





Photo by Maxim Tolchinskiy on Unsplash

When factoring heat generation required for the manufacturing and transportation of products, *Greenhouse gas emissions attributable to products, from food to sneakers to appliances, make up more than 75% of global emissions.*

( Source: The Carbon Catalogue <https://www.nature.com/articles/s41597-022-01178-9> )

Our data, which is publicly available on nature.com, contains product carbon footprints (PCFs) for various companies. PCFs are the greenhouse gas emissions attributable to a given product, measured in CO<sub>2</sub> (carbon dioxide equivalent).

This data is stored in a PostgreSQL database containing one table, `product_emissions`, which looks at PCFs by product as well as the stage of production that these emissions occurred.


Here's a snapshot of what `product_emissions` contains in each column:

`product_emissions`

field	data type
<code>id</code>	<code>VARCHAR</code>
<code>year</code>	<code>INT</code>
<code>product_name</code>	<code>VARCHAR</code>
<code>company</code>	<code>VARCHAR</code>
<code>country</code>	<code>VARCHAR</code>
<code>industry_group</code>	<code>VARCHAR</code>
<code>weight_kg</code>	<code>NUMERIC</code>
<code>carbon_footprint_pcf</code>	<code>NUMERIC</code>
<code>upstream_percent_total_pcf</code>	<code>VARCHAR</code>


field	data type
operations_percent_total_pcf	VARCHAR
downstream_percent_total_pcf	VARCHAR

You'll use this data to examine the carbon footprint of each industry in the dataset!

 Projects Data    DataFrame as carbon\_emissions\_by\_industry

```
SELECT
  industry_group,
  COUNT(DISTINCT company) AS num_companies,
  ROUND(SUM(carbon_footprint_pcf), 1) AS total_industry_footprint
FROM product_emissions
WHERE year IN (
  SELECT year
  FROM product_emissions
  ORDER BY year DESC
  LIMIT 1
)
GROUP BY industry_group
ORDER BY total_industry_footprint DESC
```

index	...	↑↓	industry_group
		0	Materials
		1	Capital Goods
		2	Technology Hardware & Equipment
		3	Food, Beverage & Tobacco
		4	Commercial & Professional Services
		5	Software & Services

Rows: 6  Expand