



## Greenhouse Gases

Table below shows the calculation of GHG emissions during 2021. The overall calculated emission of GHG is 414 355 t of  $CO_2$  equivalent.

This calculation is subject to the following premises:

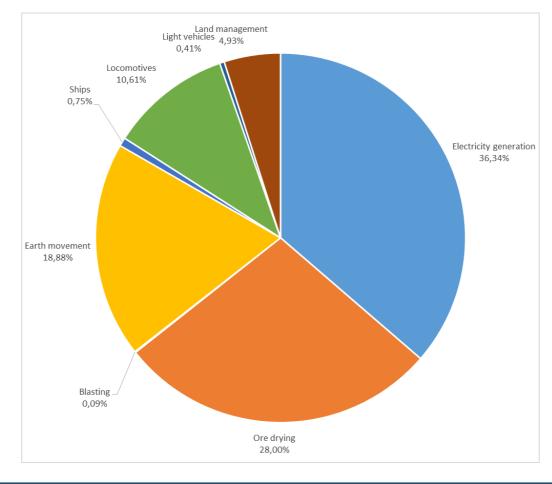
- It represents only direct emissions related to fossil fuel combustion and carbon capture or loss of capture by land clearing or rehabilitation. These two categories represent by far the major sources of GHG emissions. Other sources, like waste management, are considered minor and not included in this calculation. Likewise all indirect emissions like those associated to supplies, ore transportation, etc., are not included.
- This is a Tier 1 approach, according to IPCC (2006), i.e., estimations are based on default emissions factors taken from IPCC tables.
- Fuel consumption is estimated by the records of distribution provided by the Hydrocarbons Superintendence, i.e., the amount distributed to a unit for a certain use within a year is supposed to be completely used within the same year and for the same use.
- Emission factors are chosen according to the type of fuel and the type of use. HFO is considered as residual fuel oil, diesel and DDO are considered as Gas/Diesel oil, and gasoline is considered as Motor gasoline (see Tables 2.2, 3.2.1, 3.2.2., 3.3.1 and 3.4.1 on IPCC 2006, vol. 2).
- For the choice of land management factors it has been assumed that the corresponding ecological zone is Tropical dry forest (TAWb), with to 8 months dry during the winter (see table 4.1 on IPCC 2006, vol. 4).

Figure below shows how the emissions are distributed by activity. Electricity generation represents more than one third of the total emission and electricity generation, ore drying, earth movement and locomotives represent ensemble the 93,8 of emissions.

From the land management component it can be observed that the loss of biomass associated to land clearance largely overpass the gain in biomass related to the newly rehabilitated land and the net carbon capture associated to the land rehabilitated in the previous 20 ears. It should be noticed that this calculation does not consider the loss of biomass in rehabilitated land due to bushfires caused by communities.

FUEL CONSUMPTION	Туре	Volume consumed m3	Conversion factor MJ/L	Energy consumpt. TJ	Emission factors (kg/TJ)			Emissions (t)			CO <sub>2</sub> -eq emissions
					CO2	CH <sub>4</sub>	N <sub>2</sub> O	CO2	CH <sub>4</sub>	N₂O	(t)
Centrale Kamsar	HFO	30 008	40,36	1 211,12	77 400	3,00	0,60	93 740,91	3,63	0,73	94 049,75
Centrale Kamsar	DDO	11 268	36,55	411,85	74 100	3,00	0,60	30 517,74	1,24	0,25	30 622,76
Centrales Sangarédi	DDO	3 900	36,55	142,55	74 100	3,00	3,00	10 562,58	0,43	0,43	10 704,99
Centrale Filima (communautaire)	Diesel	4 660	36,55	170,32	74 100	3,00	0,60	12 620,93	0,51	0,10	12 664,37
Centrale Batafong	Diesel	938	36,55	34,28	74 100	3,00	0,60	2 540,44	0,10	0,02	2 549,18
Dryers	HFO	33 022	40,36	1 332,77	77 400	3,00	0,60	103 156,24	4,00	0,80	103 496,09
Dryers	Spent oils	4 233	40,20	170,17	73 300	3,00	0,60	12 473,21	0,51	0,10	12 516,60
Explosives	Spent oils	121	40,20	4,86	73 300	3,00	0,60	356,55	0,01	0,00	357,79
Heavy machinery (Kamsar and CFB)	Diesel	1 609	36,55	58,81	74 100	4,15	28,60	4 357,74	0,24	1,68	4 884,76
Heavy machinery (Mine)	Diesel	24 164	36,55	883,19	74 100	4,15	28,60	65 444,69	3,67	25,26	73 359,39
Ships	Diesel	1 130	36,55	41,30	74 100	7,00	2,00	3 060,44	0,29	0,08	3 092,70
Locomotives	DDO	14 483	36,55	529,35	74 100	4,15	28,60	39 225,11	2,20	15,14	43 968,88
Light vehicles	Diesel	609	36,55	22,26	74 100	3,90	3,90	1 649,39	0,09	0,09	1 678,30
								379 706	16,92	44,68	393 946
LAND MANAGEMENT											
Forest land that remains as forest land	ha	Gw	R	CF						tC	t CO2 eq.
Gain of biomass by groth in land rehabilitated before 2021	1582,13	8,0	0,2	0,47						-7 139	-26 175
Land that changed category	ha	B <sub>w</sub>	R	CF	fd					tC	t CO2 eq.
Loss of biomass by land cleared in 2021	348	130,0	0,2	0,47	1					25 515	82 940
Gain of biomass by land rehabilitated in 2021	293	60,0	0,2	0,47	1					-9 915	-36 355
tCO2/tC	3,6667										20 410
Total fuel emissions											393 946
Net emissions by land disturbance											20 410
TOTAL EMISSIONS											414 355

## Table GHG Inventory for 2021



## Figure Distribution of GHG emissions by activity

## REFERENCES

IPCC (2006). Guidelines for National Greenhouse Gas Inventories. Hayama, Intergovernmental Panel on Climate Change, 2006.