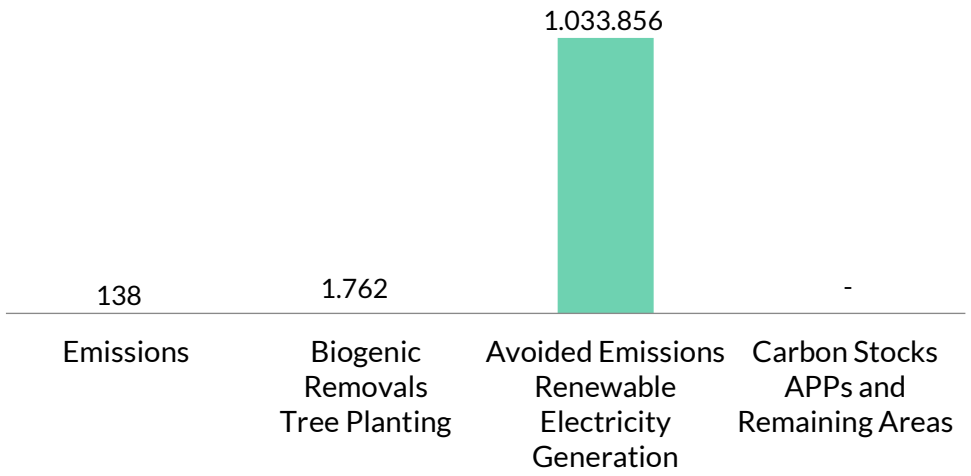
	Scope 1	Scope 2	Scope 3	Total
2019	31,63	14,48	15,29	61,40
2020	32,18	22,69	29,64	84,50
2021	74,20	30,40	33,38	137,98

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | **Biogenic Emissions and Balance**

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**72,62**	**95,9%**	**-**	**0,0%**	**72,62**	**100,0%**
Mobile Combustion	72,62	95,9%	-	0,0%	72,62	100,0%
Scope 3	**3,12**	**4,1%**	**18,17**	**100,0%**	**(15,05)**	**-82,8%**
Commuting	2,23	2,9%	18,17	100,0%	(15,93)	-87,7%
Transport and Distribution (upstream)	0,40	0,5%	-	0,0%	0,40	100,0%
Business Travel	0,49	0,6%	-	0,0%	0,49	100,0%
Total	**75,73**	**100%**	**18,17**	**100%**	**57,57**	**316,9%**

Emissions Balance (tCO_2e)



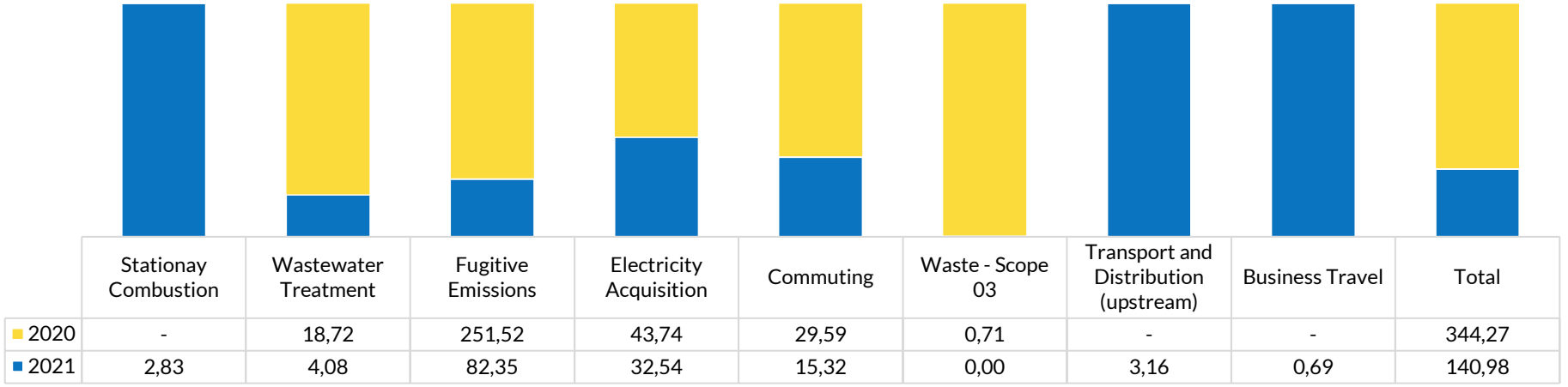
Analysis

In 2021, CECL's biogenic emissions increased by 317%, which can be directly attributed to mobile combustion from company-controlled vehicles. Tree planting carried out in 2021 resulted in the biogenic removal of 1,033,856 tCO_2e.

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Stationay Combustion	Wastewater Treatment	Fugitive Emissions	Electricity Acquisition	Commuting	Waste - Scope 03	Transport and Distribution (upstream)	Business Travel	Total
2020	-	18,72	251,52	43,74	29,59	0,71	-	-	344,27
2021	2,83	4,08	82,35	32,54	15,32	0,00	3,16	0,69	140,98

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**89,26**	**63,3%**	**270,24**	**78,5%**	**(180,98)**	**-67,0%**
Stationay Combustion	2,83	2,0%	-	0,0%	2,83	100,0%
Wastewater Treatment	4,08	2,9%	18,72	5,4%	(14,64)	-78,2%
Fugitive Emissions	82,35	58,4%	251,52	73,1%	(169,18)	-67,3%
Scope 2	**32,54**	**23,1%**	**43,74**	**12,7%**	**(11,19)**	**-25,6%**
Electricity Acquisition	32,54	23,1%	43,74	12,7%	(11,19)	-25,6%
Scope 3	**19,18**	**13,6%**	**30,29**	**8,8%**	**(11,12)**	**-36,7%**
Commuting	15,32	10,9%	29,59	8,6%	(14,26)	-48,2%
Waste - Scope 03	0,00	0,0%	0,71	0,2%	(0,71)	-99,7%
Transport and Distribution (upstream)	3,16	2,2%	-	0,0%	3,16	100,0%
Business Travel	0,69	0,5%	-	0,0%	0,69	100,0%
Total	**140,98**	**100%**	**344,27**	**100%**	**(203,29)**	**-59,0%**

Analysis

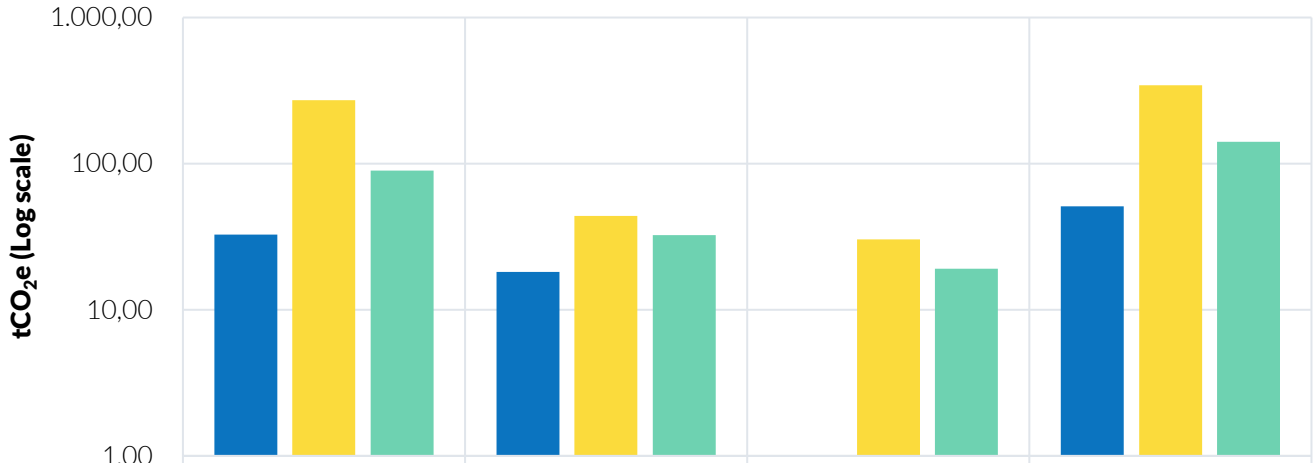
In 2021, CEUR emissions decreased by 59% relative to 2020. This decrease can mainly be attributed to a reduction in fleeting emissions (67%), effluents (78%), and the displacement of employees (48%).

