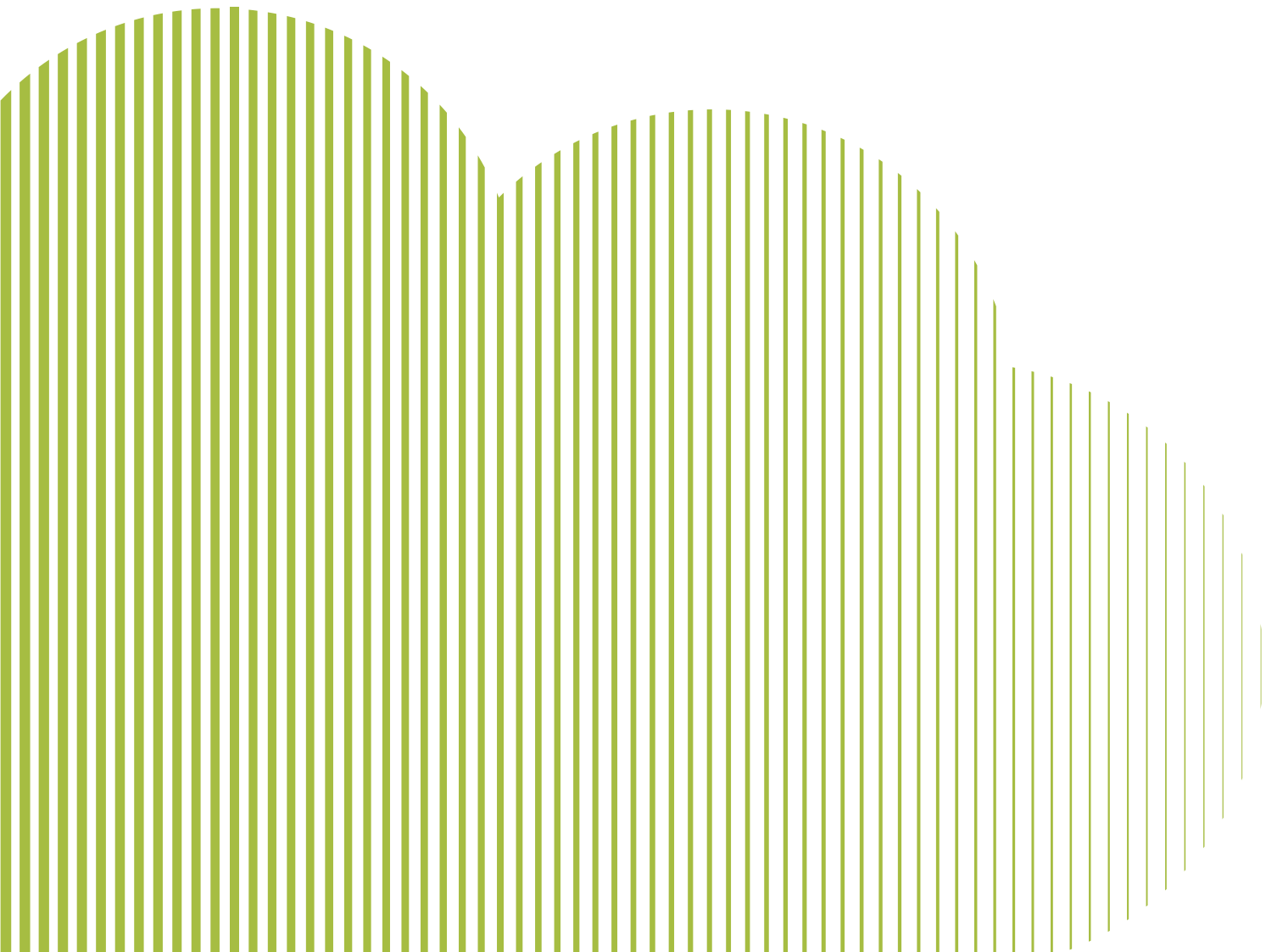
