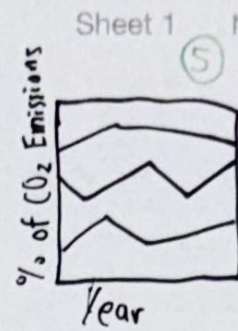
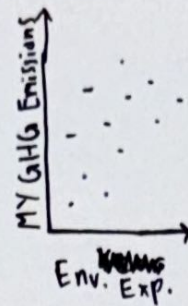
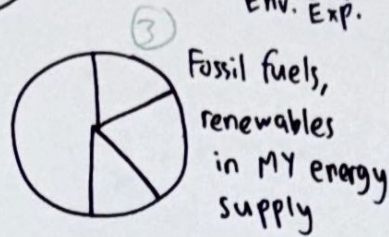
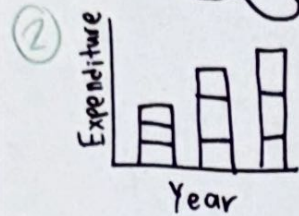
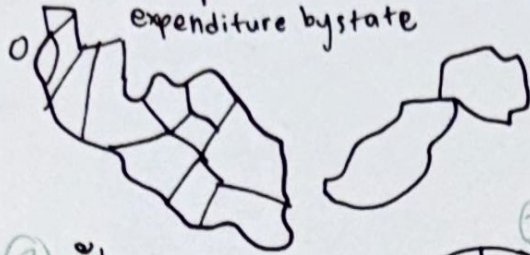
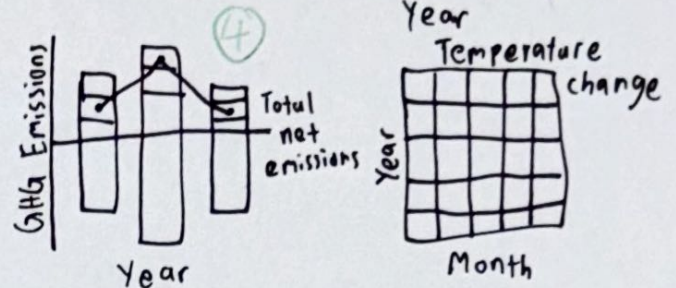
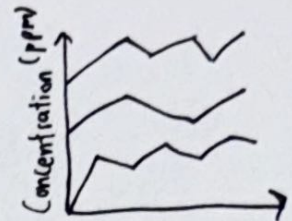


Ideas

① Choropleth for environmental expenditure by state



Name Muhammad Ibrahim bin Mohd Yusni Date 10/10/2024



Filter

Use choropleth, ①

Stacked bar chart, ②

pie chart, ③

Combo of line and bar chart, ④

Stacked Area (Normalized) chart ⑤

Categorise

Main data: Govt Expenditure on Environment by states



Outcomes:

Greenhouse Gas Emissions per Capita (Selected Asean)

% Share of energy supply (fossil fuel, renewables)

Distribution of state environmental expenditure

Combine & Refine

- 1) Combine govt expenditure with greenhouse gas emissions per Capita to compare levels of impact to Asean countries
- 2) Align govt expenditure to compare with breakdown of state environmental expenditure to identify trends.
- 3) Merge govt expenditure and % share of energy supply to show dependence on fossil fuels and its Impact on CO₂ emissions

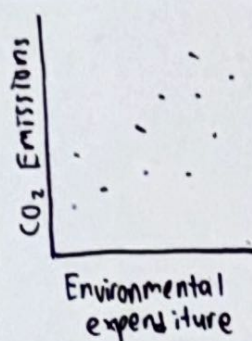
Summarise and question

- States environmental spending
- Highlight differences between MY and ASEAN CO₂ emissions per capita
- Breakdown of energy sources which influence GHG Emissions

→ Is there correlation between environmental spending and CO₂ emissions reduction?