Developed by: Ecofinance NEGÓCIOS

Analysis

CEUR emissions increased by 177% relative to 2019, which was the first year that the plant reported data.

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

Developed by: Ecofinance NEGÓCIOS

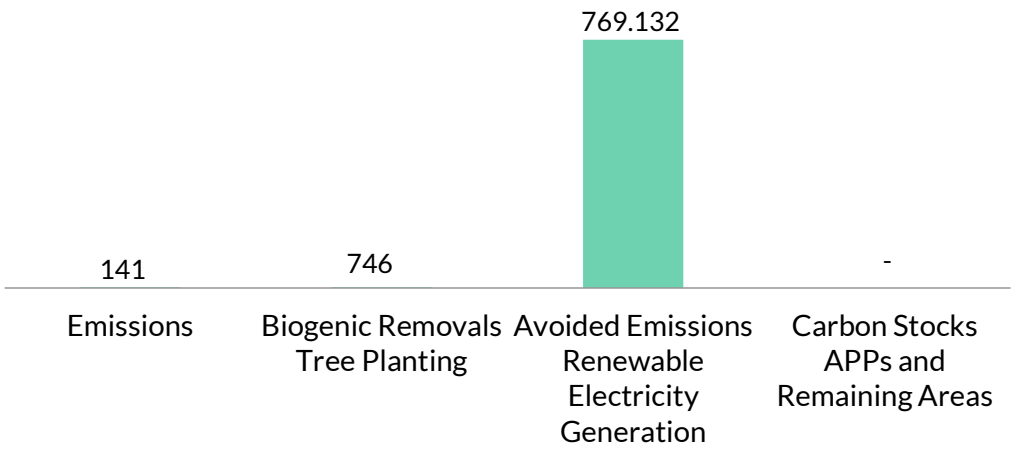
Emissions by Source (tCO_2e) 2021 x 2020

Emissions by scope (tCO_2e) - Annual Growth

Biogenic Emissions and Balance

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**0,32**	**11,5%**	**-**	**0,0%**	**0,32**	**100,0%**
Stationay Combustion	0,32	11,5%	-	0,0%	0,32	100,0%
Scope 3	**2,47**	**88,5%**	**18,29**	**100,0%**	**(15,82)**	**-86,5%**
Commuting	1,91	68,3%	18,29	100,0%	(16,38)	-89,6%
Transport and Distribution (upstream)	0,40	14,2%	-	0,0%	0,40	100,0%
Business Travel	0,17	6,0%	-	0,0%	0,17	100,0%
Total	**2,79**	**100%**	**18,29**	**100%**	**(15,50)**	**-84,7%**

Emissions Balance (tCO_2e)



Analysis

In 2021, CEUR's biogenic emissions decreased by 85%, which is directly related to employee commuting. Tree planting carried out in 2021 resulted in the biogenic removal of 746 tCO_2e. Additionally, by generating renewable energy, CEUR avoided the emission of 769,132 tCO_2e.



UCLA
Lages
Cogeneration Unit



UETB
Tubarão
Wind Power Plant



UFCA
Cidade Azul
Photovoltaic Plant



UTFE
Ferrari Thermal Power Plant



UTIB
Ibitiúva Thermoelectric Plant

Developed by:
Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO2e)



	Stationay Combustion	Mobile Combustion	Fugitive Emissions	Electricity Acquisition	Commuting	Waste - Scope 03	Transport and Distribution (Downstream)	Transport and Distribution (upstream)	Business Travel	Total
2020	2.441,15	150,03	3,69	23,81	33,02	4,00	17,98	442,08	1,91	3.117,67
2021	1.694,55	141,83	28,86	158,10	32,15	3,26	-	230,01	3,19	2.291,97

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**1.865,25**	**81,4%**	**2.594,87**	**83,2%**	**(729,62)**	**-28,1%**
Stationay Combustion	1.694,55	73,9%	2.441,15	78,3%	(746,60)	-30,6%
Mobile Combustion	141,83	6,2%	150,03	4,8%	(8,20)	-5,5%
Fugitive Emissions	28,86	1,3%	3,69	0,1%	25,17	682,5%
Scope 2	**158,10**	**6,9%**	**23,81**	**0,8%**	**134,30**	**564,1%**
Electricity Acquisition	158,10	6,9%	23,81	0,8%	134,30	564,1%
Scope 3	**268,61**	**11,7%**	**498,99**	**16,0%**	**(230,38)**	**-46,2%**
Commuting	32,15	1,4%	33,02	1,1%	(0,87)	-2,6%
Waste - Scope 03	3,26	0,1%	4,00	0,1%	(0,74)	-18,5%
Transport and Distribution (Downstream)	-	0,0%	17,98	0,6%	(17,98)	-100,0%
Transport and Distribution (upstream)	230,01	10,0%	442,08	14,2%	(212,07)	-48,0%
Business Travel	3,19	0,1%	1,91	0,1%	1,28	66,9%
Total	**2.291,97**	**100%**	**3.117,67**	**100%**	**(825,70)**	**-26,5%**

Analysis

UCLA emissions in 2021 decreased by 26% relative to 2020. This decrease can be attributed to lower biomass consumption throughout its operation (-30%) and outsourced transportation (-48%) and were partially offset by increased emissions from grid power purchases (564%).

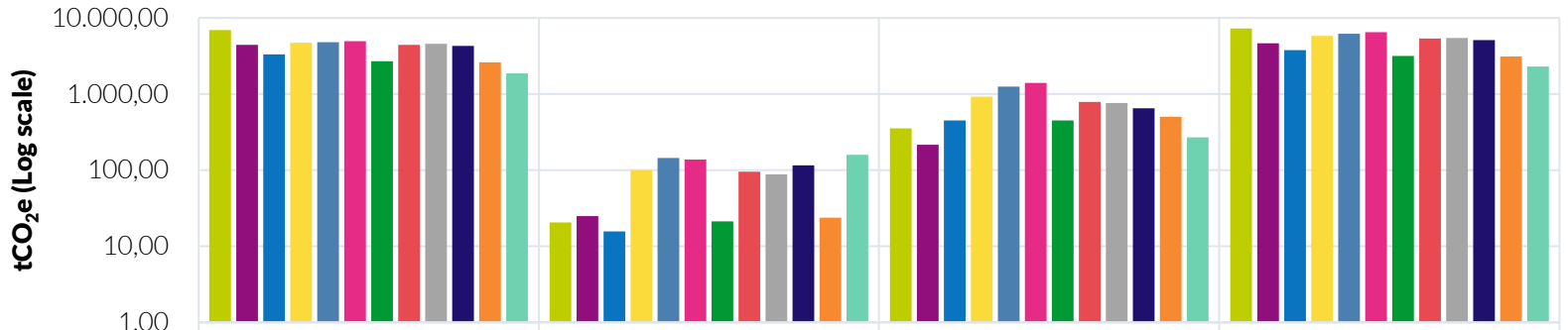
Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | **Emissions by scope (tCO_2e) - Annual Growth** | Biogenic Emissions and Balance

Analysis

In 2021, UCLA GHG emissions emissions reached an all-time low, with a 68% decrease relative to the EBE inventory base year, 2010.

