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## **Total carbon footprint (CO<sub>2</sub>) emission in the last 12 months, in metric tons**

**Liquefied petroleum gas (LPG)** = 2.983 kg CO<sub>2</sub> per kilogram, Source: Emission factors are taken from the file “Emission factors from across the sector -tool” extracted from <http://www.ghgprotocol.org/calculation-tools/alltools>

### **a. Electricity usages per year**

The CO<sub>2</sub> emission from electricity

= (electricity usages per year in kWh) \* 0.85

= (2,55,7617kWh × 0.84) / 1000

= **2148.39 metric ton**

**Note: Electricity = 0.85 kg CO<sub>2</sub> per KWh, Source: CO<sub>2</sub> emission factor database, version 06, CEA (Government of India), [http://www.cea.nic.in/reports/planning/cdm\\_co2/cdm\\_co2.htm](http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm)**

### **b. Transportation per year (Bus)**

We can calculate the total CO<sub>2</sub> emissions as follows:

Total distance travelled by all buses = Number of buses \* Average distance travelled by each bus per day \* Number of days

Total distance travelled by all buses = 8 buses \* 2 km/bus/day \* 277 days = 4416 km

Total CO<sub>2</sub> emissions = Total distance travelled by all buses \* CO<sub>2</sub> emissions per km

Total CO<sub>2</sub> emissions = 4416 km \* 120g CO<sub>2</sub>/km = 529920g CO<sub>2</sub>

**So, the total CO<sub>2</sub> emissions would be approximately 529.92 kg or 0.52992 metric tons.**

**Notes: 277 is the number of working days per year**

### **c. Transportation per year (Car)**

The average petrol car produces about 164 grams of CO<sub>2</sub>e per km

Number of cars = 81

Average distance travelled per car inside the university = 2 km

Total emissions = Number of cars \* Average distance travelled per car \* Average emissions per km per car = 81 cars \* 2 km/car \* 164 g/km = 26,568 grams

Since 1 metric ton is equal to 1,000,000 grams, we can convert the total emissions to metric tons:

Total emissions in metric tons = Total emissions in grams / 1,000,000 = 26,568 g / 1,000,000 = 0.026568 metric tons

**Total emissions for 277 days = Daily total emissions \* Number of days = 0.026568 metric tons/day \* 277 days = 7.358776 metric tons**

#### **d. Transportation per year (Two wheeler)**

The average bike produces about 21 grams of CO<sub>2</sub> per kilometre

Number of bikes = 215

Average distance travelled per bike = 2 km

Average emissions per km per bike = 21 grams

Total emissions = Number of bikes \* Average distance traveled per bike \* Average emissions per km per bike = 215 bikes \* 2 km/bike \* 21 g/km = 9,030 grams

Since 1 metric ton is equal to 1,000,000 grams, we can convert the total emissions to metric tons:

Total emissions in metric tons = Total emissions in grams / 1,000,000 = 9,030 g / 1,000,000 = 0.00903 metric tons

Daily total emissions = 0.00903 metric tons Number of days = 277

**Total emissions for 277 days = Daily total emissions \* Number of days = 0.00903 metric tons/day \* 277 days = 2.49931 metric tons**

#### **e. LPG consumption per Year**

LPG (Liquefied Petroleum Gas) produces around 1.51 kg of CO<sub>2</sub> per litre

Total weight of LPG used = 55 kg/day \* 277 days = 15235 kg

Total CO<sub>2</sub> emissions = Total weight of LPG used \* CO<sub>2</sub> emissions per kg of LPG

Total CO<sub>2</sub> emissions = 15235 kg \* 1.51 kg CO<sub>2</sub>/kg LPG = **22995.85 kg CO<sub>2</sub>**

**So, the total CO<sub>2</sub> emissions would be approximately 22.99585 metric tons.**

**Total Emission per Year: 2148.39 + 0.52992 + 7.358776 + 2.49931 + 22.99585 = 2181.77 metric ton**

## **Scope 1 and 2**

**Scope 1 (Direct Emissions): 0.52992 + 7.358776 + 2.49931 + 22.99585 = 33.38 metric ton i.e. (33.3839/44) \* 12 = 9.10 tCO<sub>2</sub>e**

**Scope 2 (Indirect Emissions): 2148.39 metric ton i.e. (2148.39 / 44) \* 12 = 585.92 tCO<sub>2</sub>e**

**Total Scope 1 and 2 Emissions is 595.02 tCO<sub>2</sub>e**