



SOCIO-ENVIRONMENTAL INDICATOR
GREENHOUSE GAS EMISSIONS - YEAR 2019

INDICATOR SOURCE: SIGO PROCESSES

GOAL:

SIGLA: CC

UT	WORK	Operational Control	TCO2e	229.176,36
		Equity Stake	TCO2e	229.176,36

General Data of the work

ID	Dates	Location	Contract	Person in charge
Name of the work: CONFRA UT: Client:	Start of work: jan/19 End of work: dez/19 Inventoried period: 2019	Country: Brazil State: São Paulo Municipality: São Paulo	Nature of the Contract: Operational Control: 100 Equity Stake: 100%	Fill: Wewerton Santos Environment: Socioenvironmental Work: EBT

Greenhouse Gas Emissions

Activity data characterization	Unity	Activity data	CO ₂ emission factor	CH ₄ emission factor	N ₂ O emission factor	Unity	Emission factor source	CO ₂ emissions (in t)	CH ₄ emissions (in t)	N ₂ O emissions (in t)	Emission characterization	Emissions in fossil tCO _{2e}	
Scope 1 - Direct emissions												Total	171.596,56
Suppressed area	Hectare	271,01	3,20E+02			tCO ₂ /ha	Univ. Fed. Paraná	86.723,71			non-renewable	86.723,71	
Diesel Consumption	m ³	29.707,69	2,68E+00	1,07E-04	2,13E-05	tCO ₂ /m ³	GHG Protocol	79.646,31	3,17	0,63	non-renewable renewable	75.913,53 3.995,45	
Gasoline Consumption	m ³	1.654,94	2,33E+00	1,06E-03	1,03E-04	tCO ₂ /m ³	GHG Protocol	3.851,05	1,76	0,17	non-renewable renewable	3.152,69 788,17	
Natural Gas Consumption	m ³		1,97E-03	3,69E-08	3,68E-09	tCO ₂ /m ³	GHG Protocol	-	-	-	non-renewable	-	
LPG Consumption	kg	342.412,00	2,99E-03	4,73E-08	4,74E-09	tCO ₂ /m ³	GHG Protocol	1.022,16	0,02	0,00	non-renewable	1.023,01	
Scope 2 - Indirect energy emissions												Total	2.973,04
Electric power consumption	mwh	120.855,37	2,46E-02			MWh	GHG Protocol	2.973,04			renewable	2.973,04	
Scope 3 - Indirect emissions												Total	54.606,76
Diesel consumption in machinery, vehicles, others	m ³	1.652,77	2,68E+00	1,07E-04	2,13E-05	tCO ₂ /m ³	GHG Protocol	4.431,08	0,18	0,04	non-renewable renewable	4.223,41 222,28	
Diesel consumption in vehicles for employee transport	m ³	766,71	2,68E+00	1,07E-04	2,13E-05	tCO ₂ /m ³	GHG Protocol	2.055,55	0,08	0,02	non-renewable renewable	1.959,21 103,12	
Diesel consumption in vehicles for transporting applied material	km	122.056,34	7,70E-04			tCO ₂ /km	GHG Protocol	93,98	-	-	non-renewable renewable	89,28 103,12	
Gasoline consumption by third-party companies	m ³	279,90	2,33E+00	1,06E-03	1,03E-04	tCO ₂ /m ³	GHG Protocol	651,33	0,30	0,03	non-renewable renewable	3.556,55 889,14	
Natural Gas Consumption	m ³		1,91E-03	3,69E-08	3,68E-09	tCO ₂ /m ³	GHG Protocol	-	-	-	non-renewable	-	
LPG Consumption	kg		2,99E-03	4,73E-08	4,74E-09	tCO ₂ /kg	GHG Protocol	-	-	-	non-renewable	-	
Steel application	ton	6.919,63	1,46E+00			tCO ₂ /ton	CETESB	10.102,66			non-renewable	10.102,66	
CP II Cement Application	ton	30.437,34	6,54E-01			tCO ₂ /ton	ABNT/CSI	19.900,85			non-renewable	19.900,85	
CP III Cement Application	ton	2.066,34	3,90E-01			tCO ₂ /ton	ABNT/CSI	805,25			non-renewable	805,25	
CP IV Cement Application	ton	11.830,81	5,63E-01			tCO ₂ /ton	ABNT/CSI	6.659,56			non-renewable	6.659,56	
CP V Cement Application	ton	574,16	8,44E-01			tCO ₂ /ton	ABNT/CSI	484,79			non-renewable	484,79	
Use of Wood (Non-Reforestation Origin)	m ³	1.278,53	8,25E-01			tCO ₂ /m ³	Univ. Fed. Paraná	1.054,52			non-renewable	1.054,52	
Polymeric Material Application	unity	1.657,04	2,53E+00			tCO ₂ /ton	University of Bath	4.192,31			non-renewable	4.192,31	
Copper Application	ton	40,00	2,19E+00			tCO ₂ /ton	University of Bath	87,60			non-renewable	87,60	
Asphalt Application	ton	170,40	1,40E-01			tCO ₂ /ton	University of Bath	23,86			non-renewable	23,86	
Iron Application	ton	110,56	1,35E+00			tCO ₂ /ton	CETESB	149,26			non-renewable	149,26	