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

Greenhouse Gases Emissions Inventory 2021

Institutional

Methodology

Results

Return

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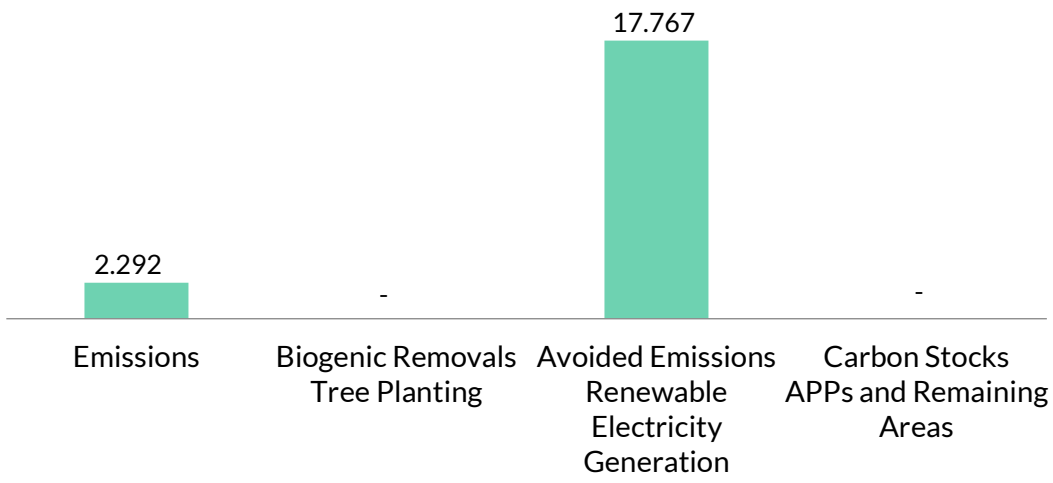
Emissions by Source (tCO_2e) 2021 x 2020

Emissions by scope (tCO_2e) - Annual Growth

Biogenic Emissions and Balance

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**89.413,87**	**100,0%**	**128.713,56**	**100,0%**	**(39.299,70)**	**-30,5%**
Mobile Combustion	17,06	0,0%	18,23	0,0%	(1,16)	-6,4%
Stationary Combustion	89.396,80	99,9%	128.695,34	99,9%	(39.298,53)	-30,5%
Scope 3	**31,70**	**0,0%**	**59,32**	**0,0%**	**(27,62)**	**-46,6%**
Transport and Distribution (Downstream)	-	0,0%	2,09	0,0%	(2,09)	-100,0%
Transport and Distribution (upstream)	25,99	0,0%	51,35	0,0%	(25,36)	-49,4%
Commuting	5,57	0,0%	5,61	0,0%	(0,04)	-0,7%
Business Travel	0,15	0,0%	0,28	0,0%	(0,13)	-47,6%
Total	**89.445,57**	**100%**	**128.772,89**	**100%**	**(39.327,32)**	**-30,5%**

Emissions Balance (tCO_2e)



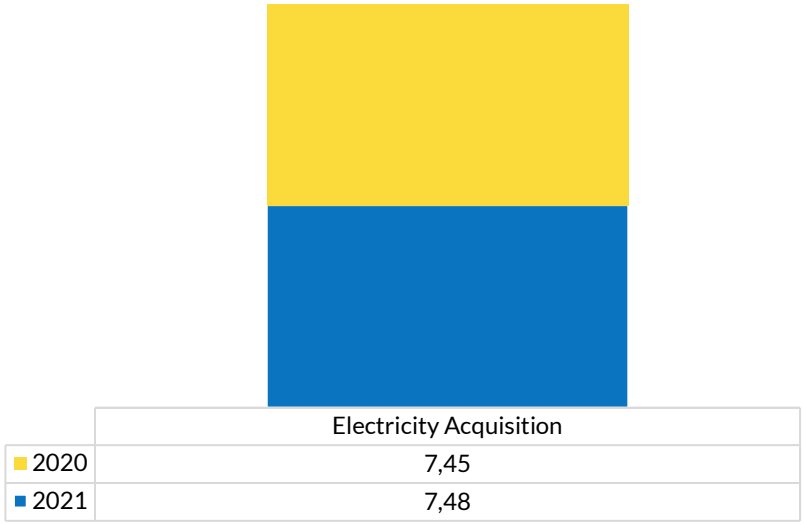
Analysis

Decreased biogenic emissions (31%) as a result of a decrease in biomass consumption. The generation of renewable energy at UCLA resulted in 17,767 tCO_2e of avoided emissions.

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Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 2	**7,48**	**100,0%**	**7,45**	**100,0%**	**0,03**	**0,4%**
Electricity Acquisition	7,48	100,0%	7,45	100,0%	0,03	0,4%
Total	**7,48**	**100%**	**7,45**	**100%**	**0,03**	**0,4%**

Analysis

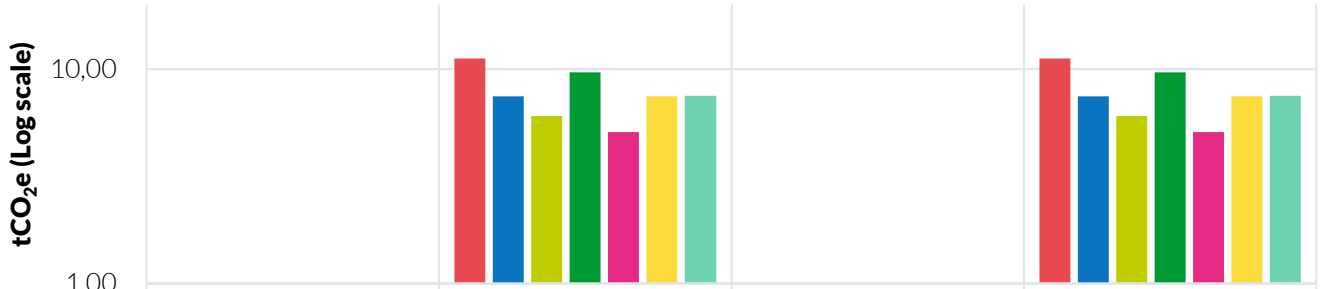
In 2021, UETB emissions increased by 0.4% as a result of an increase in the SIN emission factor (105%), leading to higher emissions from grid energy consumption.

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Analysis

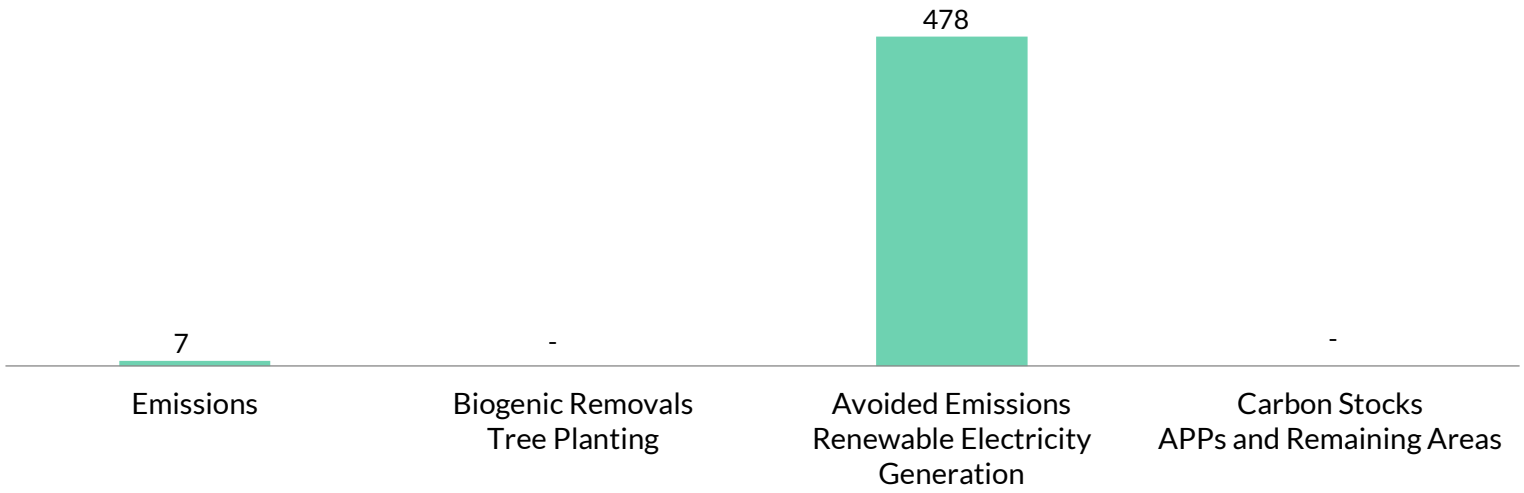
UETB emissions in 2021 increased by 0.4% relative to 2020, and by 33% relative to the plant's first year in operation, 2015.

