# **CO2 Emission Analysis using Employee Commute**

**1. Introduction**

* **Project Overview:**

Carbon, in its most basic form, is an element. In fact, it’s the most common element for life on Earth! From the air we breathe to the crops we grow, and the chemical makeup of our own bodies, carbon is literally the basis for life.

When we talk about carbon emissions, we’re focusing specifically on carbon dioxide or CO2. Naturally, CO2 releases into the atmosphere in a ton of ways. The largest source of natural carbon emissions is the exchange of carbon dioxide between the oceans and the atmosphere. Animals and plants also emit CO2 through the process of respiration (breathe in oxygen, breathe out CO2). And when these plants and animals decompose, organisms within the soil respire to produce energy and emit more CO2 into the atmosphere.

* **Scope:**

1. By Identifying Departments with Higher Co2 emissions, organization can focus their efforts on optimizing transportation practices those areas.

2. Understanding peak emission periods allows proactive planning and mitigation strategies.

3. Comparing different travel modes (e.g., petrol vs diesel, 5-seaters vs. 7-seaters) based on their carbon footprint provides actionable insights.

4. Analysing vehicle usage by department and month helps realign transportation systems. Insights can guide decisions on vehicle allocation, scheduling, and route optimization.

5. Factors like vehicle type, fuel efficiency, and maintenance play a crucial role.

* **Objectives:** Outline the primary objectives of the design.

**2. Details Overview**

* **Architecture:**
  + Dataset Creation.
  + Load data into Cloud Storage
  + Create job using Dataflow to load data as table into BigQuery
  + Connect Power BI to BigQuery to get Insights
  + Second approach to get Insights using Looker Studio
* **Technologies:**
  + Google Cloud Storage
  + Dataflow
  + BigQuery
  + Power BI
  + Looker Studio

