Actions to Reduce Greenhouse Gas Emissions

Actions	Unity	Quantification	CO ₂ emission factor	CH ₄ emission factor	N ₂ O emission factor	Unity	Emission factor source	CO ₂ emissions (in t)	CH ₄ emissions (in t)	N ₂ O emissions (in t)	Emissions in fossil tCO _{2e}
Reduction of Diesel consumption	m ³	1.145,38	2,68E+00	1,07E-04	2,13E-05	tCO ₂ /m ³	GHG Protocol	3.070,76	0,12	0,02	3.080,89
Reduction of Gasoline consumption	m ³	900,25	2,33E+00	1,06E-03	1,03E-04	tCO ₂ /m ³	GHG Protocol	2.094,88	0,96	0,09	2.143,74
Use of Ethanol	m ³	50,23	2,33E+00	1,06E-03	1,03E-04	tCO ₂ /m ³	GHG Protocol	116,89	0,05	0,01	119,61
Preventive Maintenance	Unity	693,00	2,68E+00	1,07E-04	2,13E-05	tCO ₂ /m ³	GHG Protocol	1.857,93	0,07	0,01	1.864,06
Black Smoke Measurements	Unity	2.071,00	2,68E+00	1,07E-04	2,13E-05	tCO ₂ /m ³	GHG Protocol	5.552,35	0,22	0,04	5.570,66
Reduction of Cement CP II	Ton	10.540,52	6,54E-01			tCO ₂ /ton	ABNT/CSI	6.891,71			6.891,71
Reduction of Cement CP III	Ton	6,00	3,90E-01			tCO ₂ /ton	ABNT/CSI	2,34			2,34
Reduction of Cement CP IV	Ton	241,40	5,63E-01			tCO ₂ /ton	ABNT/CSI	135,88			135,88
Reduction of Cement CP V	Ton	73,00	8,44E-01			tCO ₂ /ton	ABNT/CSI	61,64			61,64
Reduction of Steel consumption	Ton	1.259,25	1,46E+00			tCO ₂ /ton	CETESB	1.838,51			1.838,51
Reduction of Plant Suppression	Hectare	23,94	3,20E+02			tCO ₂ /ha	Univ. Fed. Paraná	7.659,90			7.659,90
Grass Planting	m ²	23.302,00	3,20E-01			tCO ₂ /ha	Univ. Fed. Paraná	7.456,64			7.456,64
Hydroseeding	m ²	24.388,00	3,20E-01			tCO ₂ /ha	Univ. Fed. Paraná	7.804,16			7.804,16
Preserved trees	Unity	2.408,00	1,63E-01			tCO ₂ /tree	ESALQ	392,50			392,50
Reduction of Energy Power Consumption	MWH	1.774,31	2,46E-02			MWh	GHG Protocol	43,65			43,65
LED bulbs	Unity	15.846,00	2,46E-02			MWh	GHG Protocol	389,81			389,81
Split air conditioning	Unity	4.892,00	2,46E-02			MWh	GHG Protocol	120,34			120,34
Solar Energy Consumption	MWH	2,78	2,46E-02			MWh	GHG Protocol	0,07			0,07
Wind Power Consumption	MWH	3,52	2,46E-02			MWh	GHG Protocol	0,09			0,09
Decrease in air travel	km	24.269,62	9,83E-05			tCO ₂ /KM	DEFRA	2,39			2,39
Disposal of waste for recycling	Ton	9343,2	3,65E-01			tCO ₂ /ton	DEFRA	3.410,27			3.410,27
REDUCTION OF GREENHOUSE GAS EMISSIONS (TCO2E)											48.988,86