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

Emissions Balance (tCO_2e)



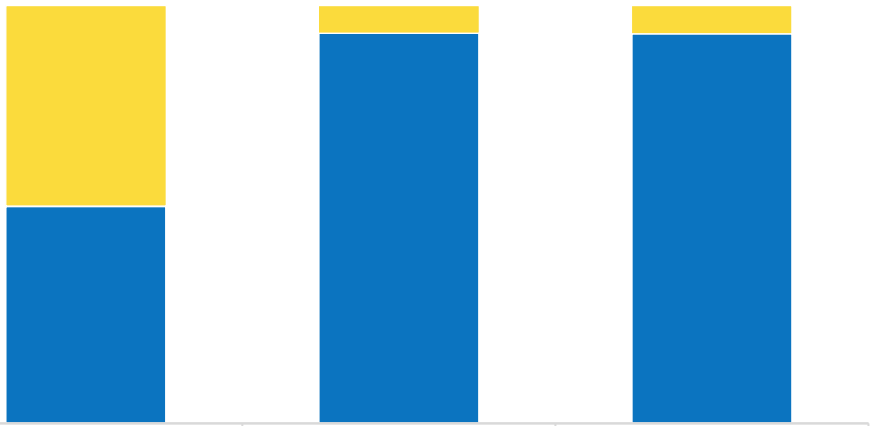
Analysis

No biogenic emissions were reported for this unit in 2021. The generation of renewable energy at UETB resulted in 478 tCO_2e of avoided emissions.

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Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Fugitive Emissions	Electricity Acquisition	Total
2020	0,05	3,65	3,69
2021	0,05	51,28	51,34

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**0,05**	**0,1%**	**0,05**	**1,3%**	**0,00**	**8,3%**
Fugitive Emissions	0,05	0,1%	0,05	1,3%	0,00	8,3%
Scope 2	**51,28**	**99,9%**	**3,65**	**98,7%**	**47,64**	**1306,7%**
Electricity Acquisition	51,28	99,9%	3,65	98,7%	47,64	1306,7%
Total	**51,34**	**100%**	**3,69**	**100%**	**47,64**	**1289,8%**

Analysis

In 2021, UFCA emissions increased by 1,290% as a result of greater grid energy consumption.

Greenhouse Gases Emissions Inventory 2021

Institutional

Methodology

Results

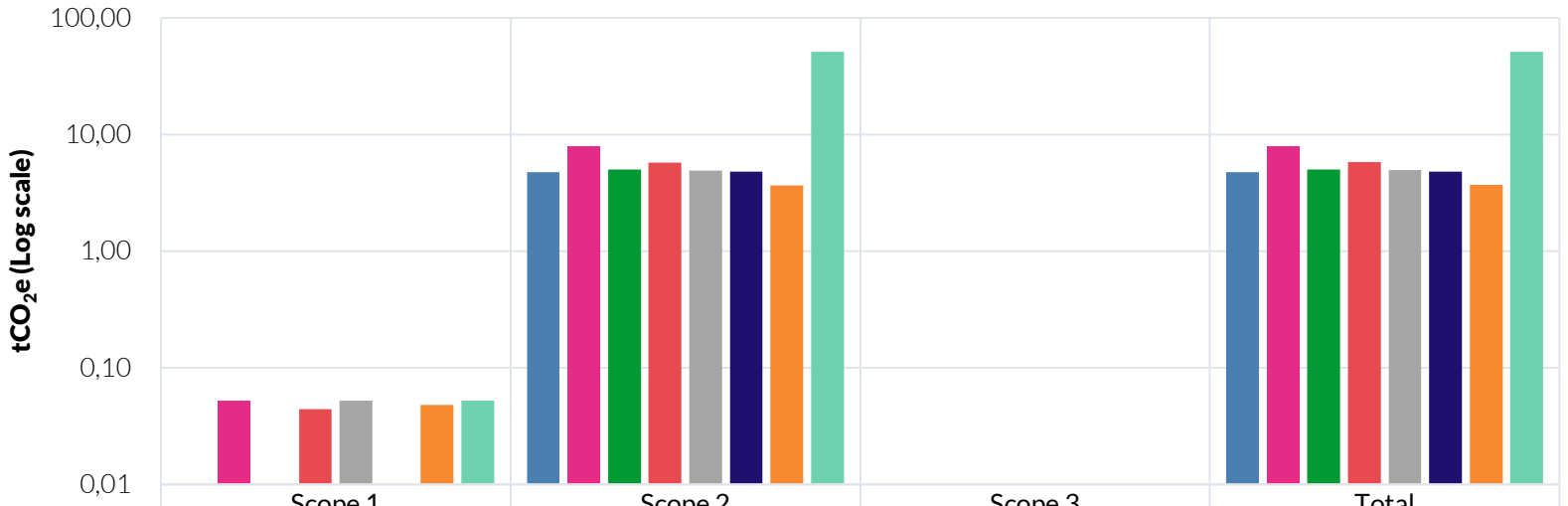
Return

Developed by: Ecofinance NEGÓCIOS

Analysis

In 2021, UFCA emissions reached an all-time high, with a 983% increase over the plant's first year in operation (2014).

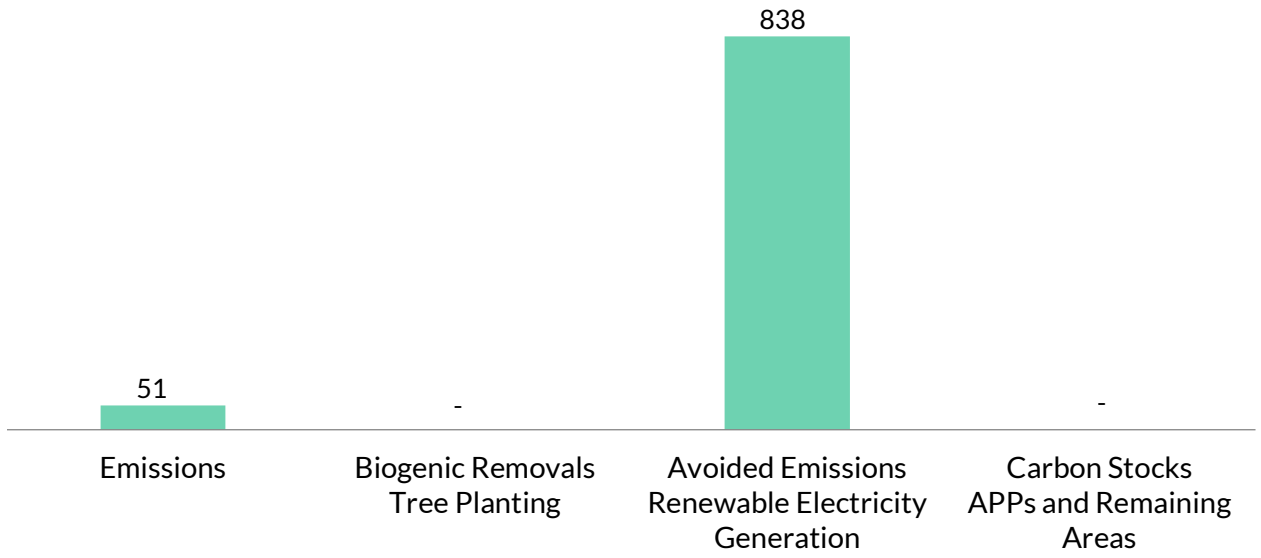
GHG Emission Evolution - Operational Control and Equity Share (tCO_2e)



	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

Developed by: Ecofinance NEGÓCIOS

Emissions Balance (tCO_2e)