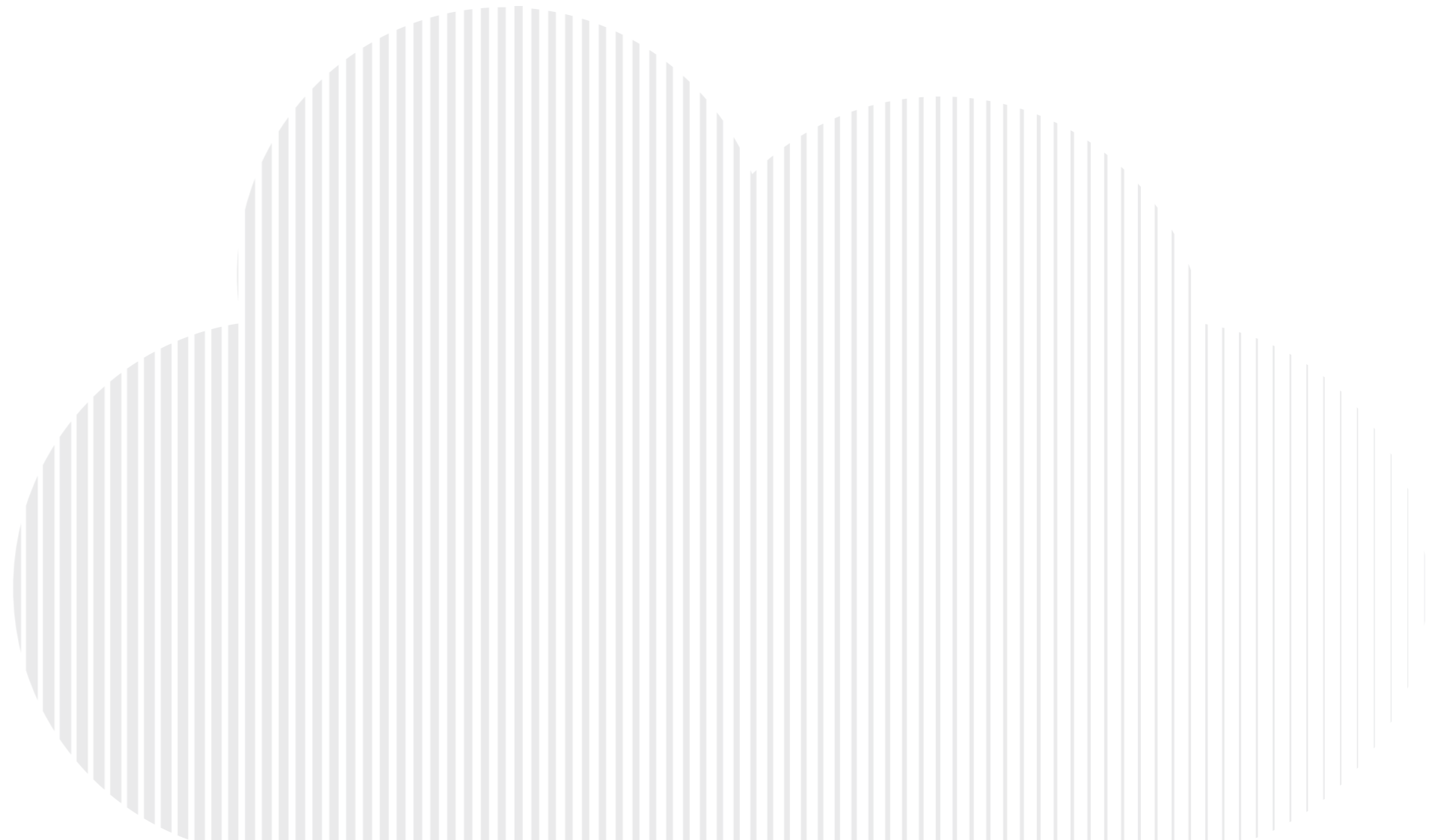


