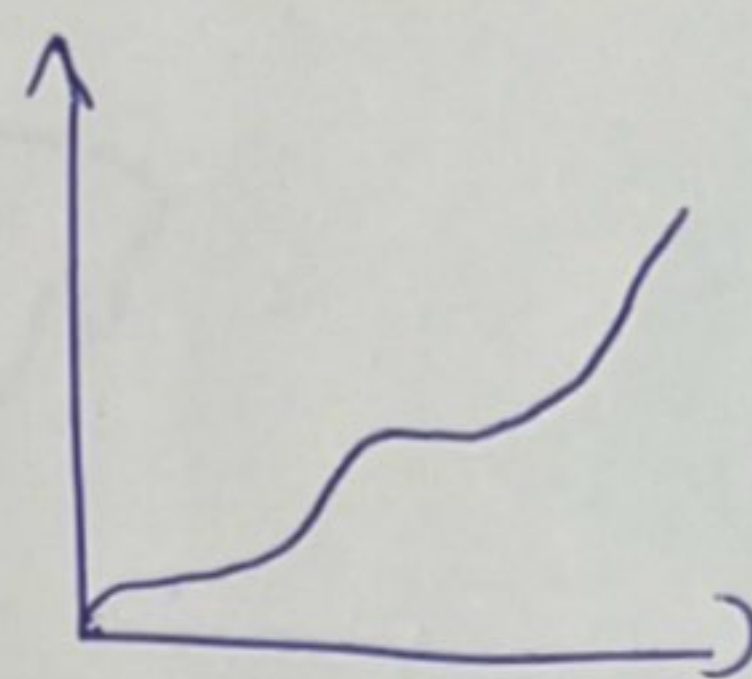


# IDEAS

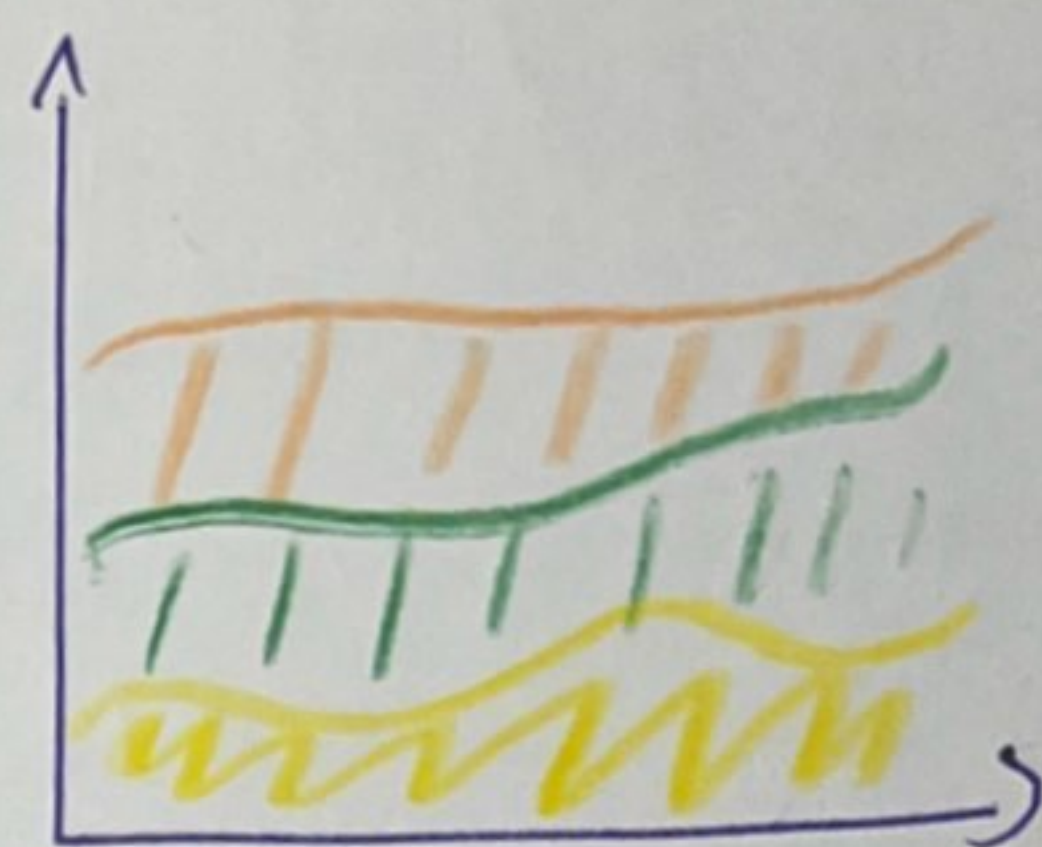
## Choropleth map



## Line Graph



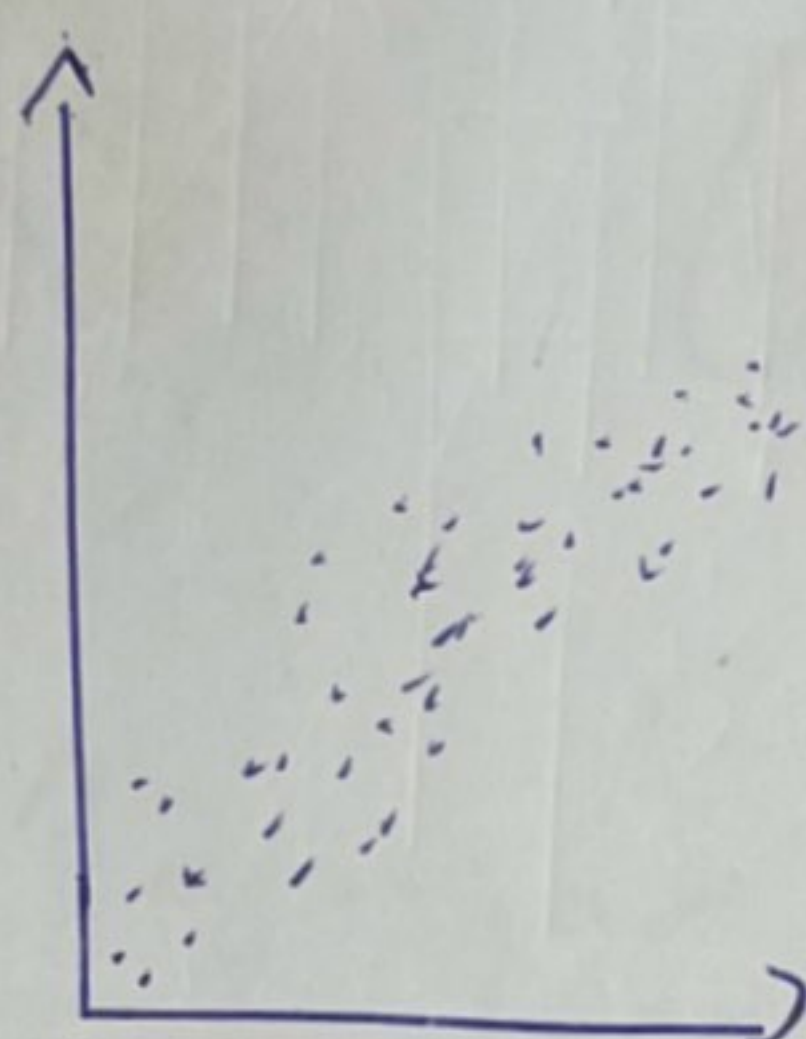
## Stacked Area Graph



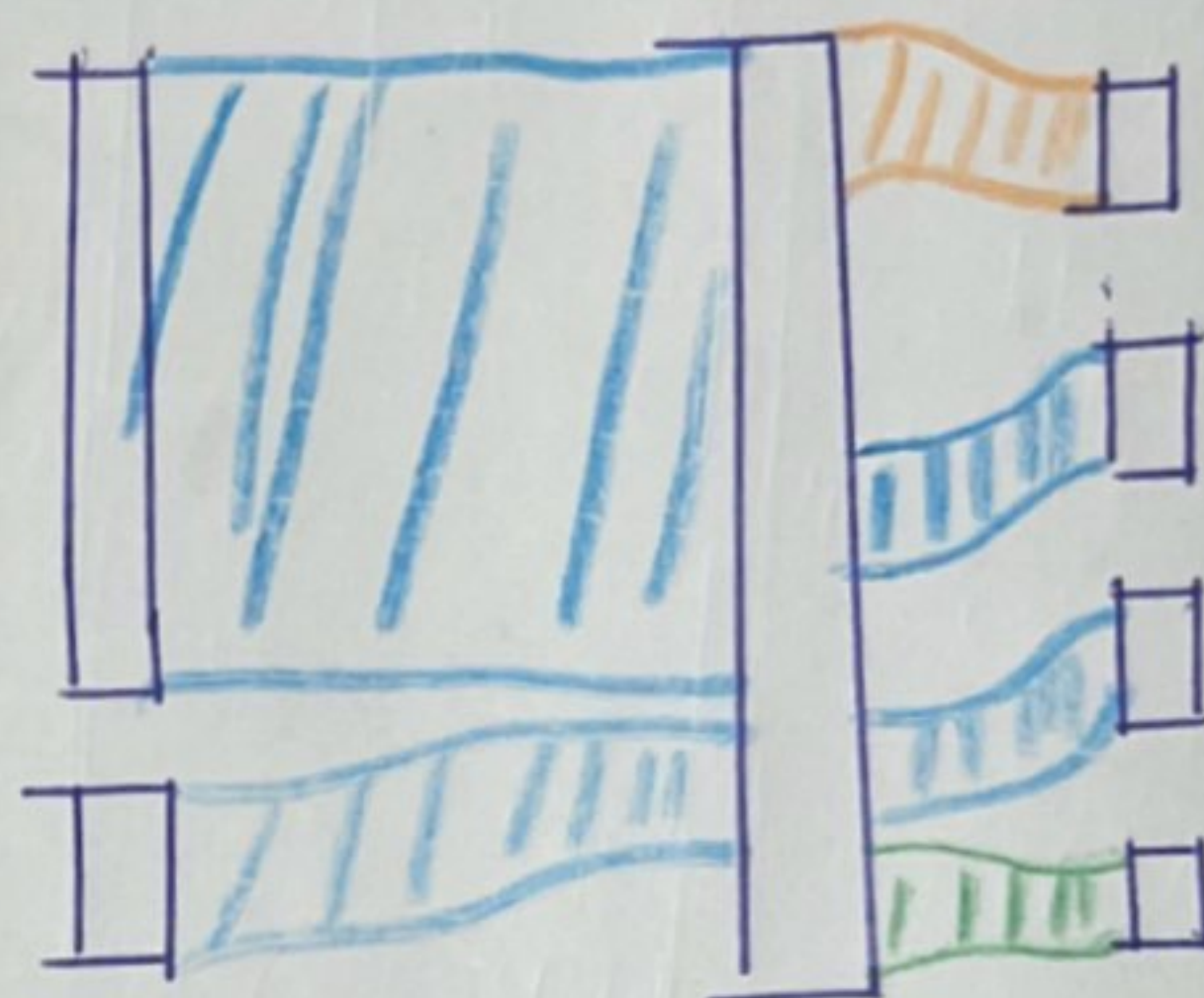
## Pie Chart



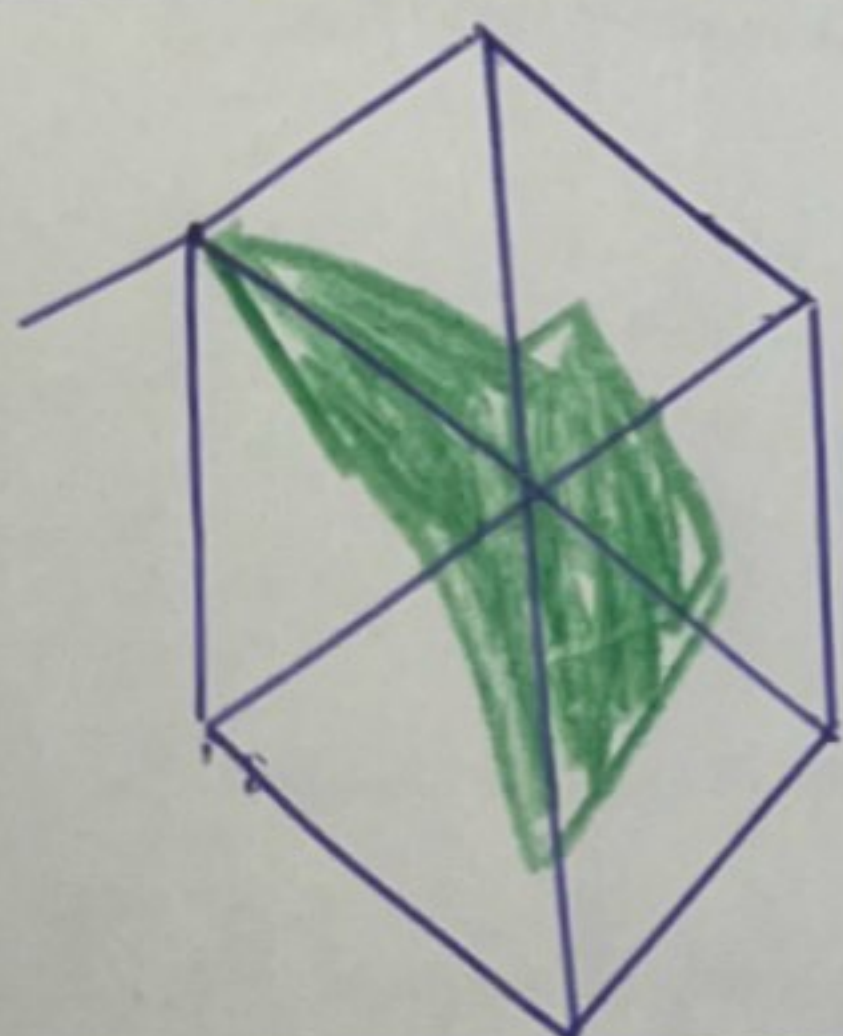
## Scatter Plot



## Sunkey Diagram



## Radar Chart



## Filter Ideas!

- Exclude redundant or ~~overly~~ overly complex elements. For example, the pie chart and tree map may serve similar functions, so only one should be used for geographic comparisons.
- Focus on combining visualisations that allow for easy navigation and comparison without overwhelming the user.

## Categorise Ideas:

- 1) Geographic Data: Choropleth maps, pie charts, radar charts for geographic and regional comparisons.
- 2) Temporal Data: Line Graphs, stacked area charts for analysing trends over time.