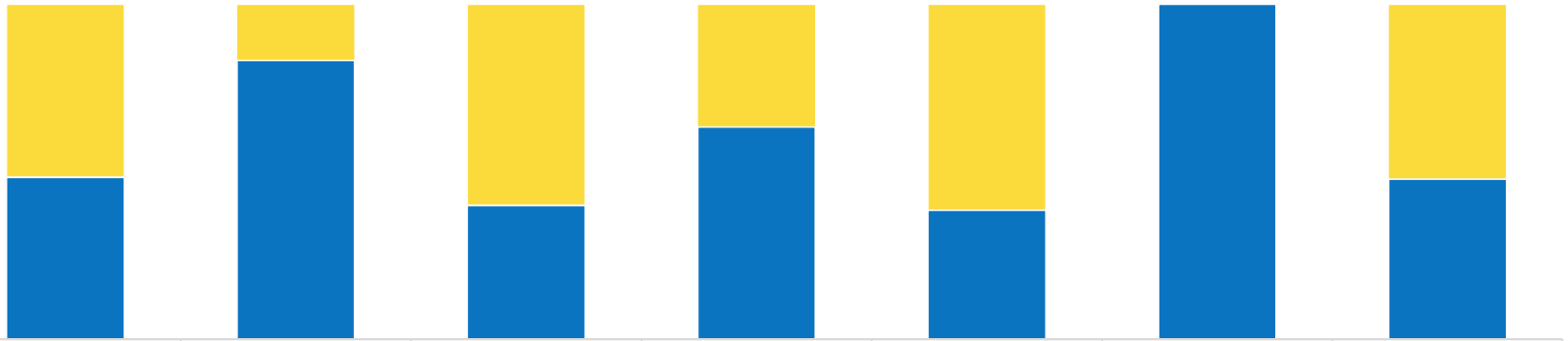


Analysis

No biogenic emissions were reported for this unit in 2021. The generation of renewable energy at UFCA resulted in 838 tCO_2e of avoided emissions.

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Stationay Combustion	Mobile Combustion	Fugitive Emissions	Electricity Acquisition	Transport and Distribution (upstream)	Business Travel	Total
2020	14.426,10	0,04	0,05	55,53	1.062,18	-	15.543,90
2021	13.516,01	0,18	0,04	96,38	666,64	0,94	14.280,19

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**13.516,23**	**94,7%**	**14.426,19**	**92,8%**	**(909,96)**	**-6,3%**
Stationay Combustion	13.516,01	94,6%	14.426,10	92,8%	(910,09)	-6,3%
Mobile Combustion	0,18	0,0%	0,04	0,0%	0,15	395,5%
Fugitive Emissions	0,04	0,0%	0,05	0,0%	(0,02)	-33,3%
Scope 2	**96,38**	**0,7%**	**55,53**	**0,4%**	**40,85**	**73,6%**
Electricity Acquisition	96,38	0,7%	55,53	0,4%	40,85	73,6%
Scope 3	**667,57**	**4,7%**	**1.062,18**	**6,8%**	**(394,61)**	**-37,2%**
Transport and Distribution (upstream)	666,64	4,7%	1.062,18	6,8%	(395,55)	-37,2%
Business Travel	0,94	0,0%	-	0,0%	0,94	100,0%
Total	**14.280,19**	**100%**	**15.543,90**	**100%**	**(1.263,72)**	**-8,1%**

Analysis

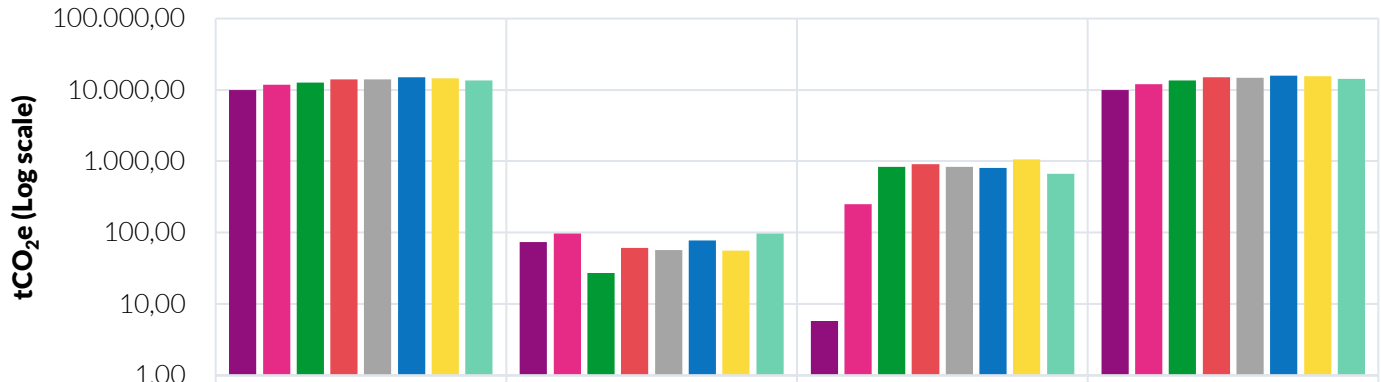
UTFE emissions in 2021 decreased by 8% relative to 2020. This reduction can be attributed to a decrease in biomass consumption (-6%) and outsourced transportation (-37%) and was partially offset by energy consumption from the grid (73%) related to an increase in the SIN emission factor (105%).

Developed by: Ecofinance NEGÓCIOS

Analysis

UTFE emissions decreased by 8% relative to 2020 and increased by 42% relative to the plant's first year of data reporting, 2014.

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

Developed by:
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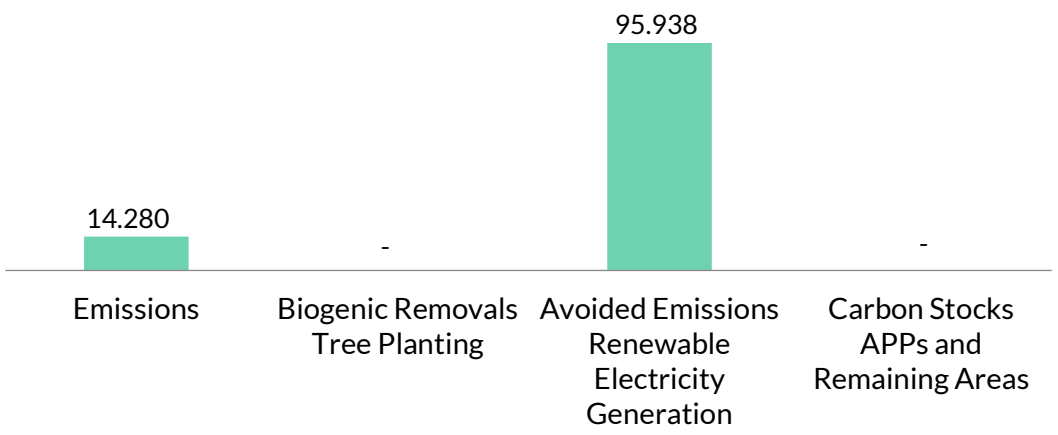
Emissions by Source (tCO_2e) 2021 x 2020

Emissions by scope (tCO^2e) - Annual Growth

Biogenic Emissions and Balance

Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**711.546,64**	**100,0%**	**759.832,03**	**100,0%**	**(48.285,39)**	**-6,4%**
Mobile Combustion	3,47	0,0%	3,81	0,0%	(0,34)	-9,0%
Stationary Combustion	711.543,17	100,0%	759.828,22	100,0%	(48.285,05)	-6,4%
Scope 3	**75,72**	**0,0%**	**123,37**	**0,0%**	**(47,65)**	**-38,6%**
Transport and Distribution (upstream)	75,49	0,0%	123,37	0,0%	(47,88)	-38,8%
Business Travel	0,23	0,0%	-	0,0%	0,23	100,0%
Total	**711.622,36**	**100,0%**	**759.955,40**	**100,0%**	**(48.333,05)**	**-6,4%**

Emissions Balance (tCO_2e)



Analysis

Decrease in biogenic emissions (6%) related to stationary combustion. Renewable energy generation at UTFE resulted in 95,938 tCO_2e of avoided emissions.