# GHG EMISSIONS INVENTORY

CMD Precision  
Products Pvt Ltd



**GHG  
EMISSIONS  
INVENTORY**  
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# Introduction

Climate change is one of the most pressing challenges faced by planet Earth today. Human activities have contributed to a global temperature rise of over 1°C from the pre-industrial era. This rise of temperature can be attributed to the presence of greenhouse gases (GHGs) in the atmosphere. The consequences can be seen in the form of extreme weather conditions, extinction of plant and animal species, rise in sea level, reduction in crop yields and scarcity of water, to name a few.

Companies across the world are increasingly aware of the global drive towards sustainable development. To ensure long-term success in a competitive business environment, companies are developing effective strategies to take early action. The first step for any company is to have a detailed understanding of its GHG emissions. An emissions inventory helps them:

- identify reduction opportunities and thereby improve operational efficiency
- prepare for future climate policies, e.g. regulations on energy efficiency, carbon taxes
- communicate their commitment to key stakeholders, such as customers and investors

CMD Precision Products Private Limited (CMDPPL), a manufacturing company in Tamil Nadu, decided to put together a baseline GHG emissions report for the financial year 2019-20. CMDPPL, incorporated in 1992, manufactures metal parts and components for automobile manufacturers, engineering companies and other manufacturing companies both domestically and internationally.<sup>1</sup>

# Scope of the study

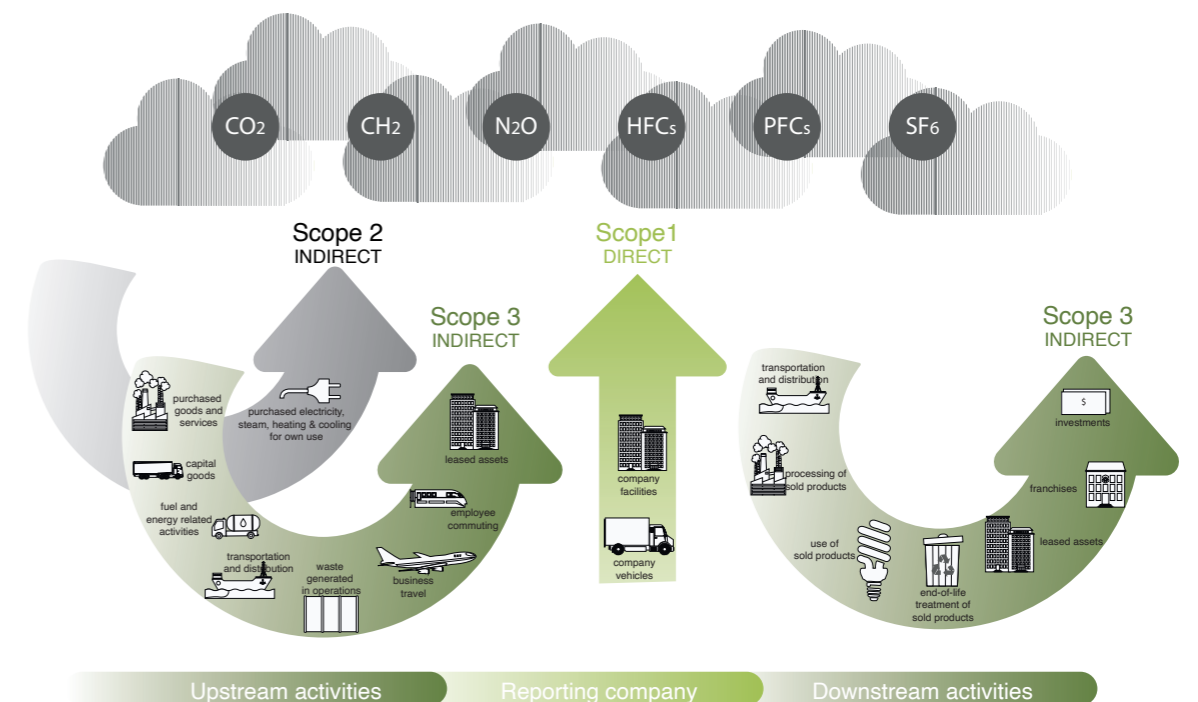
This study is put together using the guidelines of the globally-recognised GHG Protocol: Corporate Accounting and Reporting Standard. The standard helps organisations identify, calculate and report their GHG emissions in an accurate, consistent and transparent manner.

