

# EMISSION OF CO<sub>2</sub>

## 1. Introduction:

### 1.1. Overview:

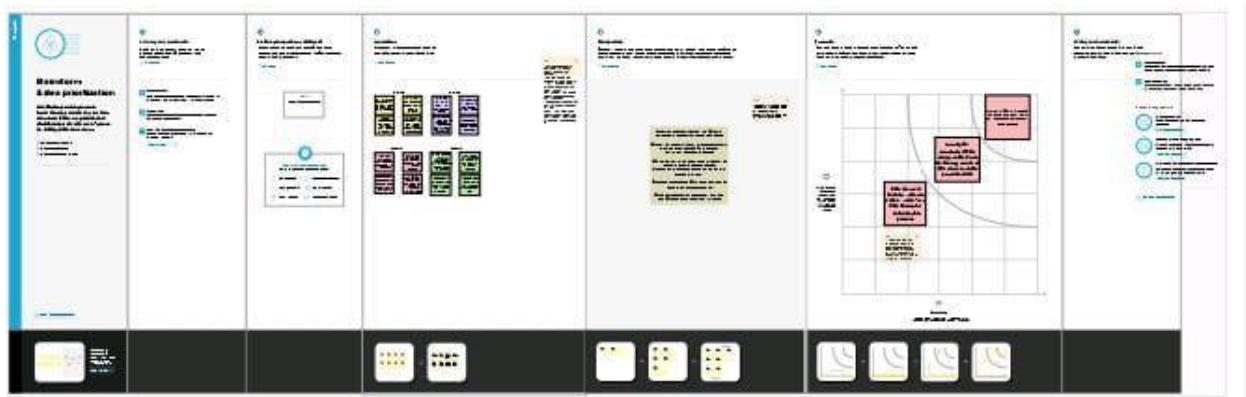
Global carbon dioxide (CO<sub>2</sub>) emissions from energy combustion and industrial processes grew 0.9% or 321 Mt in 2022 to a new all-time high of 36.8 Gt. This estimate is based on the IEA's detailed region-by-region and fuel-by-fuel analysis, incorporating the latest official national statistics and publicly available data on energy use, economic indicators and weather. Emissions shrank by more than 5% in 2020, as the Covid-19 pandemic cut energy demand. In 2021, emissions rebounded past pre-pandemic levels, growing more than 6% in tandem with economic stimulus and the roll-out of vaccines.

### 1.2. Purpose:

The data we have represented is used to analyse the emission of CO<sub>2</sub> throughout the years in various countries. This project helps in setting a goal for a better environment with less emission of CO<sub>2</sub>. The represented can be compared to the following years' data and hence aids in reduction of emission of CO<sub>2</sub>.

## 2. Problem Definition & Design Thinking:

### 2.1 Empathy Map:



### 2.2 Ideation & Brainstorming Map:

**Template**



## Empathy map

Use this framework to develop a deep, shared understanding and empathy for other people. An empathy map helps describe the aspects of a user's experience, needs, and pain points, to quickly understand your users' experience and mindset.

**Share template & feedback**

**Build empathy**

The information you add here should be representative of the observations and research you've done about your users.

**Step 1**  
What issue can we find that we might not have even imagined?

**Needs**  
What does our user need?

**Challenges**  
What obstacles does our user face?

**Goals**  
What does our user want to achieve?

**Thoughts**  
What does our user think?

**Behaviors**  
What does our user do?

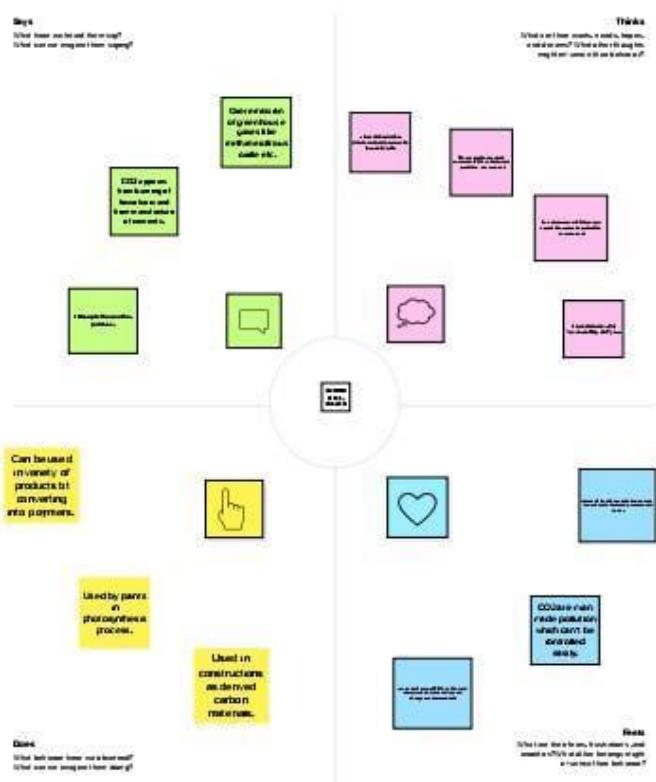
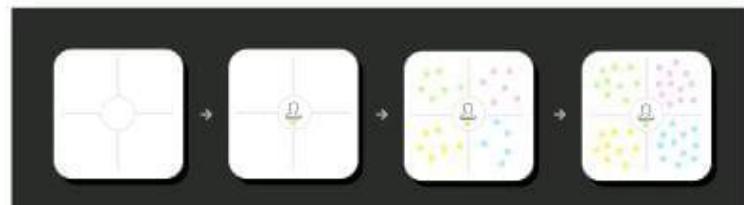
**Icons**  
Can be used in many of products to converting into polymers.