- 3) Sector-Based Data: Tree maps, Sankey diagrams, stacked area charts for examining contributions by industry.
- 4) Correlation Data: Scatter plots to visualise the relationship between emissions and temperature changes.

## Combine & Refine:

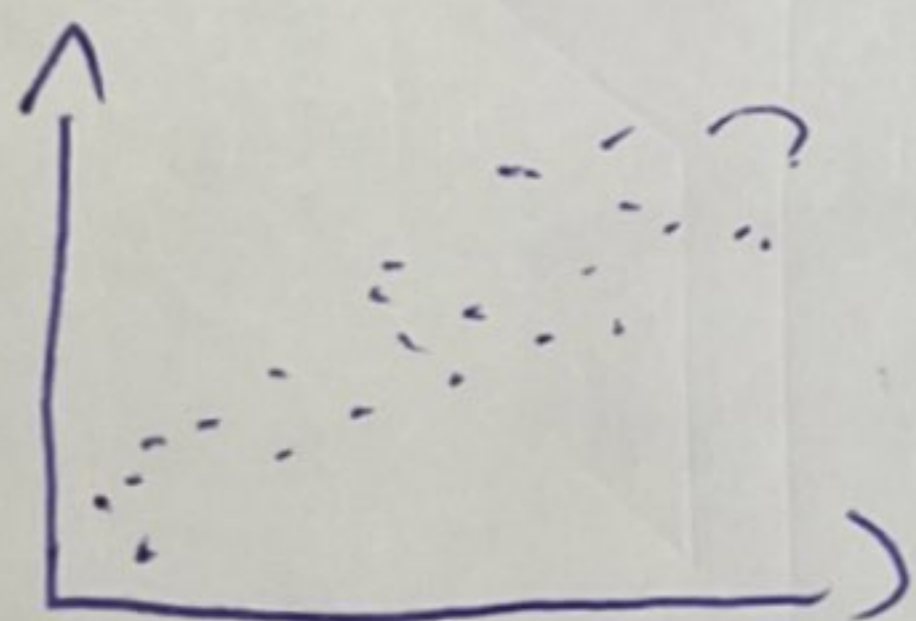
- Combine interactive geographic visualisations (choropleth map) with time-series data.
- Refine the sectoral breakdown to make it easier for users to explore specific industries.

Question: Does this visualisation provide a clear understanding of the global scope of CO<sub>2</sub> emissions by country, sector, and time?

Does it allow users to identify key sectors and regions that contribute most to



## Layout



- A choropleth map at the top showing  $\text{CO}_2$  emission by country (per capita) for the year ~~2020~~. Color intensity indicates emission levels.
- Below the map, a line graph representing the historical trend of global  $\text{CO}_2$  emissions ~~from 1950 to 2020~~.
- A stacked area graph showing  $\text{CO}_2$  emission by sector.
- A pie chart depicting the  $\text{CO}_2$  emission distribution among continents.
- A scatter plot correlating  $\text{CO}_2$  emissions with global mean temperature changes.

Focus: The design emphasises global  $\text{CO}_2$  emission patterns from a geographical, sectoral and temporal perspective, while also highlighting the relationship between emissions and global warming.

Title: Sheet 2

Authors: Desmond Chong

Date: 02/10/2024

Operations:

- Users can hover over countries on the map to see detailed  $\text{CO}_2$  emissions per capita.
- The stacked area graph has a sector selection filter, allowing users to focus on individual sectors.