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Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

GHG Emissions Comparative Operational Control - 2021 x 2020 (tCO_2e)



	Stationary Combustion	Mobile Combustion	Fugitive Emissions	Electricity Acquisition	Waste - Scope 03	Transport and distribution (upstream)	Business Travel	Total
2020	4.804,80	6,61	0,06	32,20	1,19	432,27	-	5.277,13
2021	2.969,71	5,73	0,06	90,90	0,90	190,49	0,09	3.257,88

GHG Emissions Comparative Equity Share - 2021 x 2020 (tCO2e)



	Stationary Combustion	Mobile Combustion	Fugitive Emissions	Electricity Acquisition	Waste - Scope 03	Transport and distribution (upstream)	Business Travel	Total
2020	3.327,81	4,58	0,04	22,30	0,82	299,39	-	3.654,94
2021	2.056,82	3,97	0,04	62,96	0,62	131,94	0,06	2.256,41

Analysis

UTIB emissions decreased by 8% from 2020 to 2021, which can be directly attributed to a decrease in biomass consumption from stationary combustion and operations-related transportation.

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | Biogenic Emissions and Balance

Emission Sources	Operational Control						Equity Share					
	Total Emissions				Variation		Total Emissions				Variation	
	2021		2020		2021 x 2020		2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**2.975,50**	**91,3%**	**4.811,48**	**91,2%**	**(1.835,98)**	**-38,2%**	**2.060,83**	**91,3%**	**3.332,43**	**91,2%**	**(1.271,60)**	**-38,2%**
Stationary Combustion	2.969,71	91,2%	4.804,80	91,0%	(1.835,10)	-38,2%	2.056,82	91,2%	3.327,81	91,0%	(1.270,99)	-38,2%
Mobile Combustion	5,73	0,2%	6,61	0,1%	(0,88)	-13,3%	3,97	0,2%	4,58	0,1%	(0,61)	-13,3%
Fugitive Emissions	0,06	0,0%	0,06	0,0%	-	0,0%	0,04	0,0%	0,04	0,0%		0,0%
Scope 2	**90,90**	**2,8%**	**32,20**	**0,6%**	**58,71**	**182,3%**	**62,96**	**2,8%**	**22,30**	**0,6%**	**40,66**	**182,3%**
Electricity Acquisition	90,90	2,8%	32,20	0,6%	58,71	182,3%	62,96	2,8%	22,30	0,6%	40,66	182,3%
Scope 3	**191,48**	**5,9%**	**433,45**	**8,2%**	**(241,98)**	**-55,8%**	**132,62**	**5,9%**	**300,21**	**8,2%**	**(167,59)**	**-55,8%**
Waste - Scope 03	0,90	0,0%	1,19	0,0%	(0,29)	-24,3%	0,62	0,0%	0,82	0,0%	(0,20)	-24,3%
Transport and distribution (upstream)	190,49	5,8%	432,27	8,2%	(241,77)	-55,9%	131,94	5,8%	299,39	8,2%	(167,45)	-55,9%
Business Travel	0,09	0,0%	-	0,0%	0,09	100,0%	0,06	0,0%	-	0,0%	0,06	100,0%
Total	**3.257,88**	**100%**	**5.277,13**	**100%**	**(2.019,25)**	**-38%**	**2.256,41**	**100%**	**3.654,94**	**100%**	**(1.398,53)**	**-38%**

Analysis

UTIB emissions decreased by 8% from 2020 to 2021, which can be directly attributed to a decrease in biomass consumption from stationary combustion and operations-related transportation.

Developed by: Ecofinance NEGÓCIOS

Emissions by Source (tCO_2e) 2021 x 2020 | **Emissions by scope (tCO_2e) - Annual Growth** | 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

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

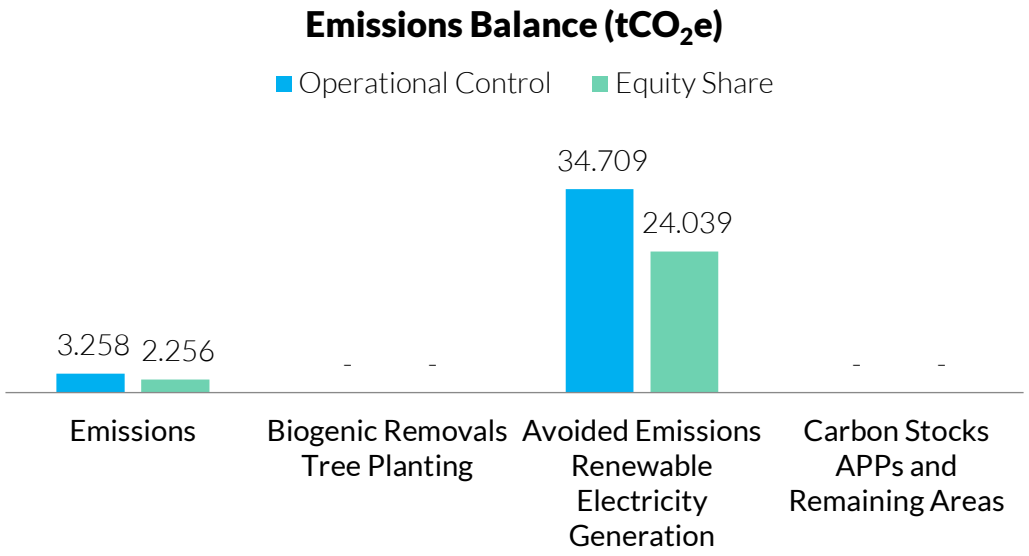
Analysis

UTIB emissions in 2021 decreased by 38% relative to 2020, and by 18% relative to the EBE inventory base year, 2010. Since emissions accounting began (2010), 2021 was the year with the lowest level of emissions.

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Emissions by Source (tCO_2e) 2021 x 2020 | Emissions by scope (tCO_2e) - Annual Growth | **Biogenic Emissions and Balance**

Emission Sources	Operational Control						Equity Share					
	Biogenic Emissions				Variation		Biogenic Emissions				Variation	
	2021		2020		2021 x 2020		2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**156.193,17**	**100,0%**	**252.950,47**	**100,0%**	**(96.757,30)**	**-38,3%**	**108.179,39**	**100,0%**	**175.193,50**	**100,0%**	**(67.014,10)**	**-38,3%**
Mobile Combustion	0,94	0,0%	1,07	0,0%	(0,14)	-12,8%	0,65	0,0%	0,74	0,0%	(0,09)	-12,8%
Stationary Combustion	156.192,24	100,0%	252.949,40	100,0%	(96.757,16)	-38,3%	108.178,74	100,0%	175.192,75	100,0%	(67.014,01)	-38,3%
Scope 3	**20,85**	**0,0%**	**50,21**	**0,0%**	**(29,36)**	**-58,5%**	**14,44**	**0,0%**	**34,77**	**0,0%**	**(20,34)**	**-58,5%**
Transport and distribution (upstream)	20,82	0,0%	50,21	0,0%	(29,38)	-58,5%	14,42	0,0%	34,77	0,0%	(20,35)	-58,5%
Business Travel	0,02	0,0%	-	0,0%	0,02	#DIV/0!	0,01	0,0%	-	0,0%	0,01	#DIV/0!
Total	**156.214,02**	**100%**	**253.000,68**	**100%**	**(96.786,66)**	**-38%**	**108.193,83**	**100%**	**175.228,27**	**100%**	**(67.034,44)**	**-38%**



Analysis

Biogenic emissions decreased by 38% in 2021, as a result of lower biomass consumption. By generating renewable energy, UTIB avoided the emission of 34,709 tCO_2e through operational control, and 24,039 tCO_2e through shareholding.