**Used by**  
Used by parents in pharmaceutical process.

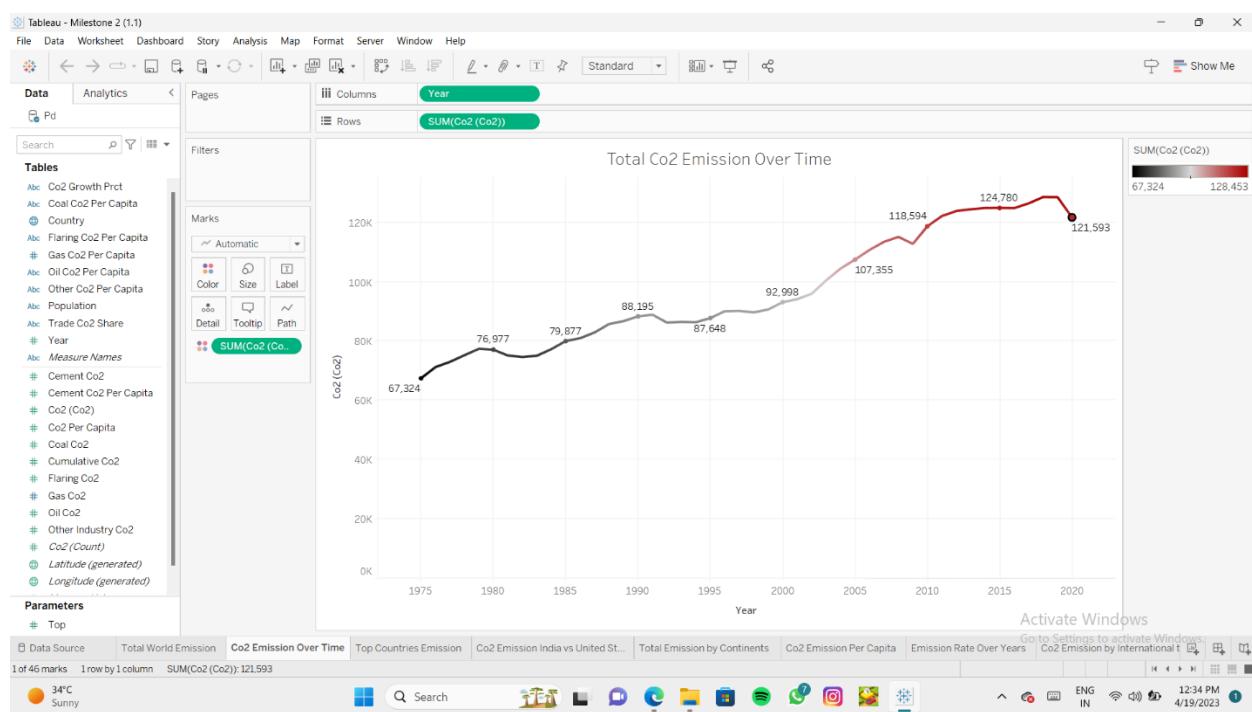
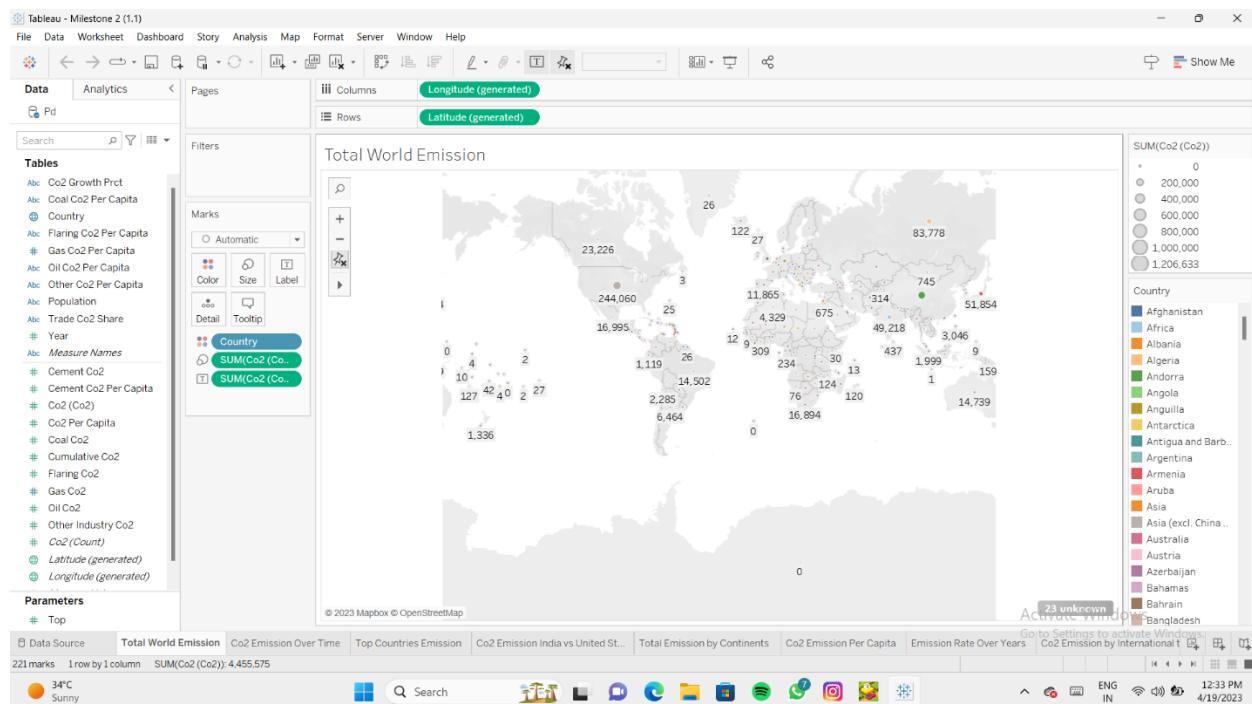
**Used in**  
Used in constructions as derived carbon materials.

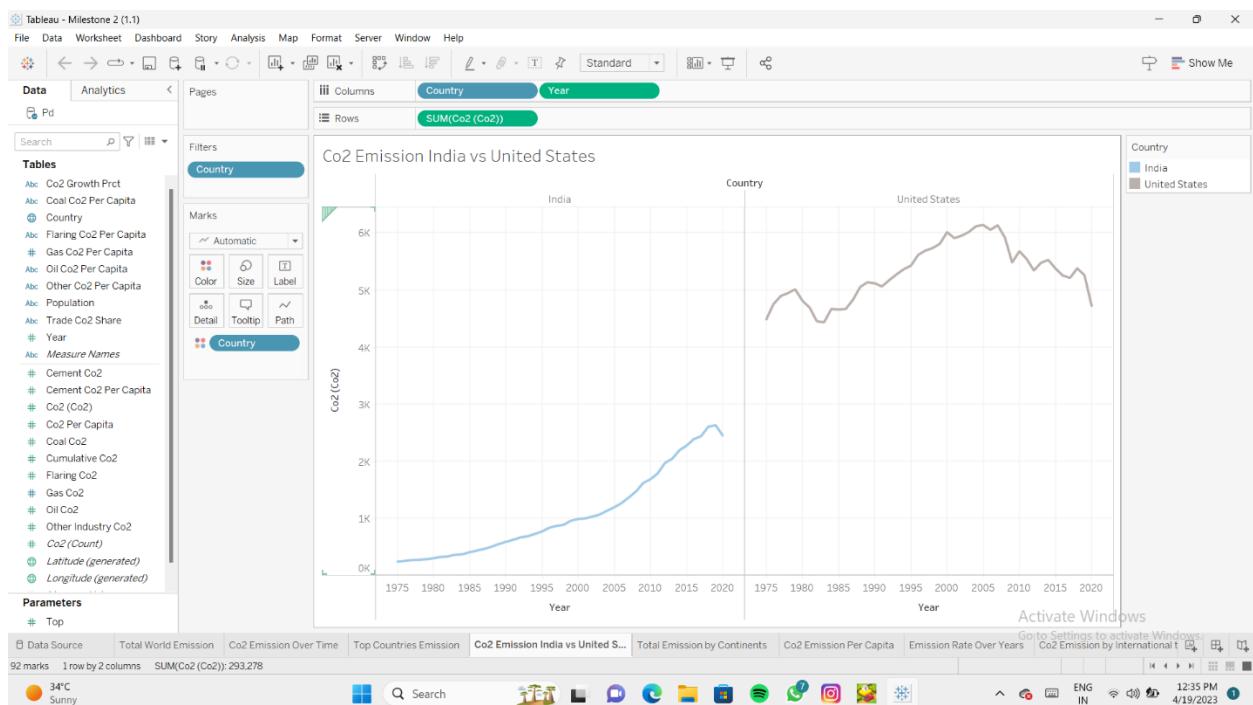
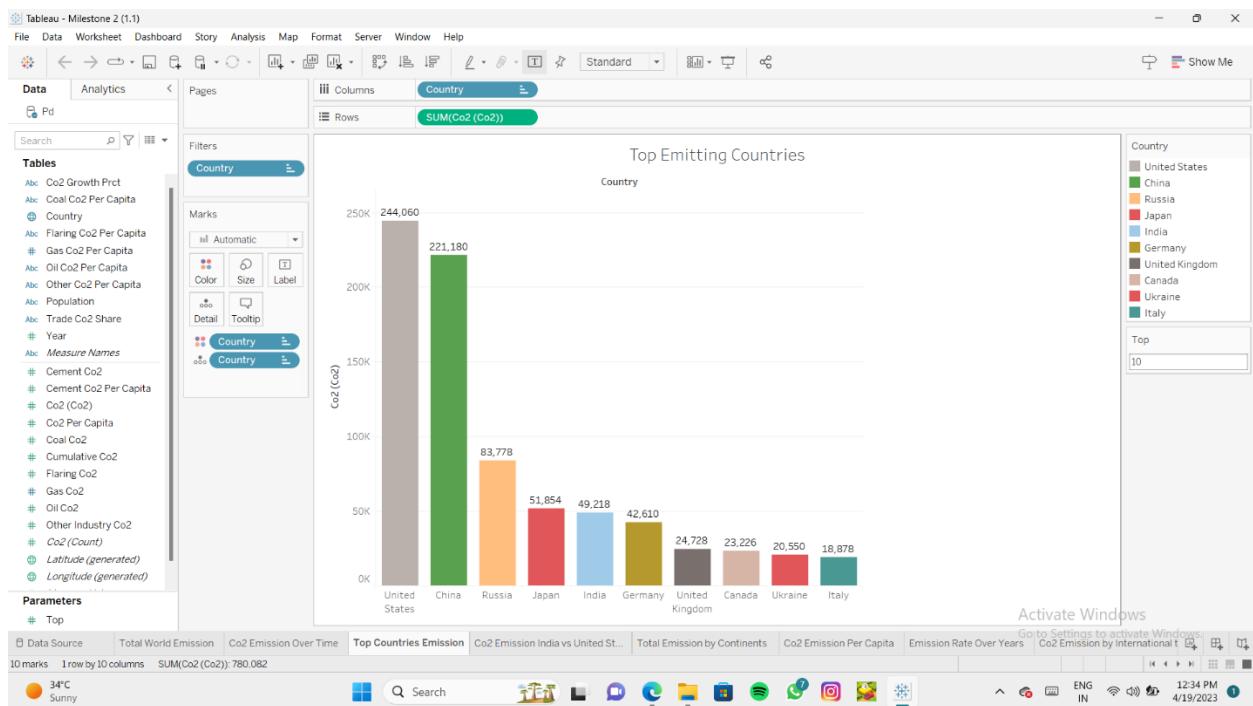
**Collage**  
Collage main media patterns which can be extracted.