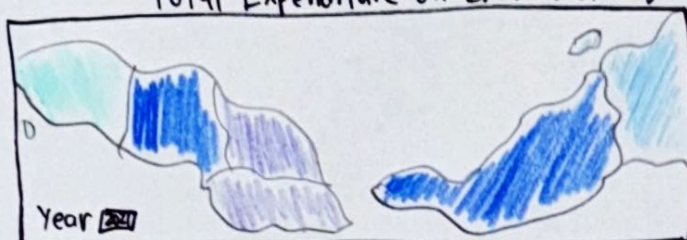
→ How has energy share evolved over time, reduce fossil fuels?

DRIVING SUSTAINABILITY IN MALAYSIA



Year	Temperatures				
	34	35	34	36	32
	30	30	34	31	32
	30	34	28	40	30
	31	28	40	34	30
Month					

Total Expenditure on Environment by State



TEXT EXPLANATION

Parti / Focus

Visualisations to provide various perspectives on environmental data like relationships between CO₂ emissions and environmental expenditure.

Scatter Plot

Displays how much was spent on environmental expenditure versus level of CO₂ emissions.

Heatmap

To show temporal trends of temperature change, visualising the effects of climate change.

Choropleth Map

Illustrates the spending on environmental protection by each state.

Sheet 2, 3

Name Muhammad Ibrahim bin Mohd Yusni

Date 10/10/2024

Title Driving Sustainability in Malaysia

Description

Effects of environmental expenditure on environmental indicators

Components / Operations

Customisable Choropleth

A dropdown menu for selecting the year.

Informational tooltips

Displays exact values and categories when hovering over data points.

Pro & Cons

+ Pros

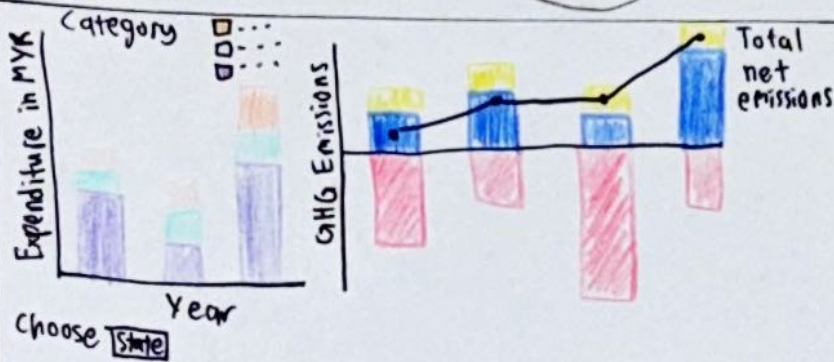
- Effective multi-dimensional data representation creating a well-rounded view.
- The dropdown menu and tooltips engage the user.

- Cons

- Scatter plot may lack depth as some external factors are not shown
- Limited interactivity in the heatmap

DRIVING SUSTAINABILITY IN MALAYSIA

Total expenditure on environment by state



TEXT EXPLANATION

Parti / Focus

Visualisations to focus on helping users understand environmental expenditure trend across states and its impact on GHG Emissions.

Choropleth Map

Illustrates geographical comparison of how much each state is spending on environmental protection.

Stacked Bar Chart

Shows breakdown of environmental expenditure into categories highlighting categorical trends of investments.

Combination of diverging stacked bar chart and line chart

To altogether illustrate which industries contribute the most to Malaysia's emissions and the overall net trend over time.

Title: Driving Sustainability in Malaysia

Description

Effects of environmental expenditure on environmental indicators

Components / Operations

Customisable choropleth

A slider to select the wanted year to display is available

Customisable stacked bar chart

A dropdown menu right below this chart allows for selecting a state

Hover for details

Hovering over points on the charts detail exact values and additional context

Pro & Cons

+Pros

- Detailed visualisations give a holistic view of environmental expenditure and GHG Emissions
- Abundant interactivity allows users to explore the data

-Cons

- The combination of stacked bar and line chart can be visually overwhelming
- Lack of side-by-side comparison for states in stacked bar chart of environmental expenditure breakdown

DRIVING SUSTAINABILITY IN MALAYSIA

Total Expenditure on Environment by State

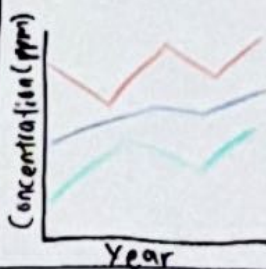


Energy supply share in Malaysia



Year 2020

Air Pollutant Distribution



TEXT EXPLANATION

Parti / Focus

Visualisations to inform the users on environmental expenditure, the current state of energy supply and air quality.