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RSSE

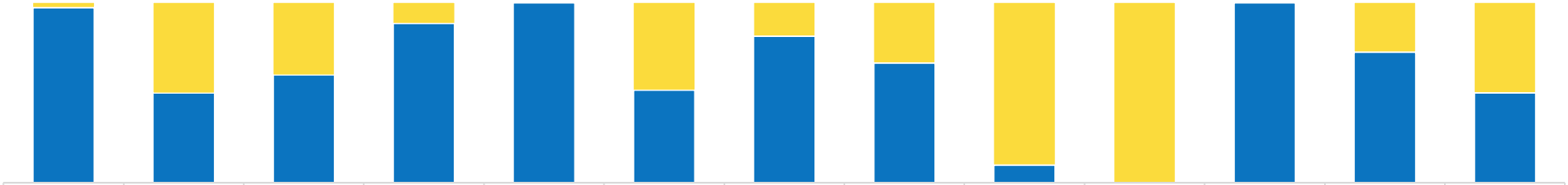
Regional Sul/Sudeste



REJL

Regional de Jorge Lacerda

GHG Emissions Comparative - 2021 x 2020 (tCO2e)



	Agriculture activities	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Industrial Processes	Electricity Acquisition	Commuting	Waste - Scope 03	Transport and Distribution (downstream)	Transport and Distribution (upstream)	Business Travel	Total
2020	0,13	1.513.259,3	25,28	0,60	0,35	12.353,88	519,46	84,60	35,19	170,77	6,64	2,90	1.526.459,1
2021	4,54	1.497.754,0	37,51	4,52	159,88	13.020,10	2.261,37	166,61	3,82	-	2.844,26	7,62	1.516.264,2

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**1.510.980,57**	**99,7%**	**1.525.639,62**	**99,9%**	**(14.659,05)**	**-1,0%**
Agriculture activities	4,54	0,0%	0,13	0,0%	4,41	3327,7%
Stationary Combustion	1.497.754,01	98,8%	1.513.259,38	99,1%	(15.505,37)	-1,0%
Mobile Combustion	37,51	0,0%	25,28	0,0%	12,23	48,4%
Wastewater Treatment	4,52	0,0%	0,60	0,0%	3,92	657,4%
Fugitive Emissions	159,88	0,0%	0,35	0,0%	159,54	45712,1%
Industrial Processes	13.020,10	0,9%	12.353,88	0,8%	666,22	5,4%
Scope 2	**2.261,37**	**0,1%**	**519,46**	**0,0%**	**1.741,91**	**335,3%**
Electricity Acquisition	2.261,37	0,1%	519,46	0,0%	1.741,91	335,3%
Scope 3	**3.022,31**	**0,2%**	**300,11**	**0,0%**	**2.722,20**	**907,1%**
Commuting	166,61	0,0%	84,60	0,0%	82,01	96,9%
Waste - Scope 03	3,82	0,0%	35,19	0,0%	(31,37)	-89,1%
Transport and Distribution (downstream)	-	0,0%	170,77	0,0%	(170,77)	-100,0%
Transport and Distribution (upstream)	2.844,26	0,2%	6,64	0,0%	2.837,62	42723,7%
Business Travel	7,62	0,0%	2,90	0,0%	4,72	162,5%
Total	**1.516.264,25**	**100%**	**1.526.459,19**	**100%**	**(10.194,94)**	**-0,7%**

Analysis

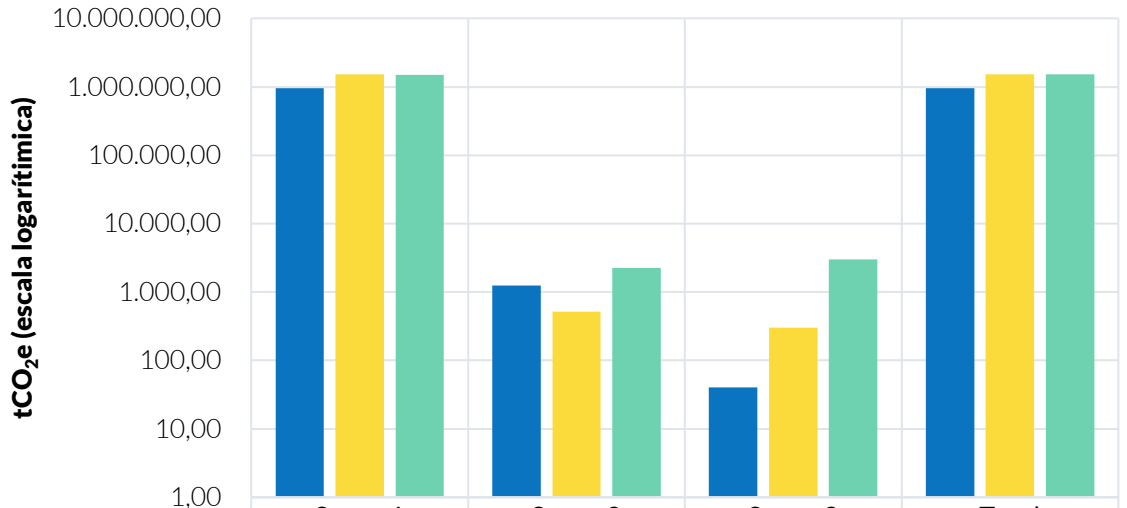
In 2021, UTPS reduced its emissions by 0.7%. Coal combustion-related emissions decreased by 1% yet were partially offset by an increase in transportation to distribute inputs and the purchase of grid energy, both of which can be associated with the emissions factor increase (105%).

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Analysis

In 2021, UTPS emissions decreased by 0.7% relative to 2020, and increased by 58% relative to 2019. The year 2019 marked the start of the company's operations and no power was generated throughout the entire year.

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

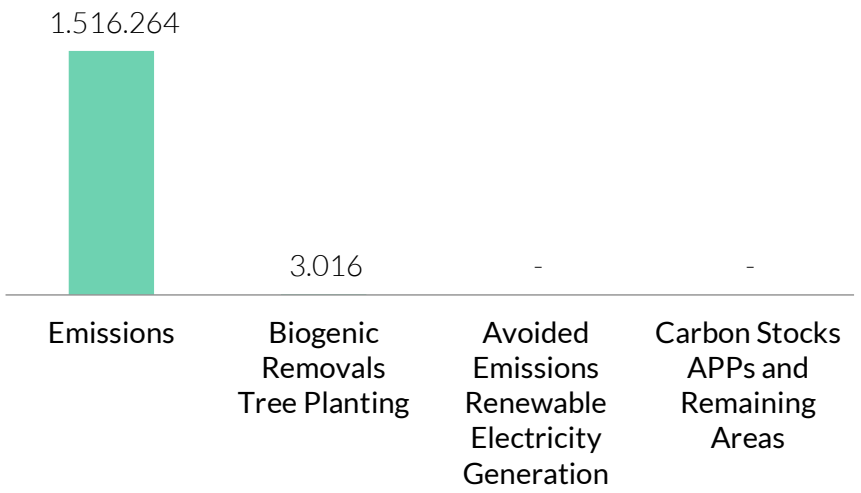


	Scope 1	Scope 2	Scope 3	Total
2019	953.206,43	1.241,23	40,42	954.488,08
2020	1.525.639,62	519,46	300,11	1.526.459,19
2021	1.510.980,57	2.261,37	3.022,31	1.516.264,25

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Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**311,04**	**46,8%**	**347,44**	**91,3%**	**(36,40)**	**-10,5%**
Mobile Combustion	7,93	1,2%	5,15	1,4%	2,77	53,8%
Stationary Combustion	303,11	45,6%	342,28	89,9%	(39,17)	-11,4%
Scope 3	**354,10**	**53,2%**	**33,15**	**8,7%**	**320,95**	**968,2%**
Transport and Distribution (downstream)	-	0,0%	19,96	5,2%	(19,96)	-100,0%
Transport and Distribution (upstream)	327,19	49,2%	0,77	0,2%	326,42	42313,0%
Commuting	25,63	3,9%	12,42	3,3%	13,21	106,4%
Business Travel	1,28	0,2%	-	0,0%	1,28	100,0%
Total	**665,13**	**100%**	**380,58**	**100%**	**284,55**	**74,8%**

Emissions Balance (tCO_2e)



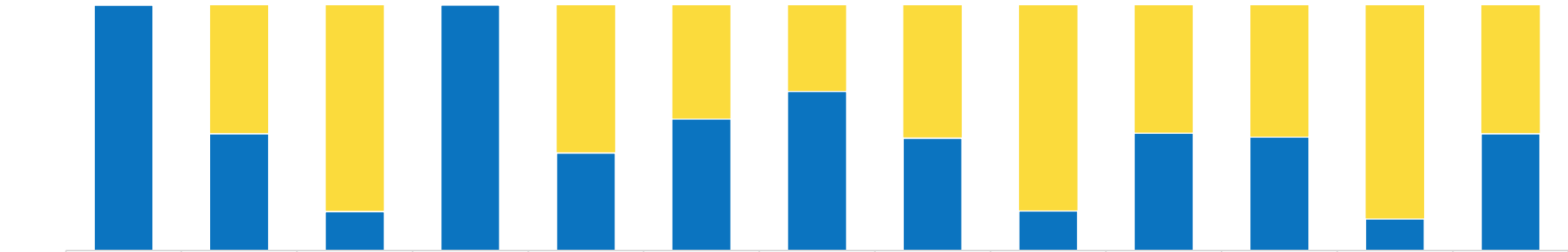
Analysis

Tree planting carried out in 2021 led to the biogenic removal of 3,016 tCO_2e. However, biogenic emissions increased by 74%, mainly due to increased emissions from outside suppliers hired to transport inputs and waste.