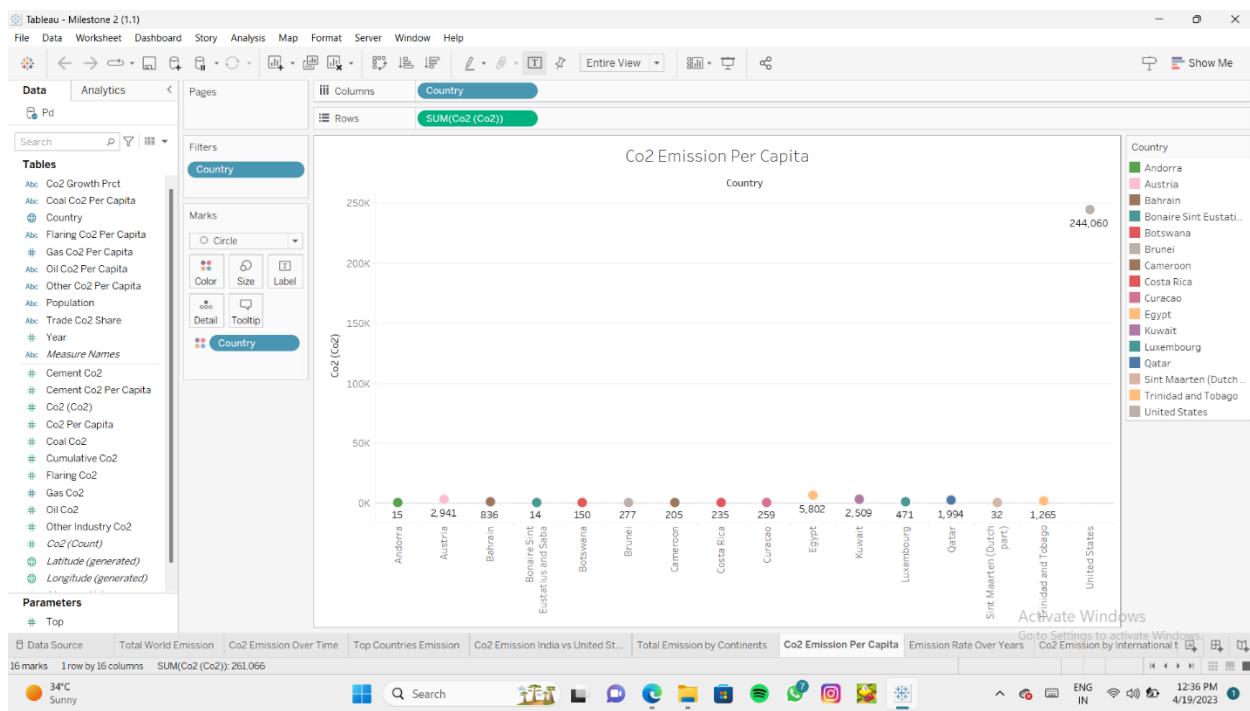
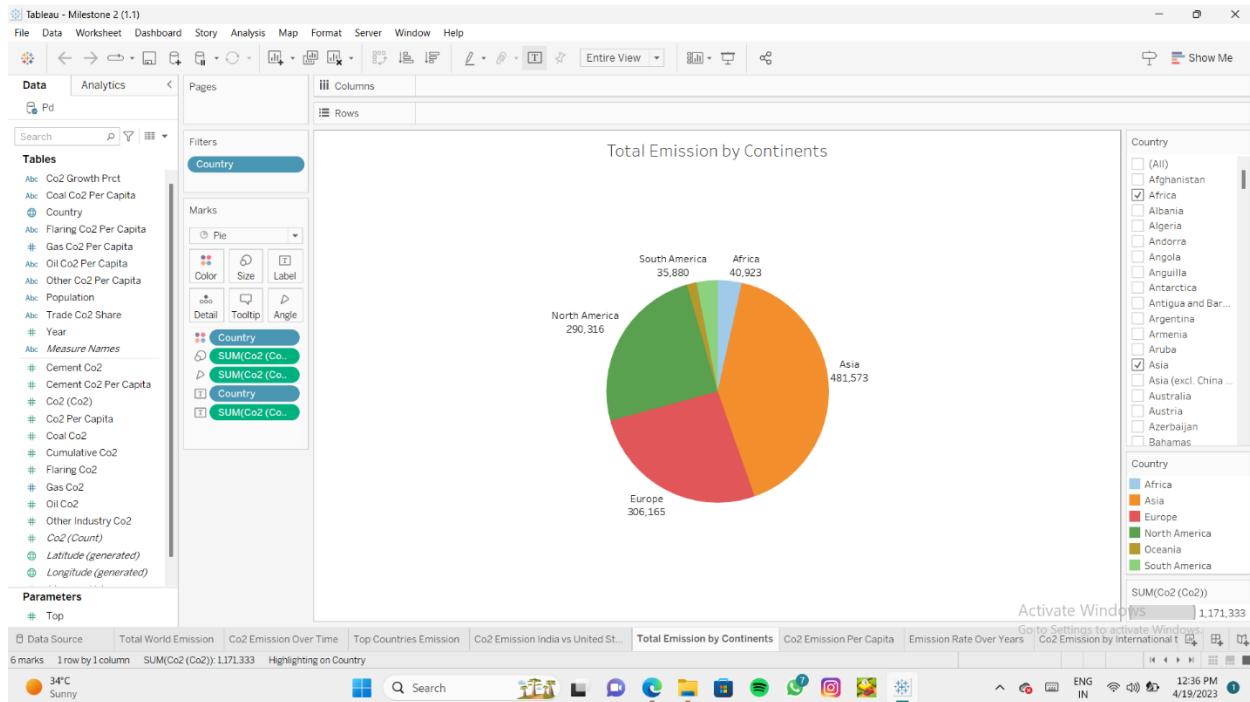
**Want**  
What does our user want to reach?