The tool incorporates national emission factors where available or default global values to convert different organisational activities into the respective greenhouse gases emitted. The seven greenhouse gases reported under this standard include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbon (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>) and nitrogen trifluoride (NF<sub>3</sub>). The combined emissions are expressed in tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e), which compares all the greenhouses to carbon dioxide. The use of CO<sub>2</sub>e helps simplify the accounting process and analysis as the emissions are represented by a single value.

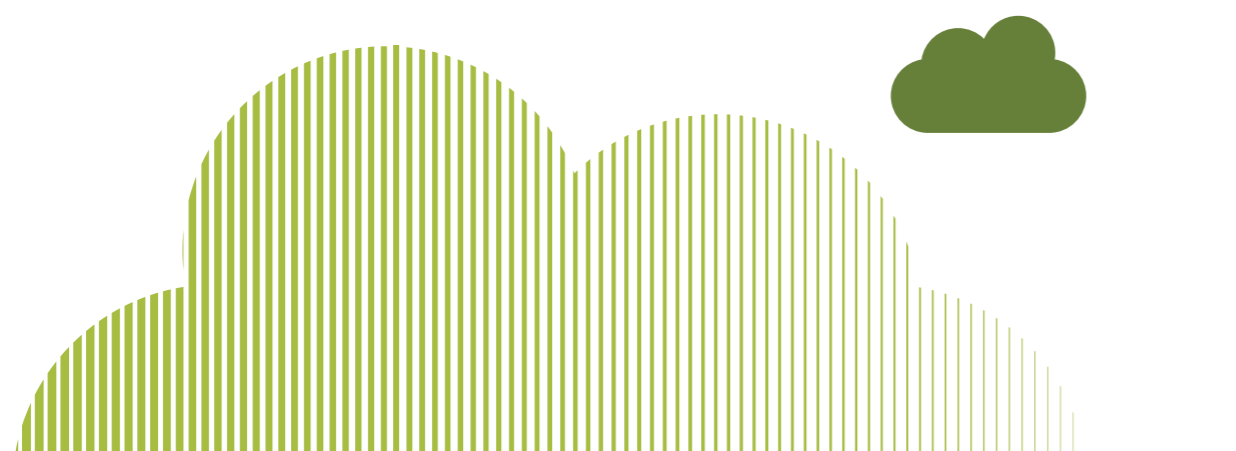
The GHG Protocol mandates that the activities of organisations be split into three categories or scopes for a more transparent accounting structure:

- **scope 1** – direct emissions from sources owned and controlled by the company; e.g. emissions from equipment and vehicles owned by the company
- **scope 2** – indirect emissions from the generation of purchased electricity consumed at company facilities
- **scope 3** (optional) – indirect emissions that occur as a consequence of the company’s activities, but from sources not owned by the company, e.g. transport of purchased goods, work-related travel

Figure 1: GHG emissions by scope



Source GHG Protocol



[https://www.youtube.com/watch?v=MsH85c3fmJg&ab\\_channel=CMDPPLCMDPRECISIONPRODUCTSPRIVATELIMITED](https://www.youtube.com/watch?v=MsH85c3fmJg&ab_channel=CMDPPLCMDPRECISIONPRODUCTSPRIVATELIMITED)

# Annual GHG emissions

The operational boundary for CMDPPL is the company's factory premise at Pappambakkam Village, Thiruvallur District in Tamil Nadu. The sources of emissions covered in this inventory are:

- fuel consumption for diesel generators,
- fugitive emissions during the use of air conditioners,
- grid-related emissions, and
- emissions from the purchase of the company's primary raw materials, namely aluminium coils, stainless steel coils, rods and Bright Barrs

The total emissions for FY2019-20 is 5,752.87 tCO<sub>2</sub>e.