Choropleth map

Shows Malaysia's state with each state coloured according to its level of environmental expenditure.

Pie chart

Displays percentage share of total energy supply (renewable, oil, coal, etc...)

Grouped Line Chart

Illustrates air quality showing concentration of different pollutants over time.

Title: Driving Sustainability in Malaysia

Description

Effects of environmental expenditure on environmental indicators

Components / Operations

Tailorable choropleth map

There is a dropdown menu to select the year to be displayed.

Tailorable Pie Chart

Using a slider, the user can select the year to display

Tooltips

Detailed points of data are shown when hovering over visualisation marks.

Pro & Cons

+ Pros

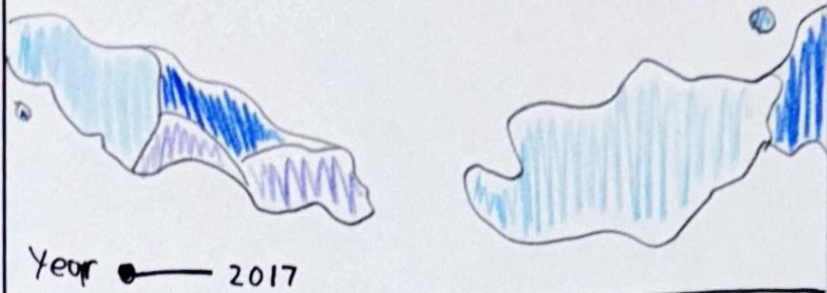
- Diverse visualisation types for multi-faceted data to allow users to extract wide insights.
- Dropdown menu and sliders encourage dynamic exploration

- Cons

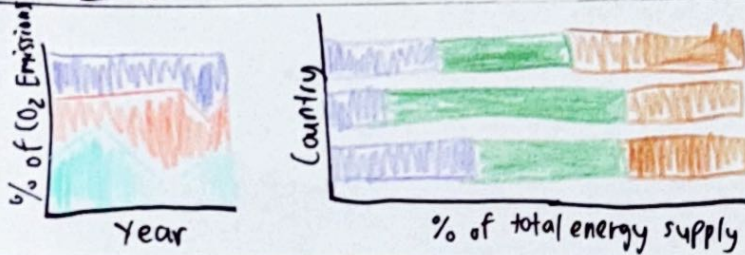
- Lack of side-to-side pie chart comparison
- Oversimplification of data doesn't provide deep understanding.

DRIVING SUSTAINABILITY IN MALAYSIA

Total expenditure on environment by State



Choose State



Parti / Focus

→ Focus on the bottom two stacked area and normalized stacked bar charts to compare Malaysia's environmental indicators to ASEAN peers

→ Highlights Malaysia's standing in terms of CO₂ emissions and dependence on fossil fuels

Sheet 5

Name Muhammad Ibrahim bin Mohd Yusni

Date 10/10/2024

Title Driving Sustainability in Malaysia

Description

Effects of environmental expenditure on environmental indicators

Components / Operations

Charopleth slider

A slider is present to select the year to show

State dropdown

A dropdown menu to select the states to be shown

Tooltips

Provide stylised tooltips over data marks, adding additional context.

Details

Dependencies

Vega-lite javascript library, HTML, CSS and Github Pages to host the visualisation

Effort

3 days to build the visualisation idioms

2 days to format the visualisation page and storytelling

Requirements

Access to up to date govt expenditure data, GHG Emissions and energy share.