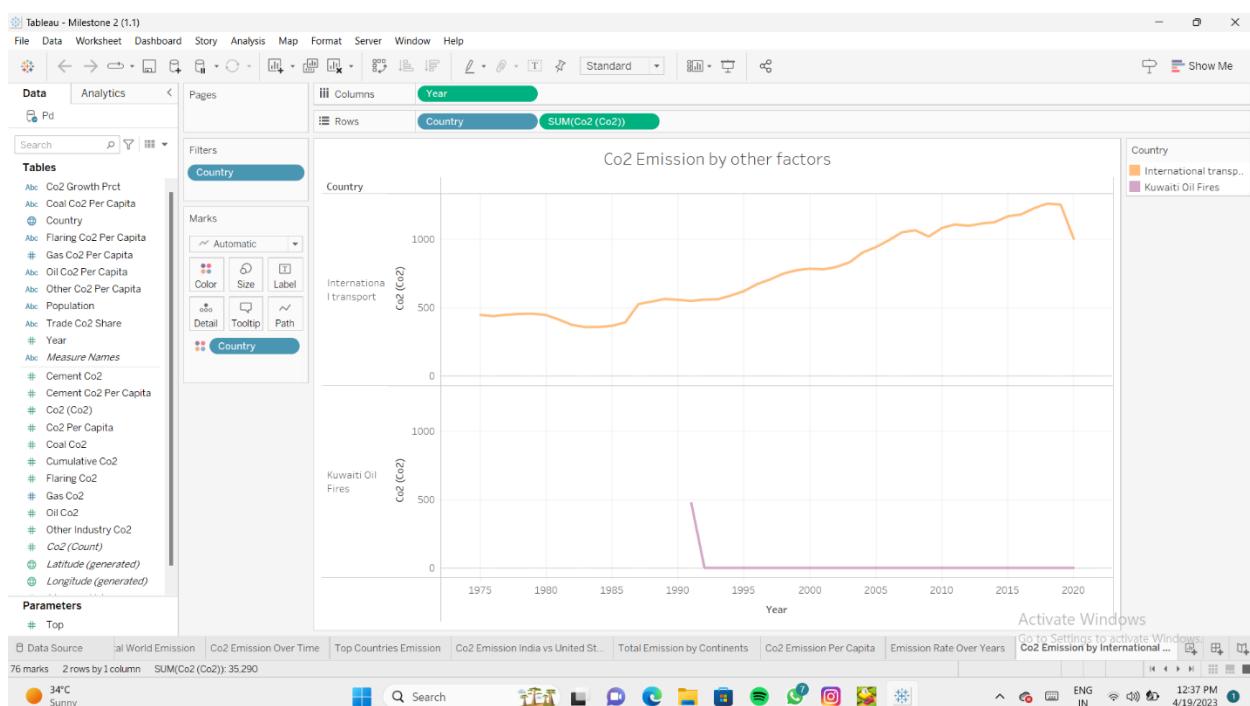
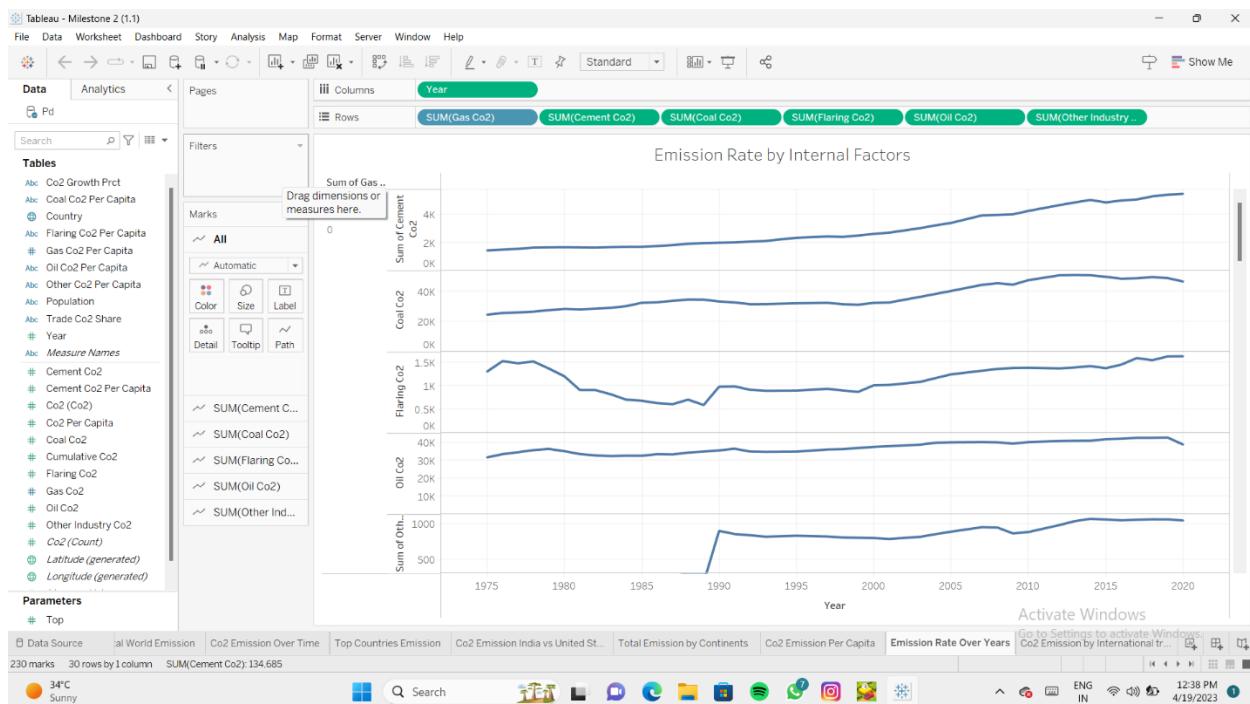



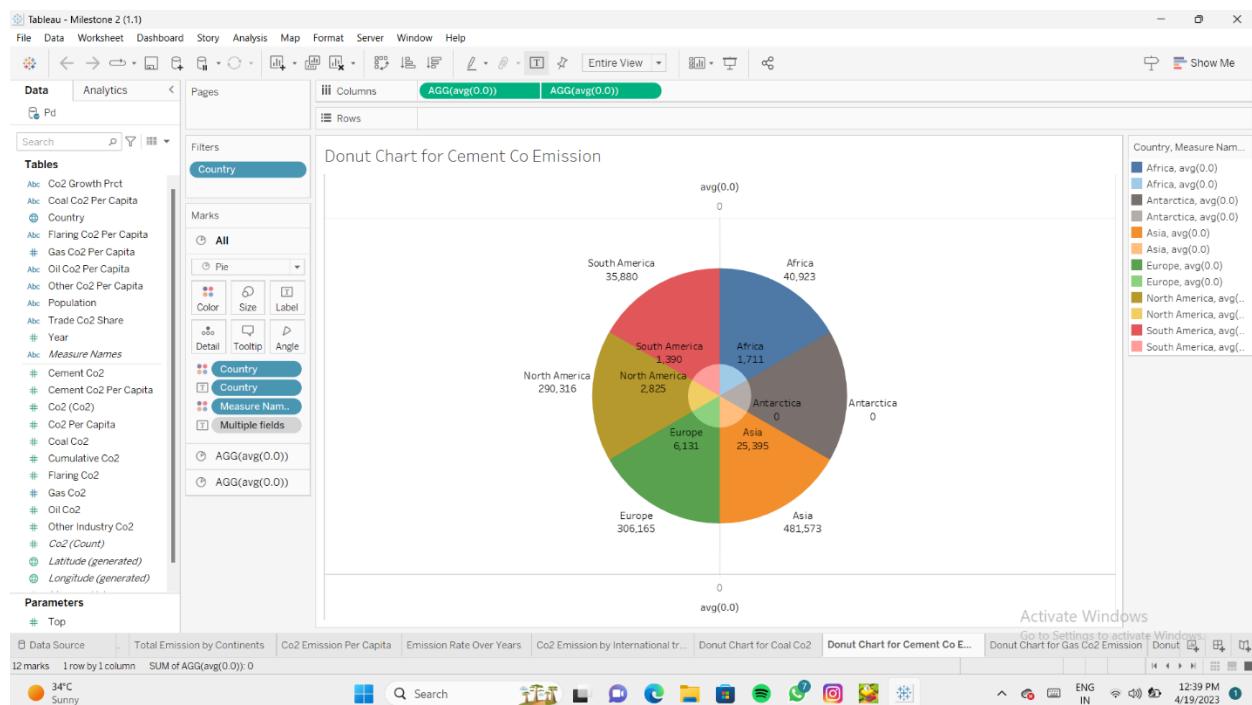
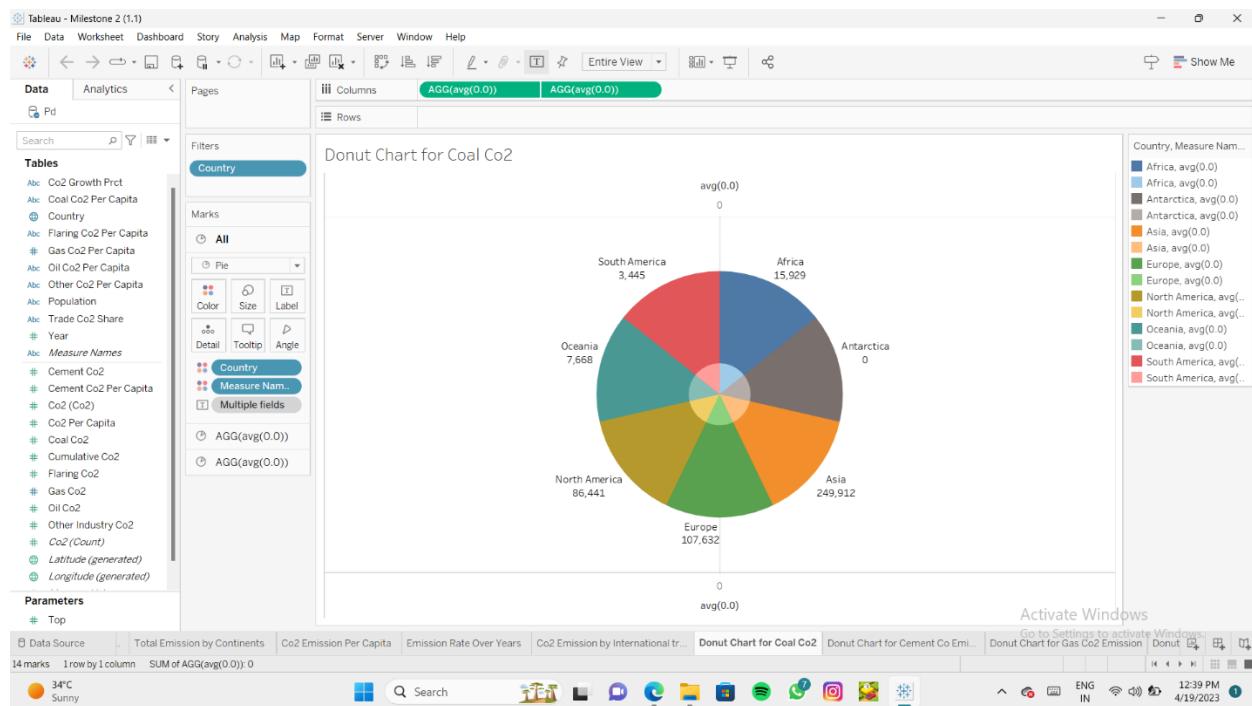
### 3. Result:

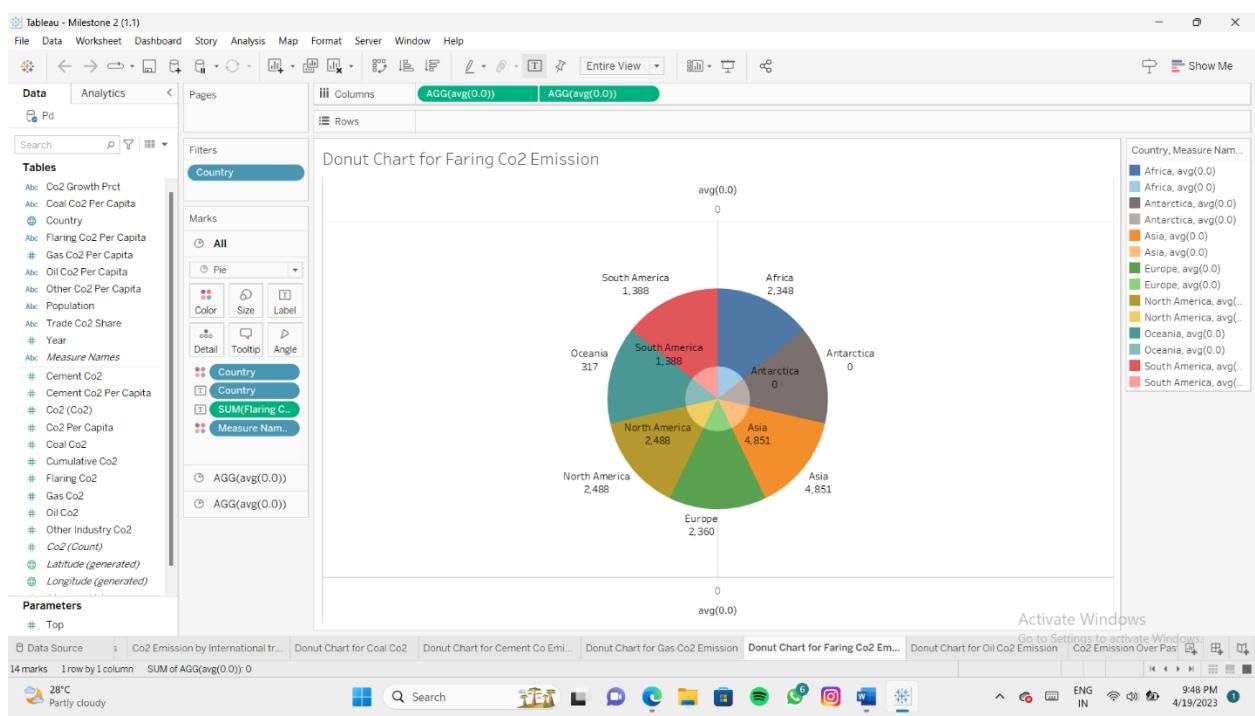
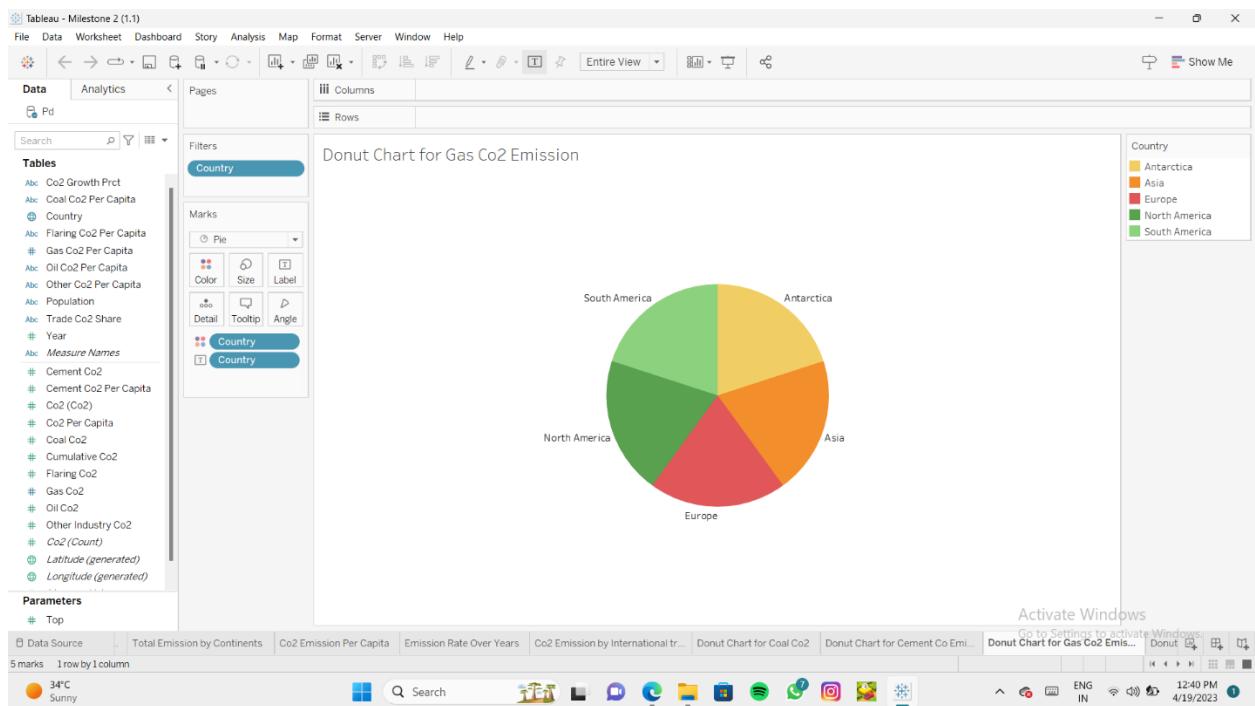