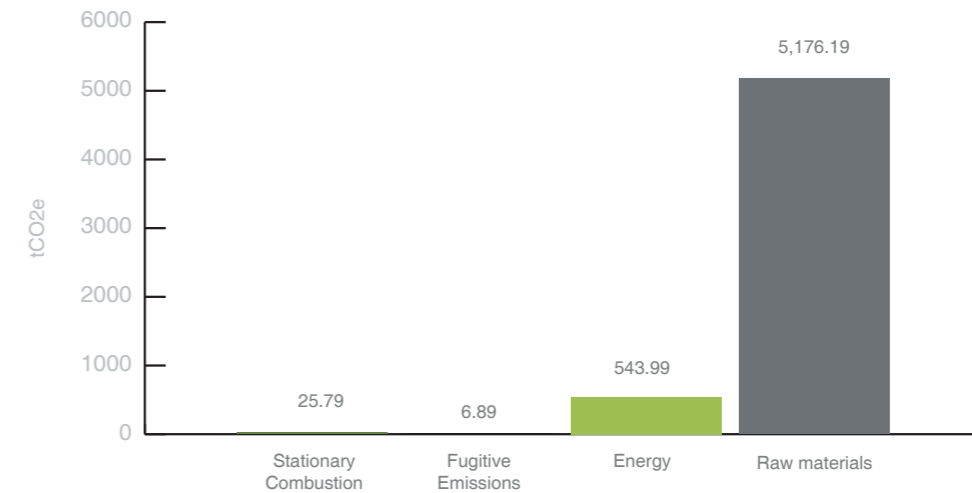
Scope 3 was the largest contributor with 5,176.19 tCO<sub>2</sub>e or 89.98 %, followed by scope 2 with 543.99 tCO<sub>2</sub>e (9.46 %), and scope 1 with 32.69 (0.57%).

Figure 2: Annual GHG emissions by scope



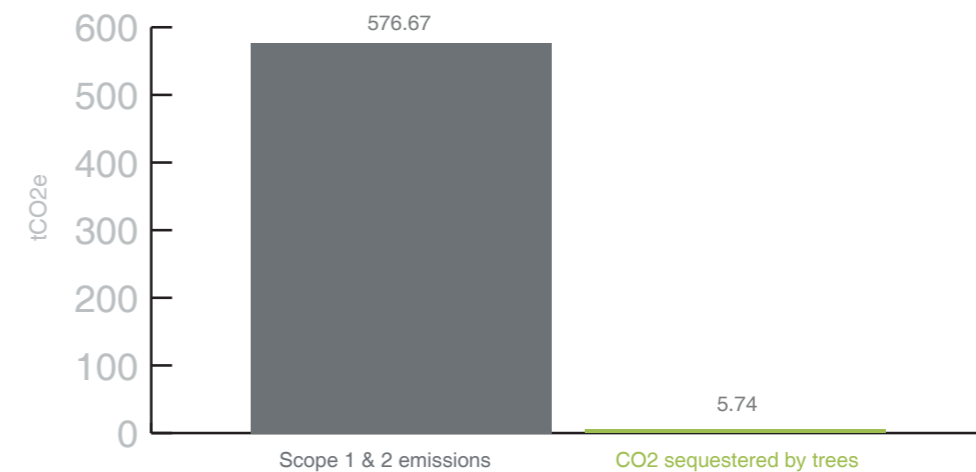
The purchase of the primary raw materials was the largest emission category (5,176.19 tCO<sub>2</sub>e), followed by grid consumed electricity (543.99 tCO<sub>2</sub>e), diesel consumption for on-site electricity generation (25.79 tCO<sub>2</sub>e) and lastly fugitive emissions through the use of air conditioners (6.89 tCO<sub>2</sub>e).