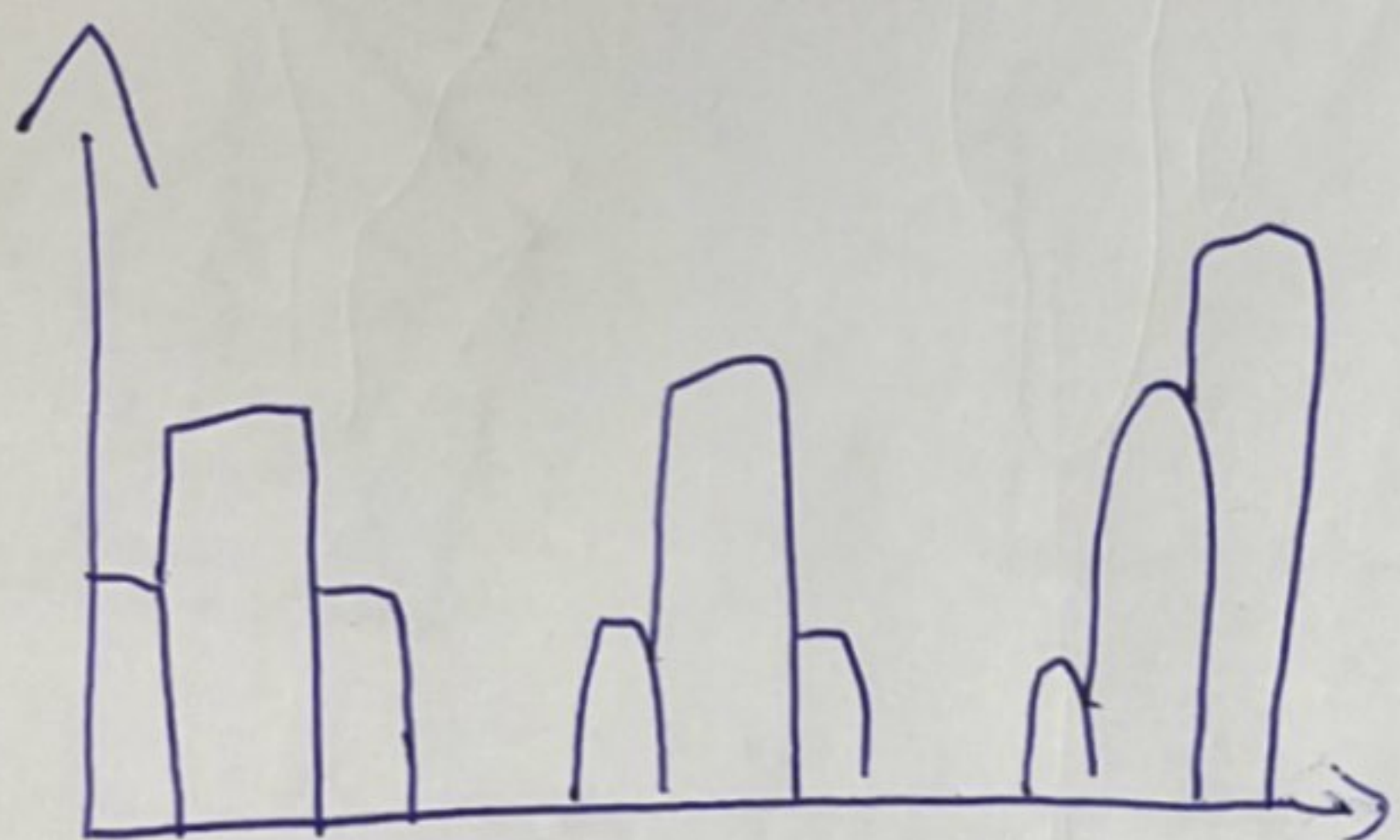
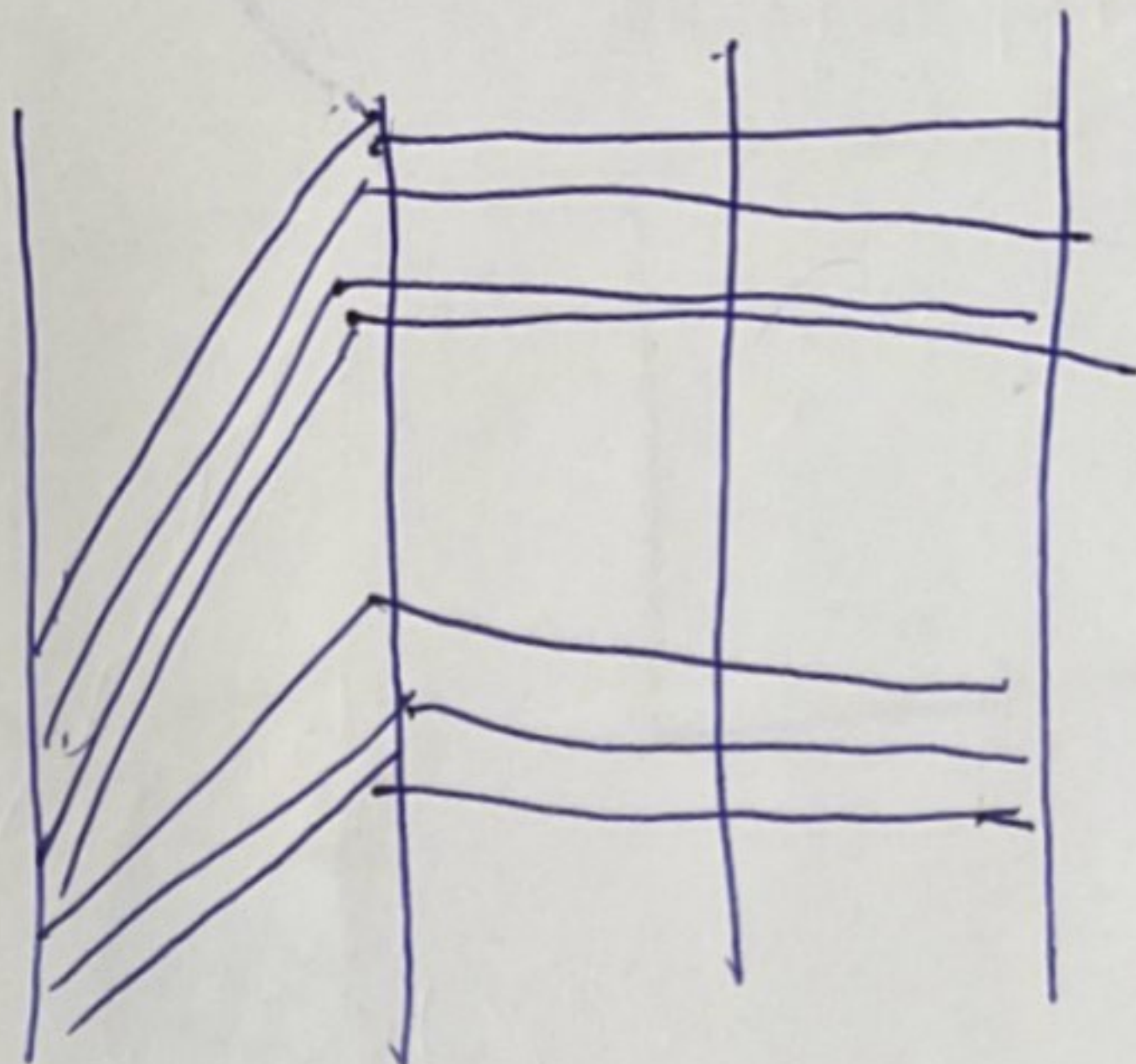
~~Pros~~ Discussion:

• Pros: This layout provide ~~com~~ comprehensive insights into  $\text{CO}_2$  emissions from multiple perspectives. The variety of charts caters to diverse user needs, from high-level overviews to more detailed analysis.