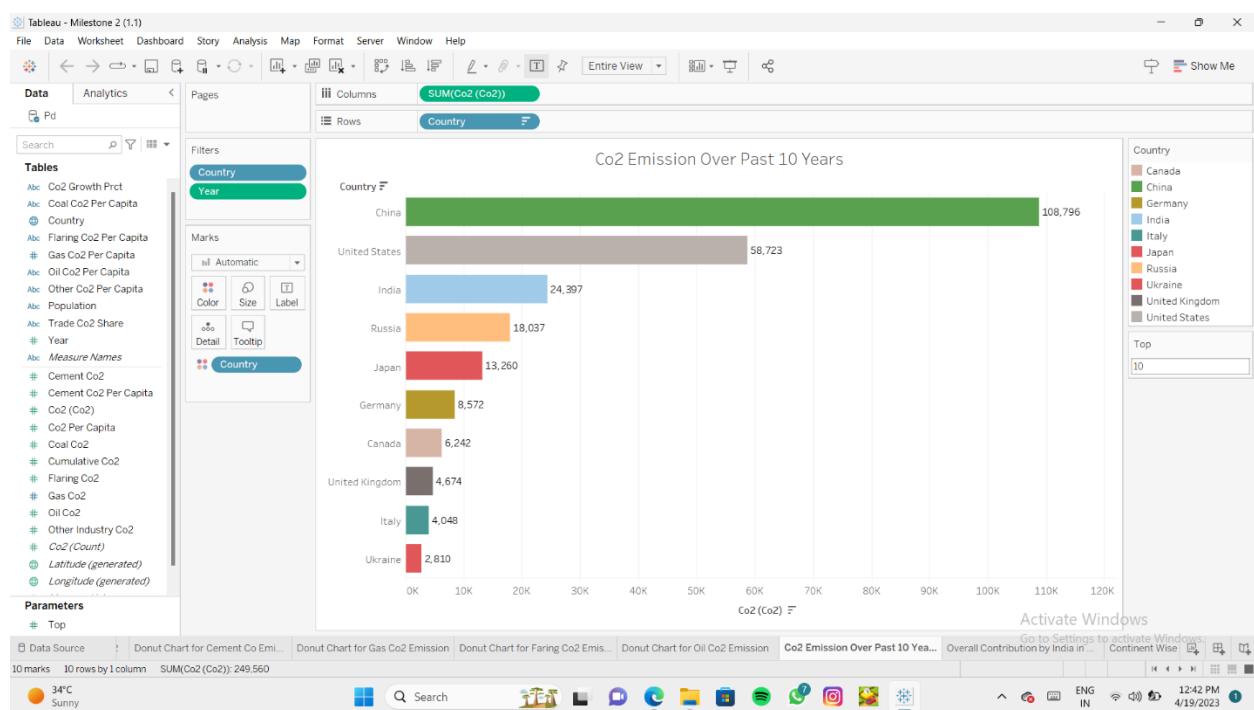
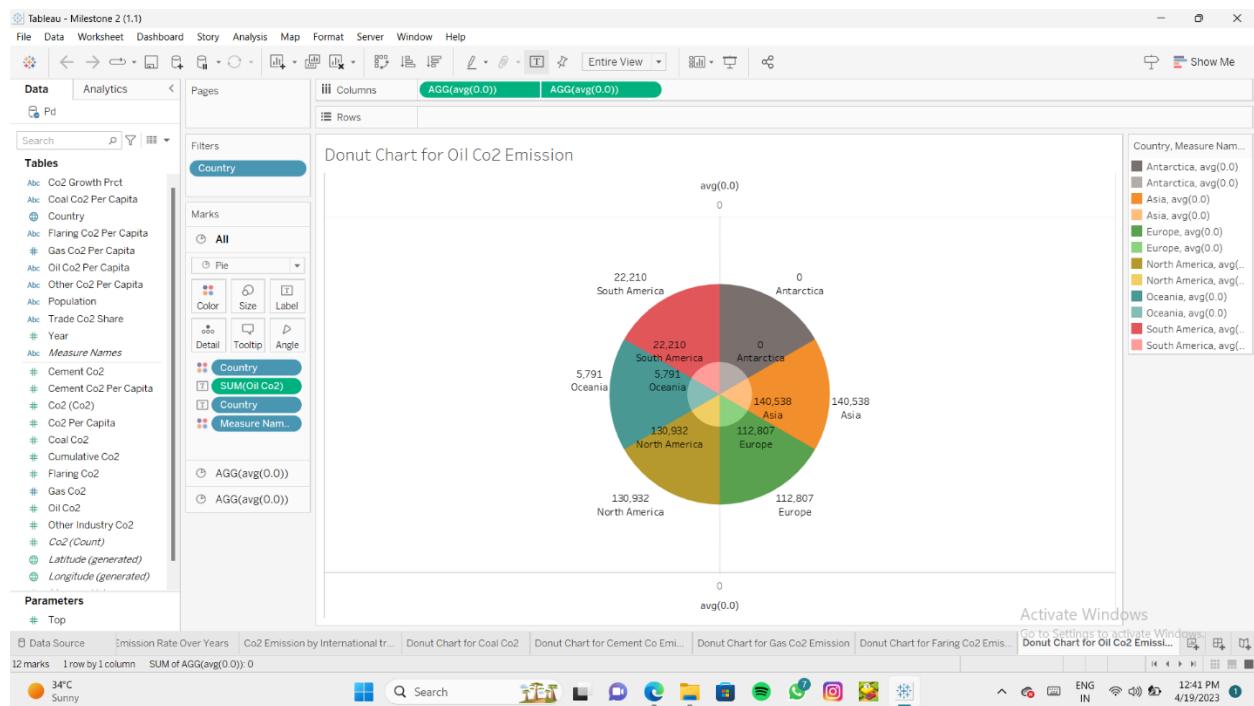


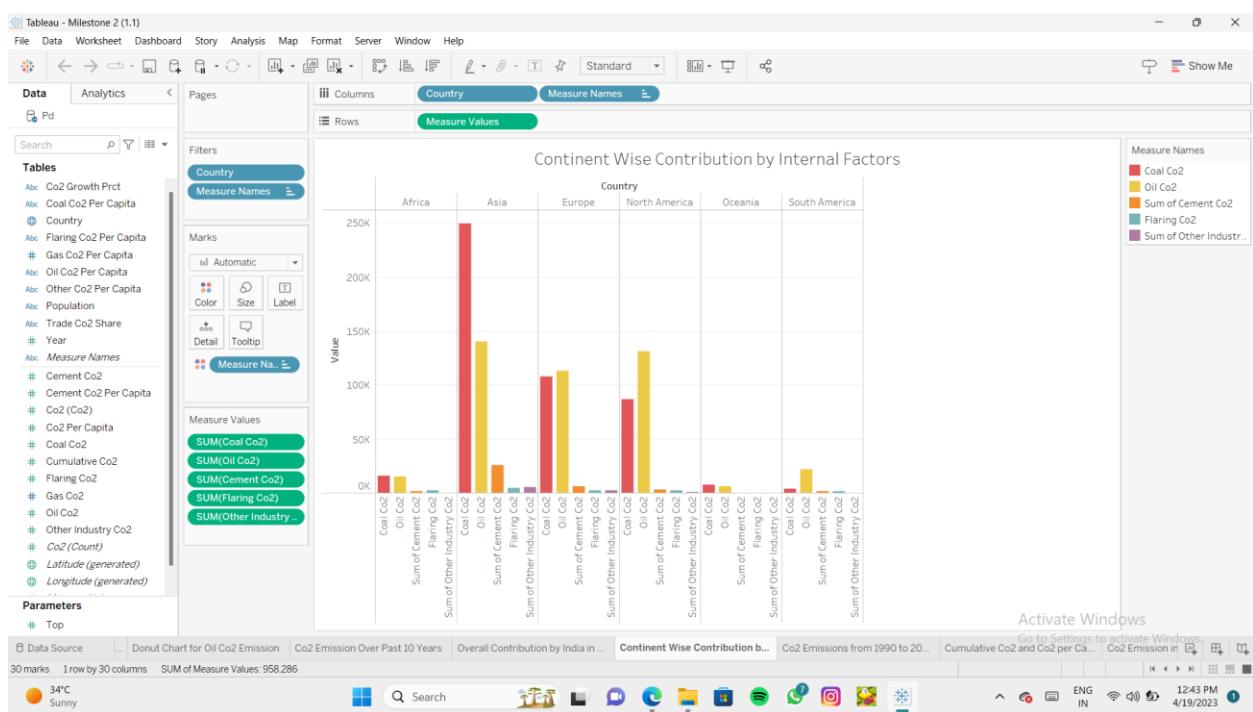
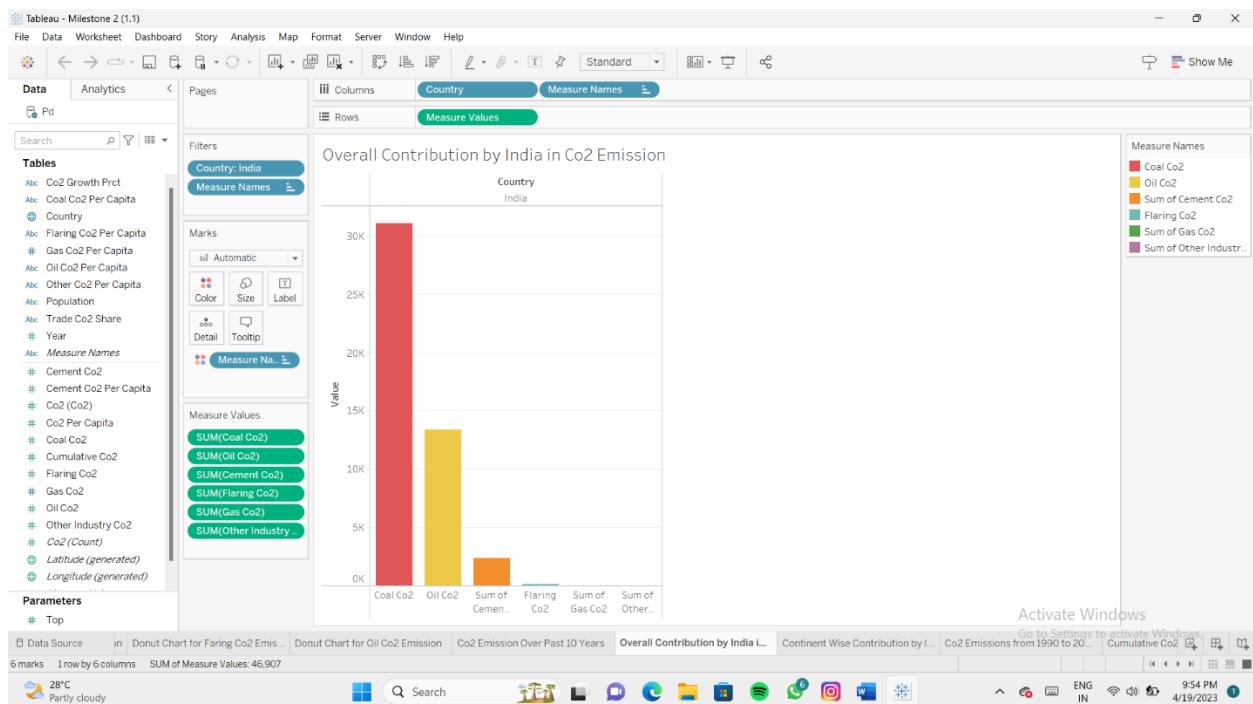