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Emissions by Source (tCO_2e) 2021 x 2020 | Annual Growth (tCO_2e) | Biogenic Emissions and Balance

GHG Emissions Comparative - 2021 x 2020 (tCO_2e)



	Agriculture activities	Stationary Combustion	Mobile Combustion	Wastewater Treatment	Fugitive Emissions	Waste	Electricity Acquisition	Commuting	Waste - Scope 03	Transport & Distribution (downstream)	Transport & Distribution (upstream)	Business Travel	Total Geral
2020	0,00	4.300.769,8	53,68	-	150,73	7,49	3.962,76	51,17	110,66	6.748,39	5.690,44	49,68	4.317.594,8
2021	1,71	3.900.313,8	10,09	0,85	99,20	8,62	7.291,27	43,13	21,28	6.187,99	4.878,81	7,28	3.918.864,0

Emission Sources	Total Emission				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**3.900.434,34**	**99,5%**	**4.300.981,78**	**99,6%**	**(400.547,44)**	**-9,3%**
Agriculture activities	1,71	0,0%	0,00	0,0%	1,70	209319,3%
Stationary Combustion	3.900.313,87	99,5%	4.300.769,87	99,6%	(400.456,00)	-9,3%
Mobile Combustion	10,09	0,0%	53,68	0,0%	(43,59)	-81,2%
Wastewater Treatment	0,85	0,0%	-	0,0%	0,85	100,0%
Fugitive Emissions	99,20	0,0%	150,73	0,0%	(51,53)	-34,2%
Waste	8,62	0,0%	7,49	0,0%	1,13	15,1%
Scope 2	**7.291,27**	**0,2%**	**3.962,76**	**0,1%**	**3.328,52**	**84,0%**
Electricity Acquisition	7.291,27	0,2%	3.962,76	0,1%	3.328,52	84,0%
Scope 3	**11.138,48**	**0,3%**	**12.650,34**	**0,3%**	**(1.511,87)**	**-12,0%**
Commuting	43,13	0,0%	51,17	0,0%	(8,04)	-15,7%
Waste - Scope 03	21,28	0,0%	110,66	0,0%	(89,39)	-80,8%
Transport & Distribution (downstream)	6.187,99	0,2%	6.748,39	0,2%	(560,40)	-8,3%
Transport & Distribution (upstream)	4.878,81	0,1%	5.690,44	0,1%	(811,64)	-14,3%
Business Travel	7,28	0,0%	49,68	0,0%	(42,39)	-85,3%
Total Geral	**3.918.864,09**	**100%**	**4.317.594,88**	**100%**	**(398.730,79)**	**-9,2%**

Analysis

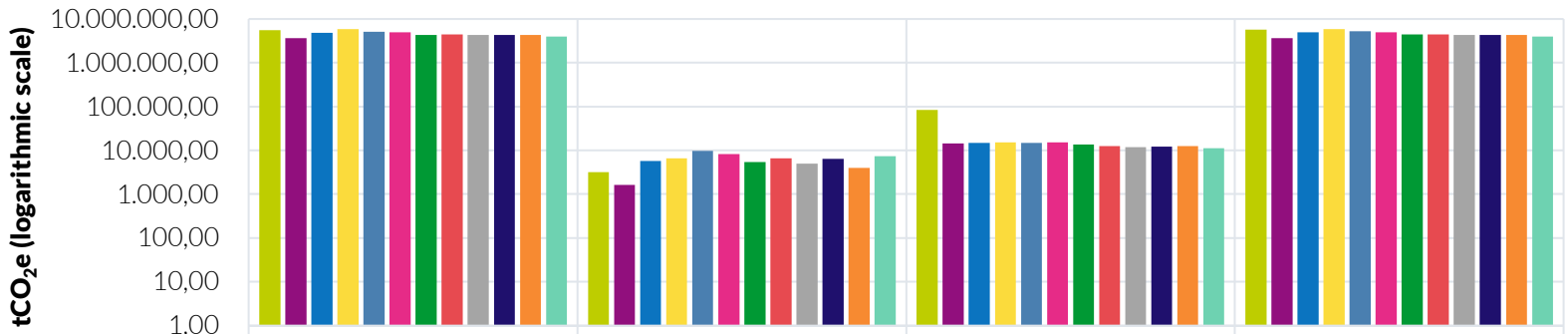
CTJL emissions were 9.2% lower than in 2020. This reduction can mainly be attributed to a decrease in stationary coal-fired fuel to generate power in 2021, as a result of the sale of the business to another organization in October 2021. Other activities associated with this operation also decreased as a result of the sale of this asset.

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Analysis

Given the shorter accounting and operation period, in 2021 CTJL emissions were lower than all other years except for 2011, a year of heavy precipitation and a reduced need for thermal energy generation in the National Interconnected System.

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



	Scope 1	Scope 2	Scope 3	Total
2010	5.574.077,71	3.199,20	84.399,55	5.661.676,46
2011	3.654.967,06	1.616,55	14.346,65	3.670.930,26
2012	4.856.278,09	5.755,72	14.796,04	4.876.829,86
2013	5.874.984,89	6.517,50	15.158,22	5.896.660,61
2014	5.141.350,52	9.781,26	14.681,80	5.165.813,58
2015	4.971.560,84	8.289,22	15.155,49	4.995.005,55
2016	4.353.516,67	5.358,60	13.463,83	4.372.339,10
2017	4.376.632,89	6.494,10	12.502,01	4.395.629,00
2018	4.316.714,97	4.983,6284	11.897,72	4.333.596,32
2019	4.282.661,92	6.338,70	12.011,14	4.301.011,76
2020	4.300.981,78	3.962,76	12.650,34	4.317.594,88
2021	3.900.434,34	7.291,27	11.138,48	3.918.864,09

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Emission Sources	Biogenic Emissions				Variation	
	2021		2020		2021 x 2020	
	tCO_2e	%	tCO_2e	%	tCO_2e	%
Scope 1	**1.320,91**	**49,8%**	**1.295,64**	**46,9%**	**25,27**	**2,0%**
Mobile Combustion	20,19	0,8%	24,26	0,9%	(4,07)	-16,8%
Stationary Combustion	1.300,72	49,1%	1.271,38	46,1%	29,34	2,3%
Scope 3	**1.329,03**	**50,2%**	**1.464,18**	**53,1%**	**(135,14)**	**-9,2%**
Transport & Distribution (downstream)	742,06	28,0%	783,82	28,4%	(41,75)	-5,3%
Transport & Distribution (upstream)	581,05	21,9%	667,72	24,2%	(86,68)	-13,0%
Commuting	5,10	0,2%	5,94	0,2%	(0,84)	-14,2%
Business Travel	0,82	0,0%	6,69	0,2%	(5,87)	-87,7%
Total	**2.649,94**	**100%**	**2.759,81**	**100%**	**(109,87)**	**-4,0%**

Analysis

A small reduction in biogenic emissions (-4%) associated with a decrease in input and waste transportation operations.

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