• Cons: The multiple visualisations may feel overwhelming for users unfamiliar with interpreting such data and navigating through interactive filters could be challenging.



## Layout



- **Tree Map:** Visualise the contribution of various sectors to global CO<sub>2</sub> emissions, with each block size proportional to its share of total emissions.
- **Parallel Coordinates Plot:** Show how different sectors' emissions have fluctuated. Each line represents a sector, showing variations across years.
- **Time-series Bar Chart:** Depicts total CO<sub>2</sub> emissions by continent, broken down per year.

**Focus:** This design focuses on showing sectoral breakdowns and how emissions by sector and continent have evolved over time. The tree map highlights the dominant sectors, while the parallel coordinates allow users to track changes in each sector over the years.

Sheet 3

Desmond Chong Qi Xiang

~~02/06/2024~~ 02/06/2024

Operations:

• Users can click on any sector in the tree map to see more detailed emission data or filter the other graphs to focus on that sector.

• The parallel coordinates allow users to hover over specific lines (sectors) to highlight changes over time.

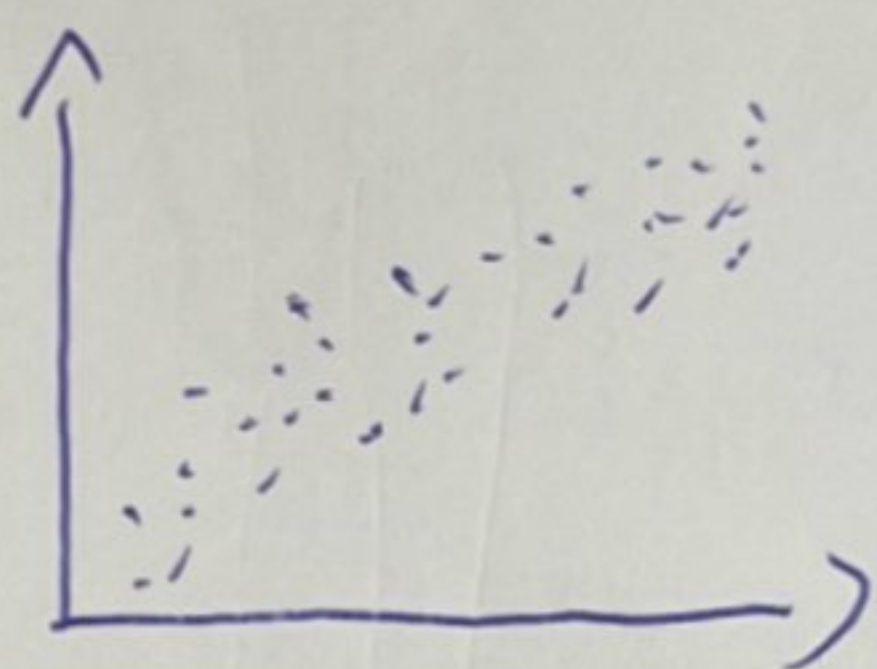
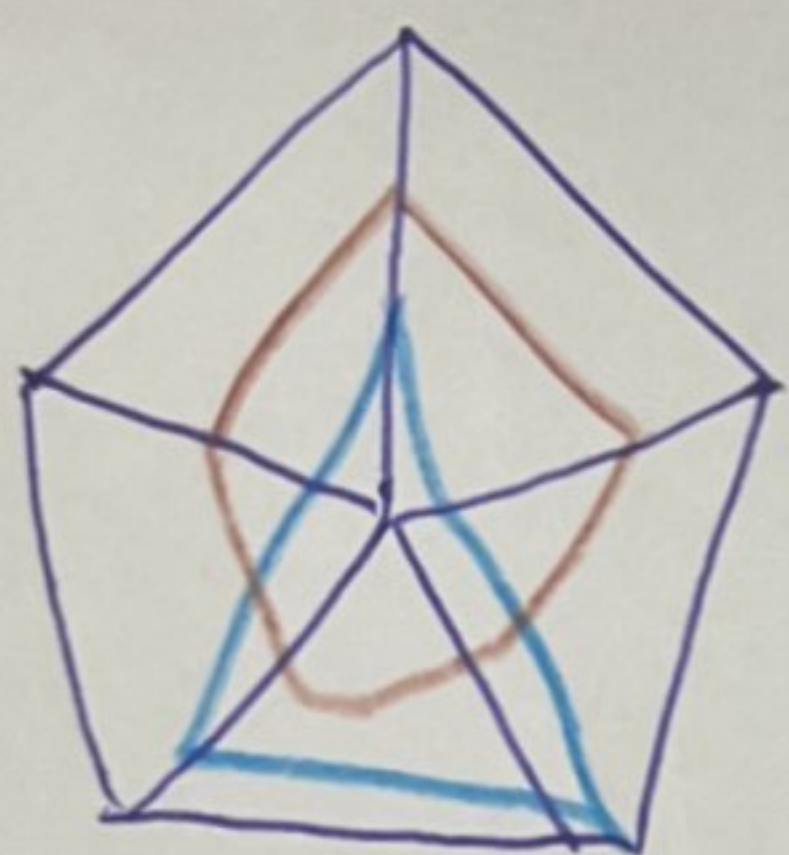
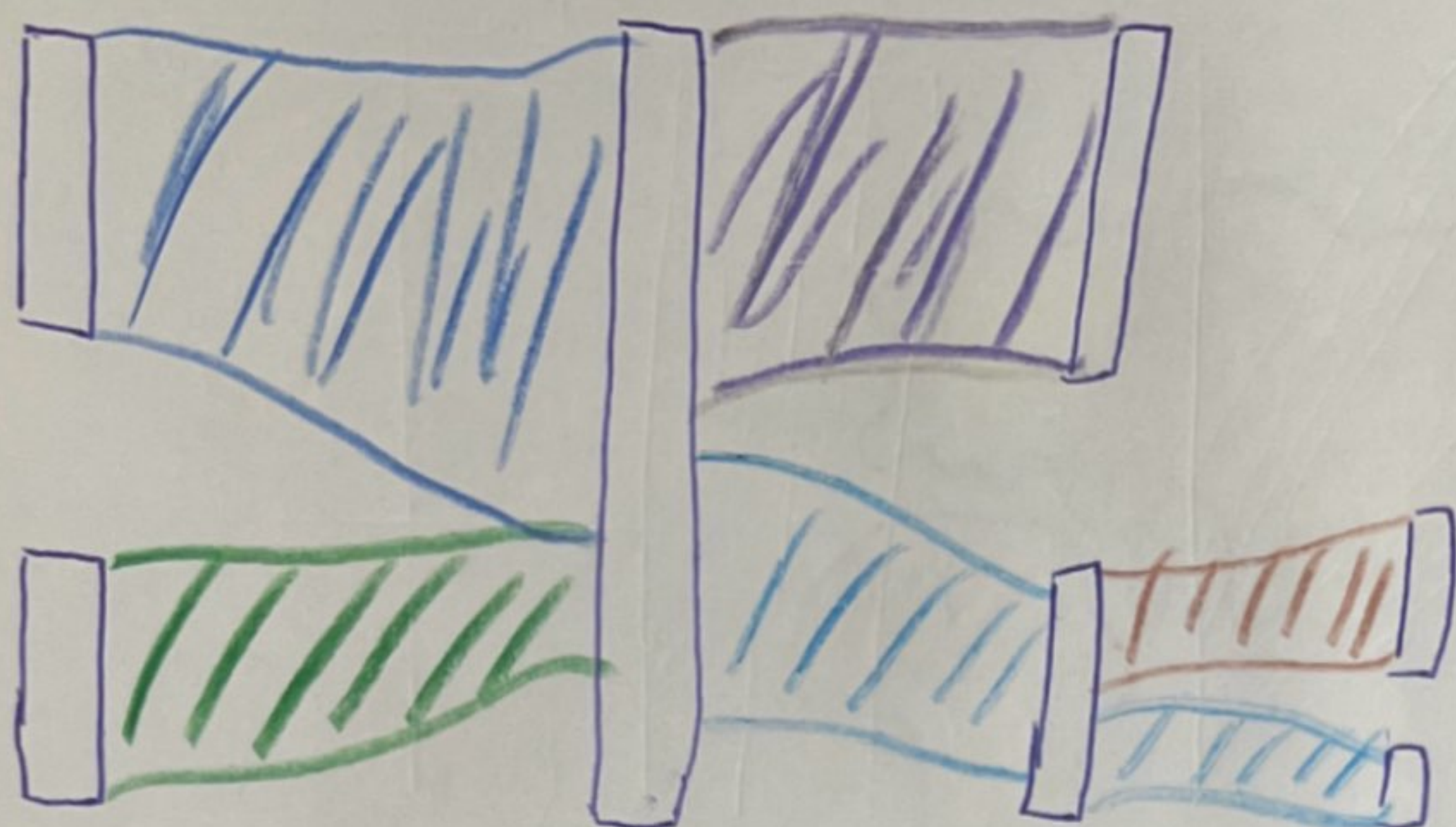
Discussion:

**Pros:** The tree map offers a quick overview of major emission sources, while the parallel coordinates provide in-depth insights into sectoral trends.

**Cons:** Tree map can become cluttered with too many sectors, and parallel coordinate plots may be difficult to interpret for ~~some~~ non-experts.



LAYOUT



Sankey Diagram: Visualises the flow of  $\text{CO}_2$  emissions from various sources (sectors) to their environmental impact, showing the contribution of each sector to total emissions.

Radar Chart: Compares continents in terms of their sector-specific emissions. Each continent's emissions are broken down by sector, ~~visualised~~ visualised as radial axes.

Interactive Scatter Plot: Plot  $\text{CO}_2$  emissions against global mean temperature, allowing users to explore how emissions impact temperature over time.

Focus: The sankey diagram emphasizes the flow of emissions from different sectors to their cumulative global impact. The radar chart allows users to compare sectors across continents, and the scatter plot correlates emissions with temperature.

Sheet 4

Hermond Chong

02/10/2024

Operations:

- The sankey diagrams allow users to hover over flows to highlight contributions from each sector and see how emissions are distributed.

- The scatter plot is interactive allowing zooming into specific frames or emission thresholds.

- The radar chart provides interactive filtering for continents, so users can focus on one region at a time.

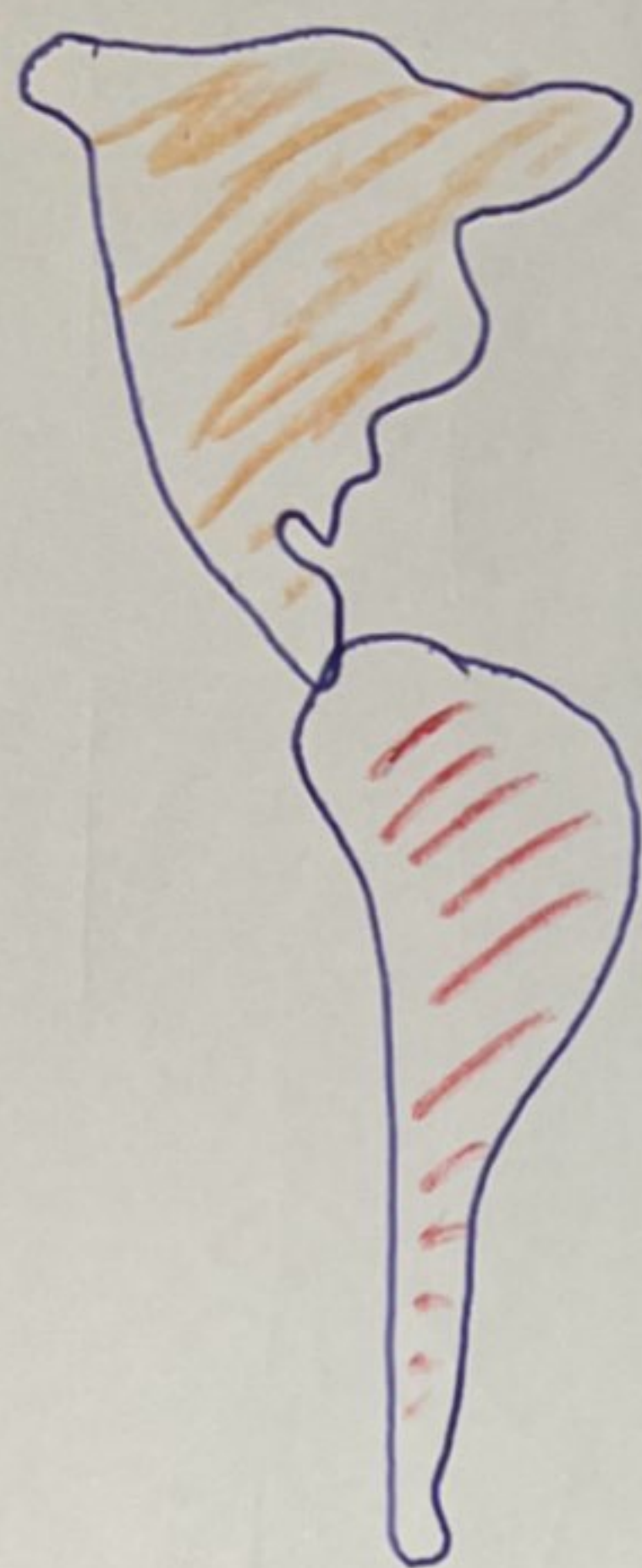
~~Discussion:~~ Discussion:

Pros: Sankey diagrams are excellent for visualising flows and relationships, while radar charts make multi-dimensional comparisons clear.

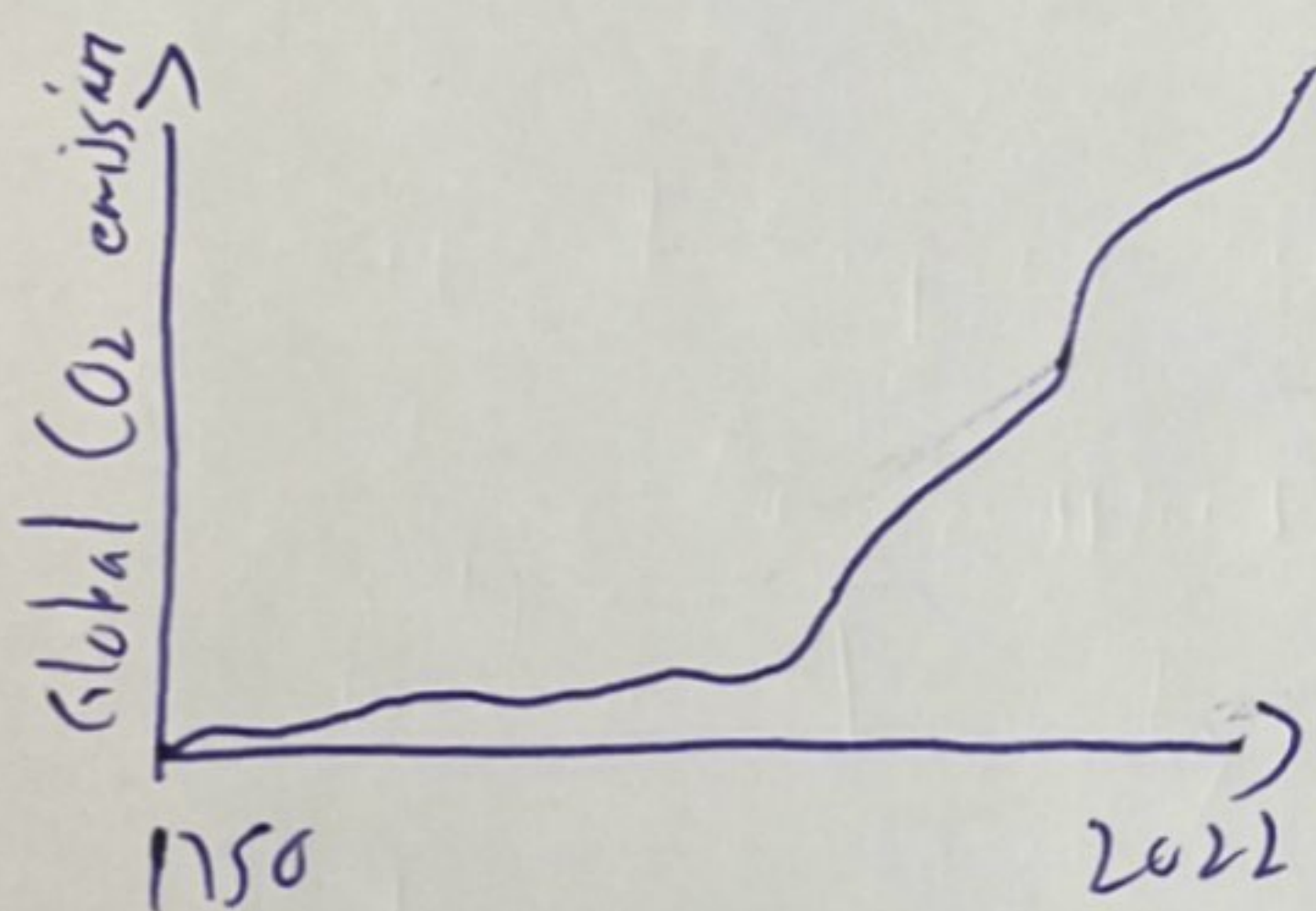
Cons: Sankey diagrams can become overloaded if too many data points are visualised.