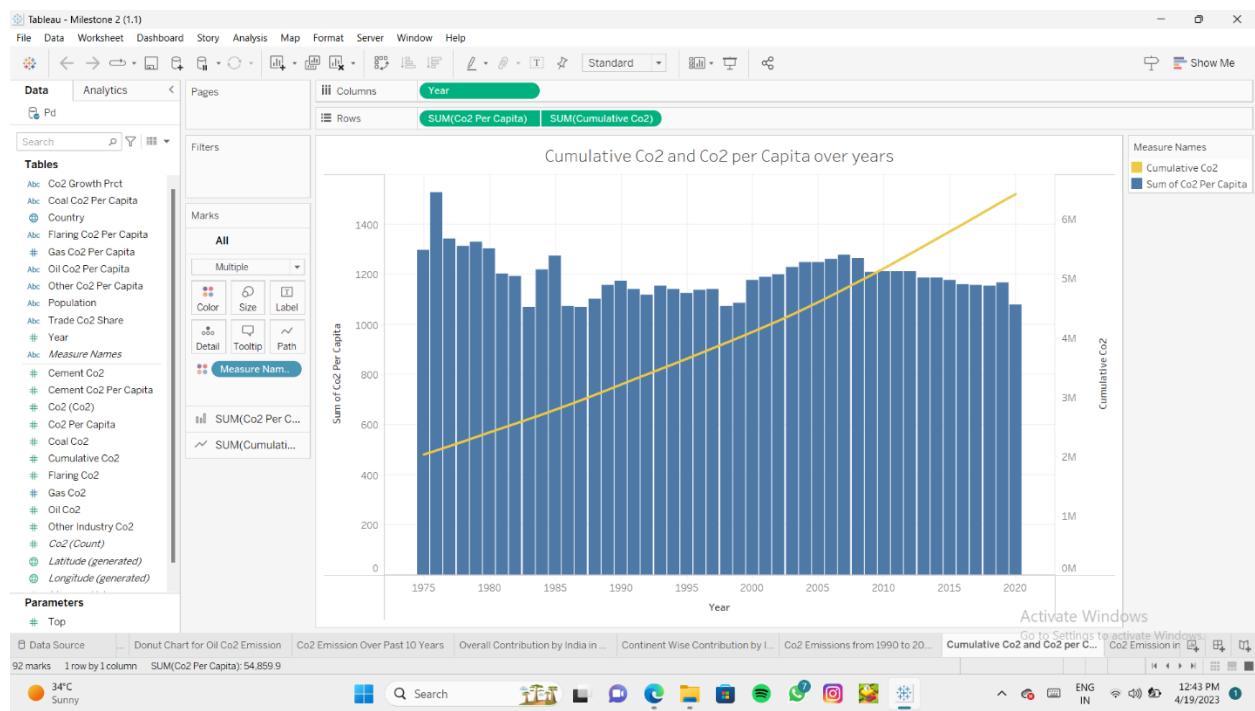
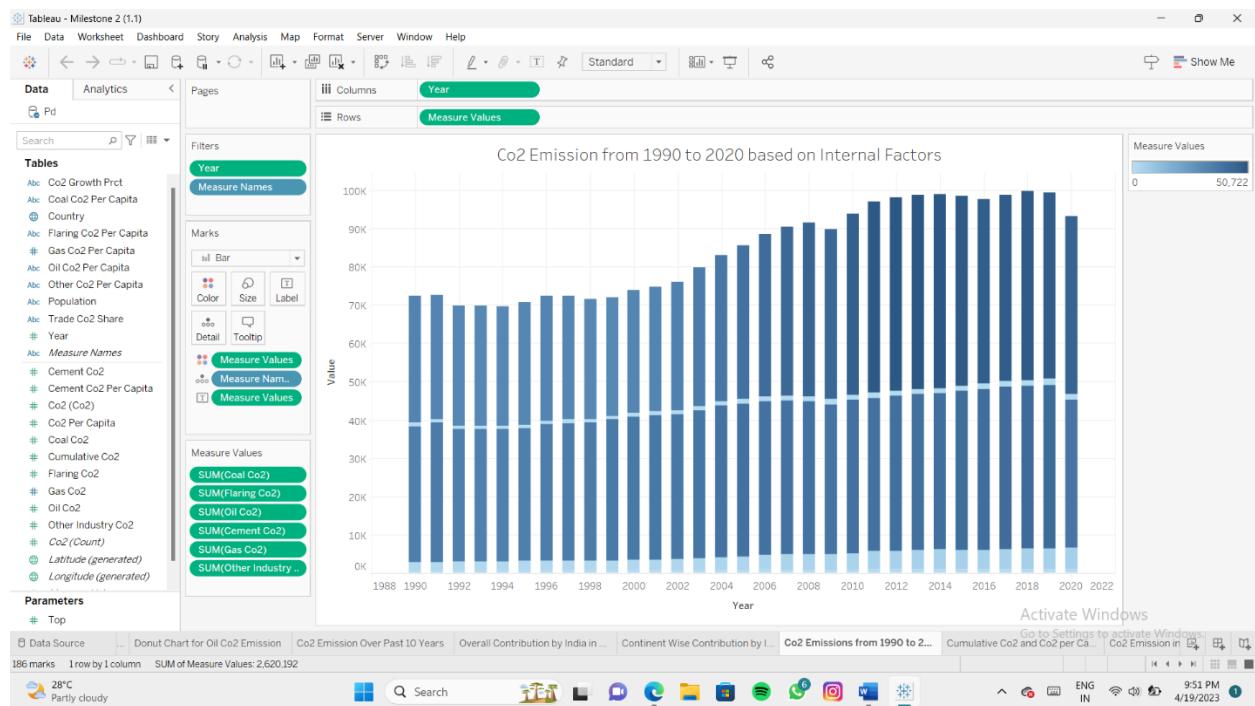