Figure 3: Emissions by category



It is good to note that CMDPPL has **261 trees** in its factory premises. Using an average absorption rate for all tree species, it is assumed that in FY2019-20 they sequestered approximately 5.74 tCO<sub>2</sub> from the atmosphere. Although it forms a small part of the company's direct emissions, trees have other environmental benefits – they preserve the precious top soil from eroding and restore ground water; they are also home for birds, reptiles and mammals that seek refuge in them.

Figure 3: Emissions by category



## Next steps for CMDPPL

With this baseline report, CMDPPL has a broad overview of its GHG emissions.

It is recommended that CMDPPL **add additional emissions categories** in their subsequent inventory in order to have a broader and more holistic understanding of its impact on the environment. The categories include emissions from company owned vehicles, the transport of goods both upstream and downstream, the commute and business travel of employees, waste generated and disposed and water consumption and treatment among others.

While the company is putting together a complete emissions inventory, it may also choose to set itself an emissions target. Typically one of two approaches are taken up by companies:

- reduction of **absolute emissions**, which is the reduction of total emissions to zero, or
- reduction of **emission intensity**, which sees the reduction of the volume of emissions per unit of turnover or employee strength

If CMDPPL chooses the second approach, which is typically the intermediary approach, the emission intensity for its baseline year is 1.84 tCO<sub>2</sub>e / INR lakh turnover or 56.96 tCO<sub>2</sub>e / employee.

Some initiatives that CMDPPL can explore are listed hereunder:

- conducting an **energy audit** to assess the energy efficiency potential - a target of a minimum reduction of 10% of grid electricity demand could reduce 54.4 tCO<sub>2</sub>e
- installing **rooftop solar** - emission reduction potential of 256 tCO<sub>2</sub>e / year or 4.46 % of baseline (as per the Auroville Consulting solar assessment report)
- evaluating the financial feasibility of **replacing the diesel generator** with a solar plus energy storage system - emission reduction potential of 25.79 tCO<sub>2</sub>e (assuming all emissions from the generators)
- procuring the majority of electricity demand from renewable sources through the **open access route** (purchase from a third party)
- sourcing **raw materials**: a long-term strategy may include building alliances along the entire supply chain where each player reduces emissions
- installing **e-charging** station on campus to incentivise employees to shift to e-mobility solutions
- considering **offsetting emissions** voluntarily by participating in reforestation efforts

By implementing the first three recommendations, there's a potential for CMDPPL to reduce its emissions intensity to 1.73 tCO<sub>2</sub>e / INR lakh turnover or 53.63 tCO<sub>2</sub>e / employee.

Furthermore, an inspection of the factory premises and a deeper view of the operations of CMDPPL including the sister concerns of its parental Classic Group will help it pave a strong path towards carbon neutrality in the near future.

## Annexure

A summary of the GHG emissions of FY2019-20 for CMDPPL are shown in the table below

Table 2: Summary GHG emissions inventory (tCO<sub>2</sub>e)

CATEGORIES	Scope 1		Scope 2	Scope 3
	Stationary Combustion	Fugitive Emissions		
April	2.15	0.57	45.53	967.26
May	2.15	0.57	36.47	702.30
June	2.15	0.57	46.25	284.55
July	2.15	0.57	50.25	360.38
August	2.15	0.57	46.90	325.39
September	2.15	0.57	45.03	316.89
October	2.15	0.57	44.61	262.33
November	2.15	0.57	50.74	429.34
December	2.15	0.57	45.30	342.18
January	2.15	0.57	47.04	529.56
February	2.15	0.57	48.22	311.17
March	2.15	0.57	37.65	344.84
Annual emissions	25.79	6.89	543.99	5,176.19



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