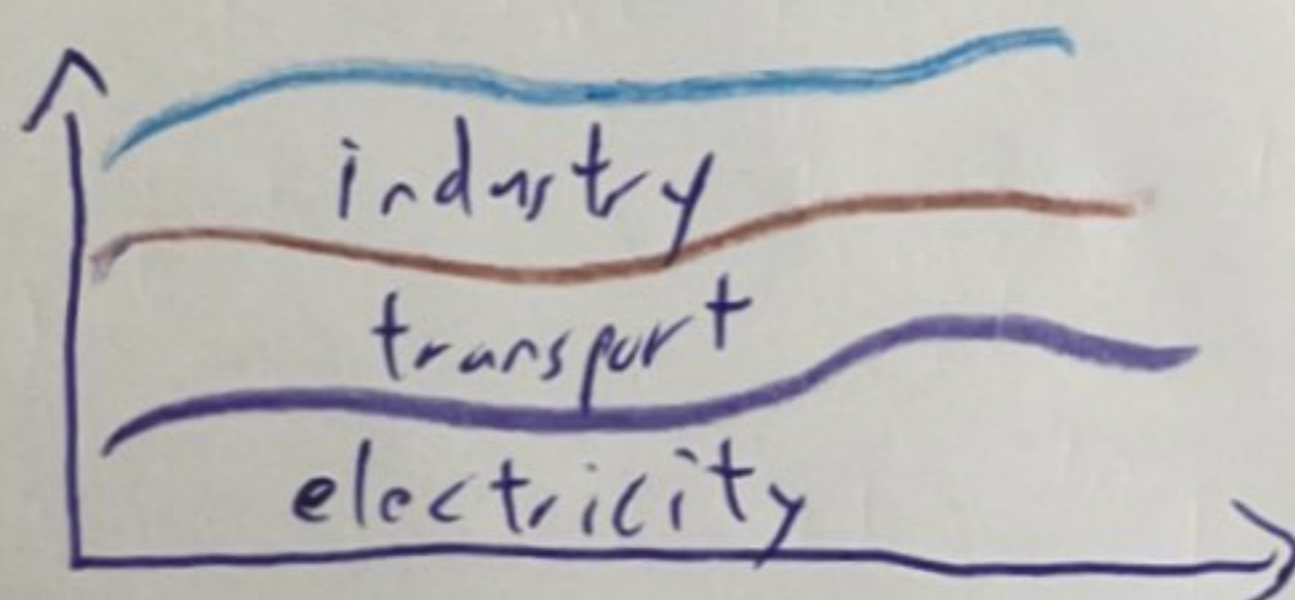
# LAYOUT



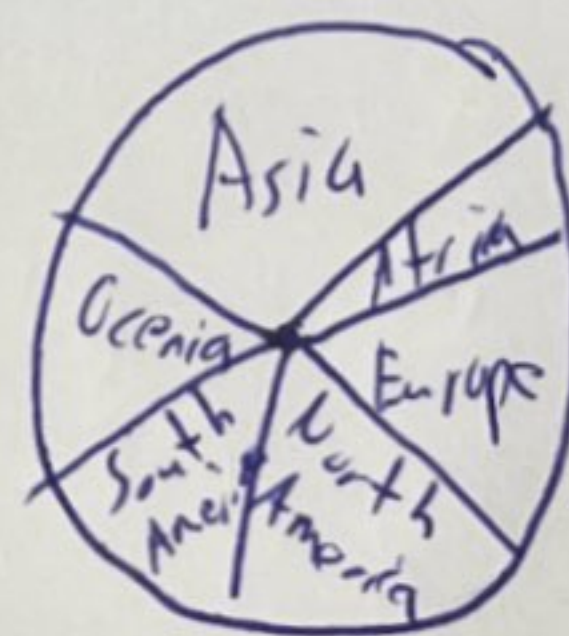
Display global CO<sub>2</sub> emission per capita, with color intensities representing emission levels.



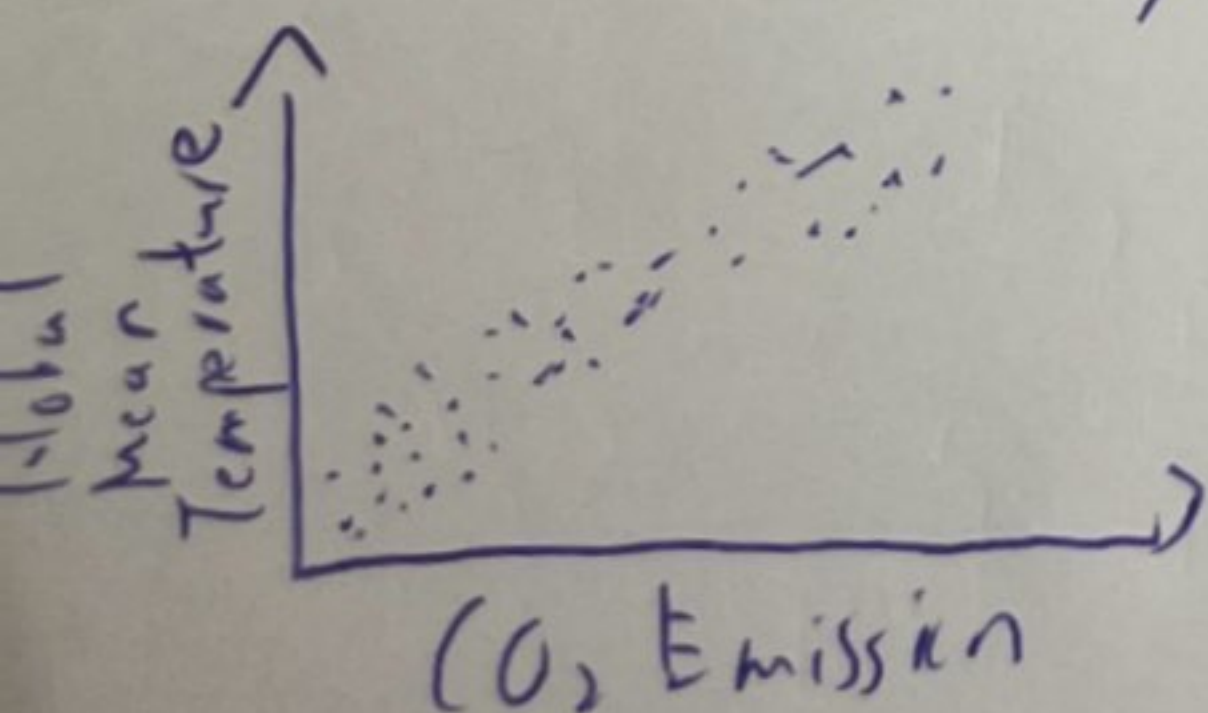
Presents the global CO<sub>2</sub> emissions trend ~~over~~ time, from 1750 to 2022.



Shows CO<sub>2</sub> emissions by sector



Compares CO<sub>2</sub> emissions by continent



Correlation between CO<sub>2</sub> emissions and global mean temperature changes.

Sheet 5  
Desmond Chong  
02/10/2024

Focus:

The visualisation tells a comprehensive story of global ~~the~~ CO<sub>2</sub> emissions across space, time, and sector, allowing user to explore not just where emissions are come from, but how they evolved over time. what sectors are contributing the most. The scatter plot offers a compelling view of how rising emissions are directly linked to temperature increases.

Detail:

- Algorithms: HTML, CSS, JavaScript, Vega-Lite.

- Dependencies:

Requires emissions data by country, sector, and temperature data etc.

- Time to build: 3 weeks

- Software Requirements: VScode.