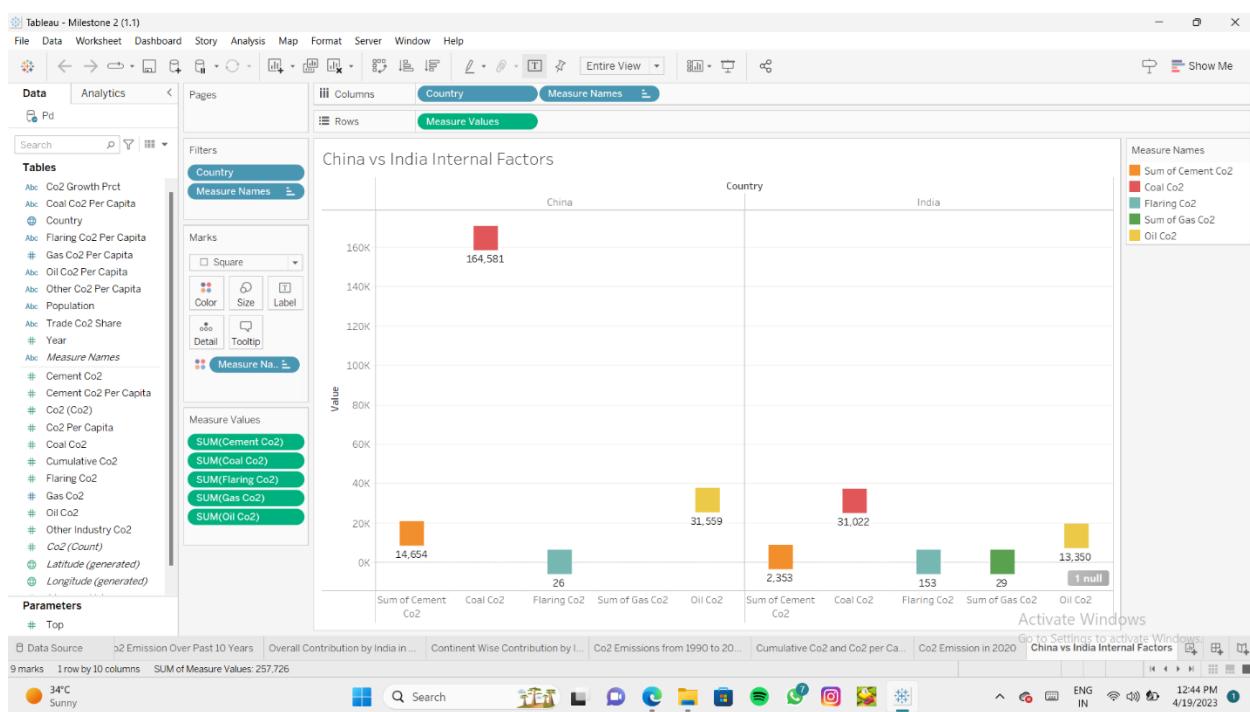
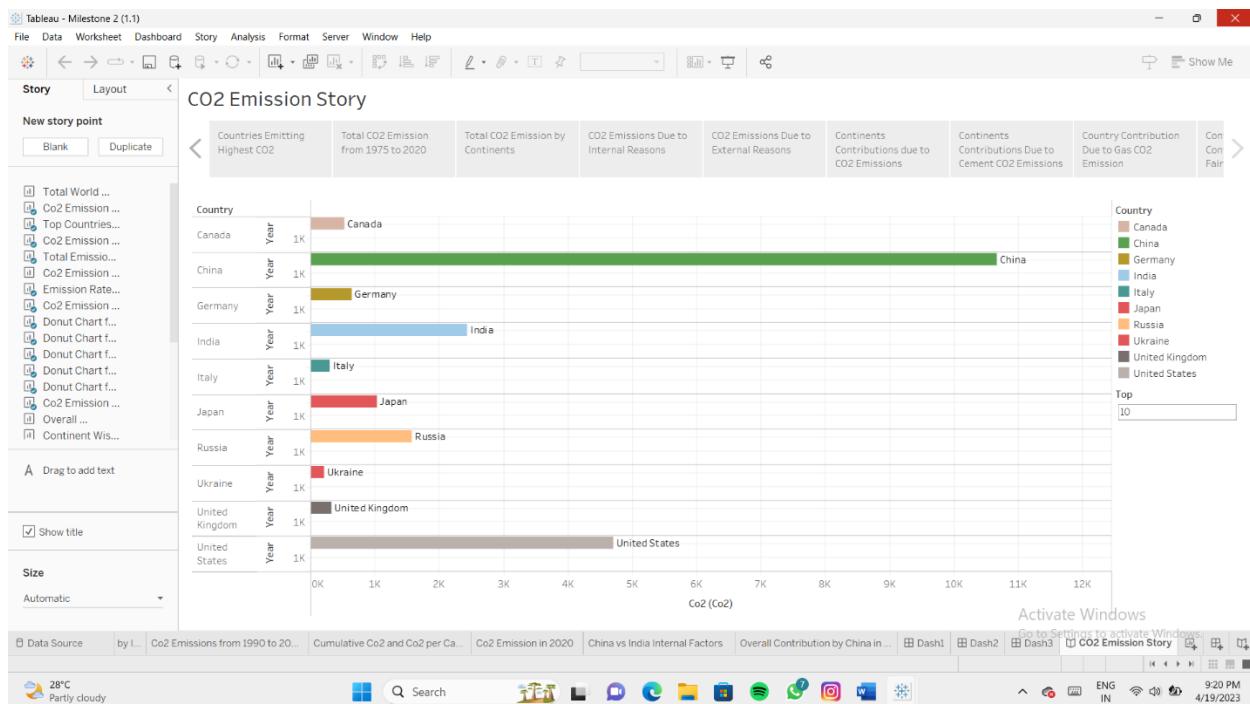


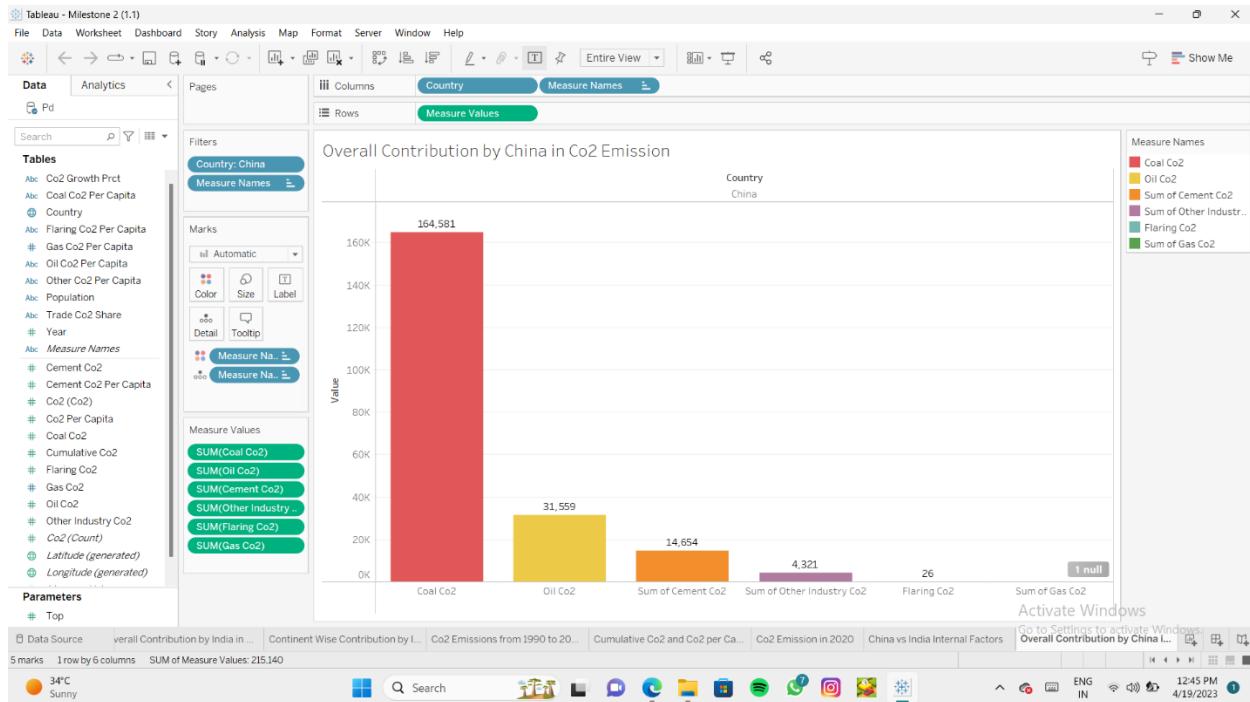












## 4. Advantages & Disadvantages:

### Advantages:

The proposed solution helps in economic, social and environment massive impact on global and local scale. Geologically stored CO<sub>2</sub> might be utilized to retrieve geothermal heat from the area injected which helps in the production of sustainable geothermal energy.

### Disadvantages:

The solution process is not cost efficient. Carbon capture can be stored for a short term. But long term storage capacity for CO<sub>2</sub> is uncertain. The storage sites and transportation of CO<sub>2</sub> can be dangerous. Public's perception is storing CO<sub>2</sub> near them is negative.

## 5. Applications:

The application of CO<sub>2</sub> capture technology is expanding to a variety of emissions sources. These include waste-to-energy plants, LNG production, steel plants, cement plants, gas engines, chemical plants and ships. The latest projects include

biomass power and cement manufacturing in Japan as well as steel production in Belgium and North America.

## 6. Conclusion:

We have created an empathy map to help describe the aspects of a user's experience, reads and points of quickly understand user's experience and mindset.

Then we created a mural as a pdf file in the Brainstorm and idea prioritization template which contains the ideas of our team members. Then we have created three dashboards and a CO<sub>2</sub> emission story from the given table.

## 7. Future Scope:

Carbon capture will play a crucial role in energy transition, especially in heavy industries like power, steel, cement and oil and gas.

Companies are embracing carbon capture's potential and investing in this technology.

The engineering, procurement and construction industry will play a critical role in delivering more economic solutions.