IDEALS

Ideal Water Use per Capita

→ Factors

Renewable Water Resources

Iceland
Msia
Bhutan
NewZealand

Food products for water

1	
2	Cheep
3	Beef
	Prawn
4	PigMeat
5	Nuts
6	Rice
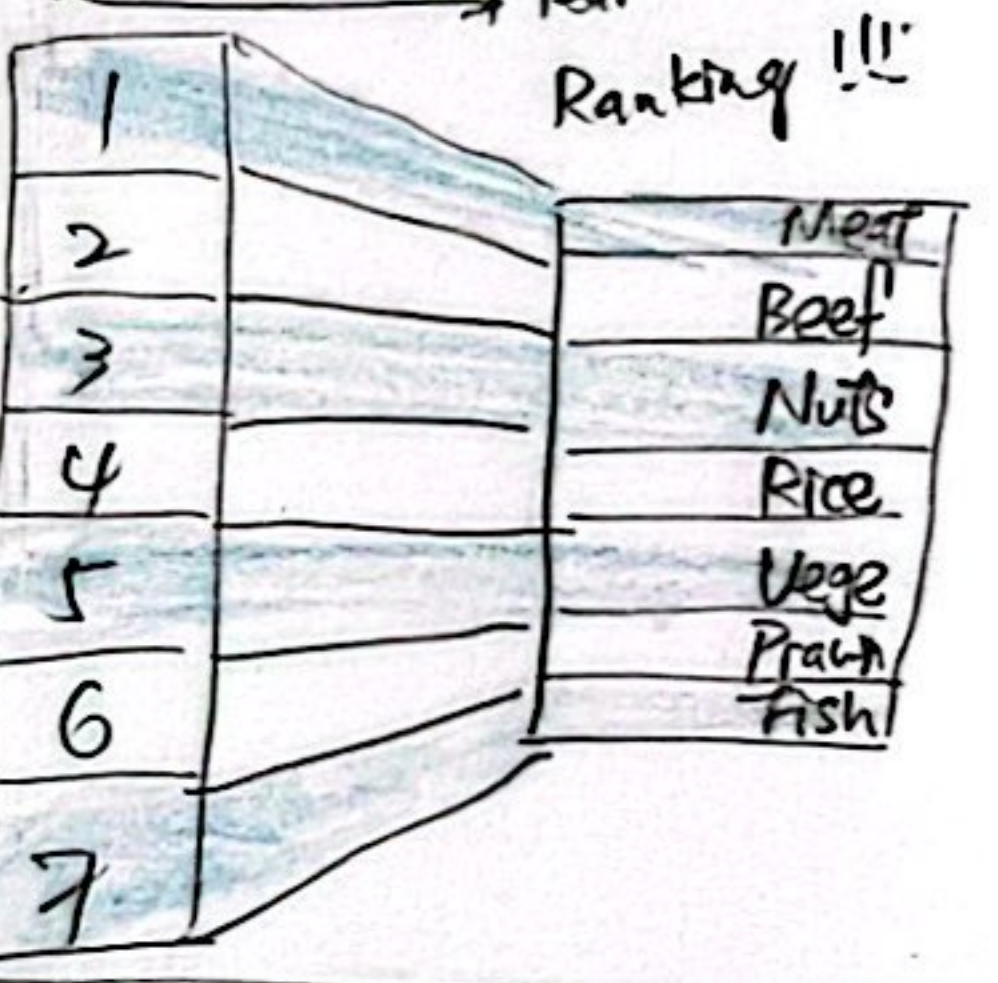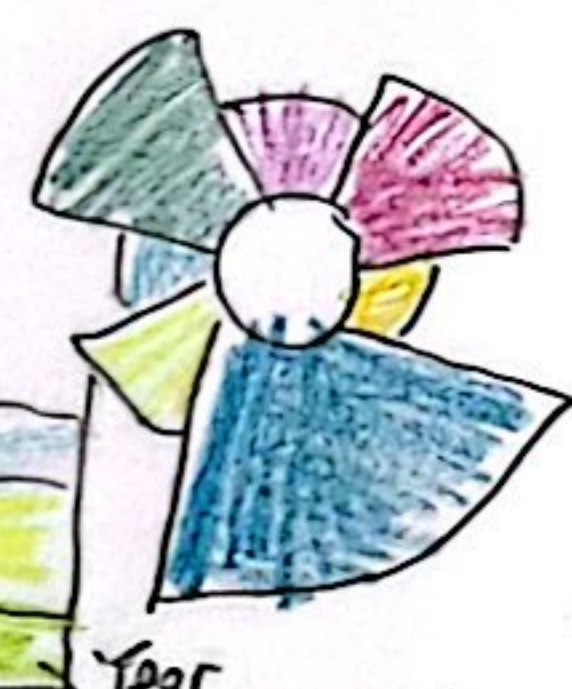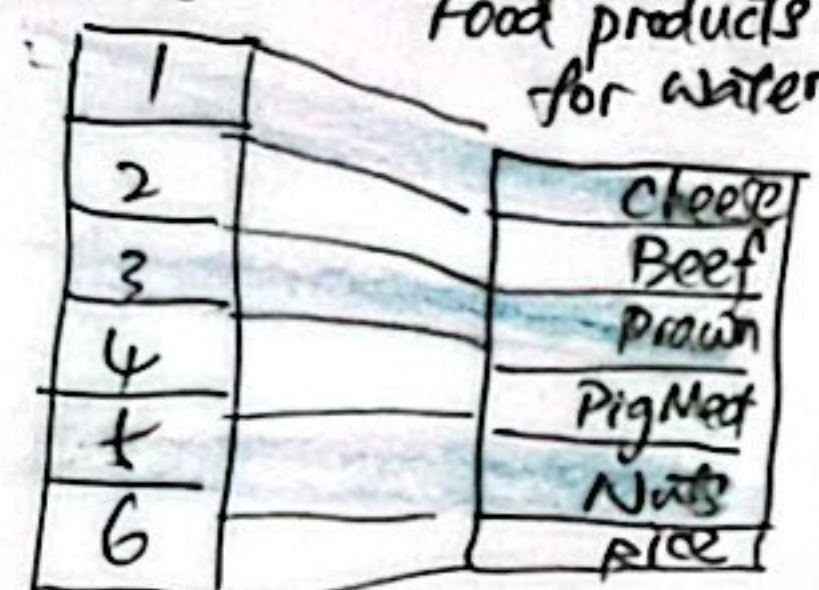
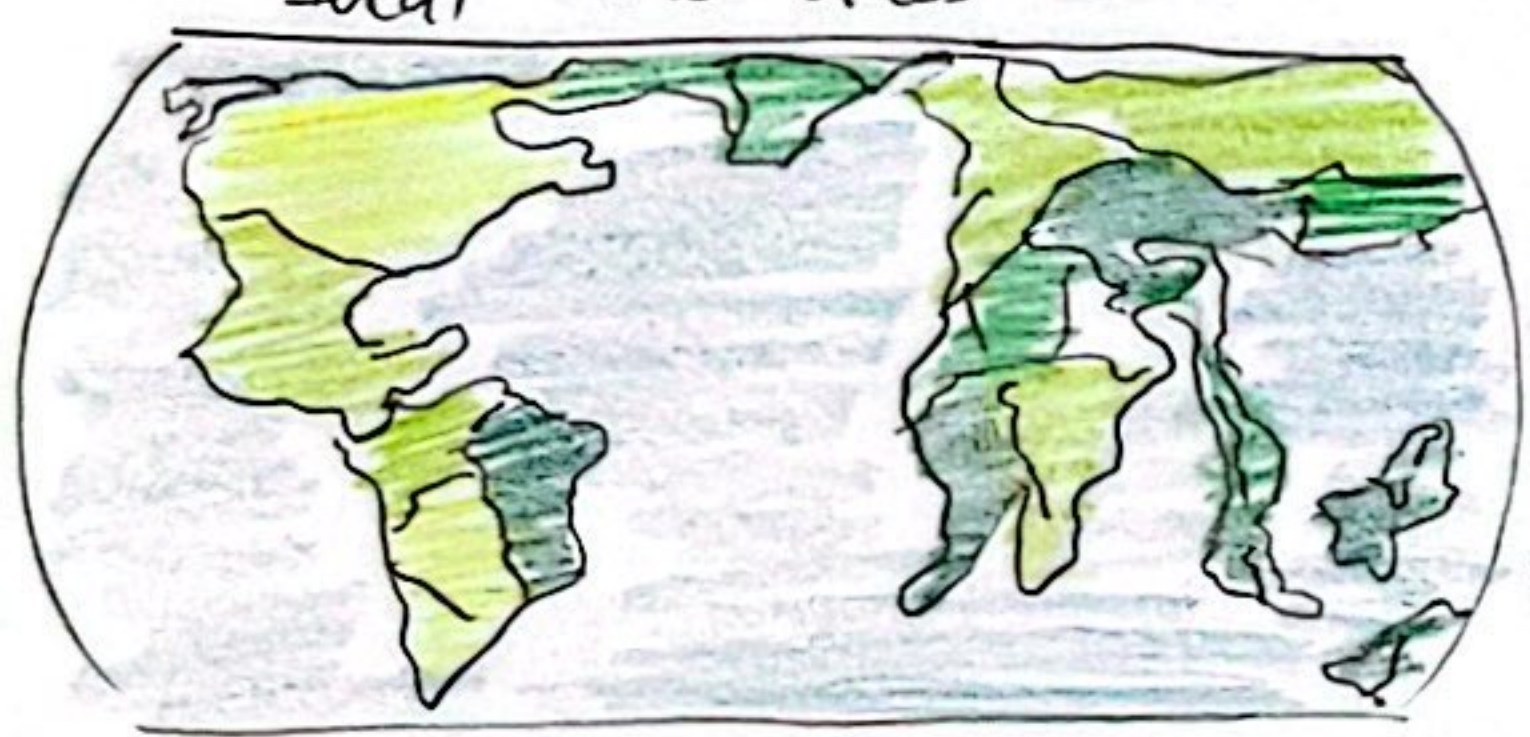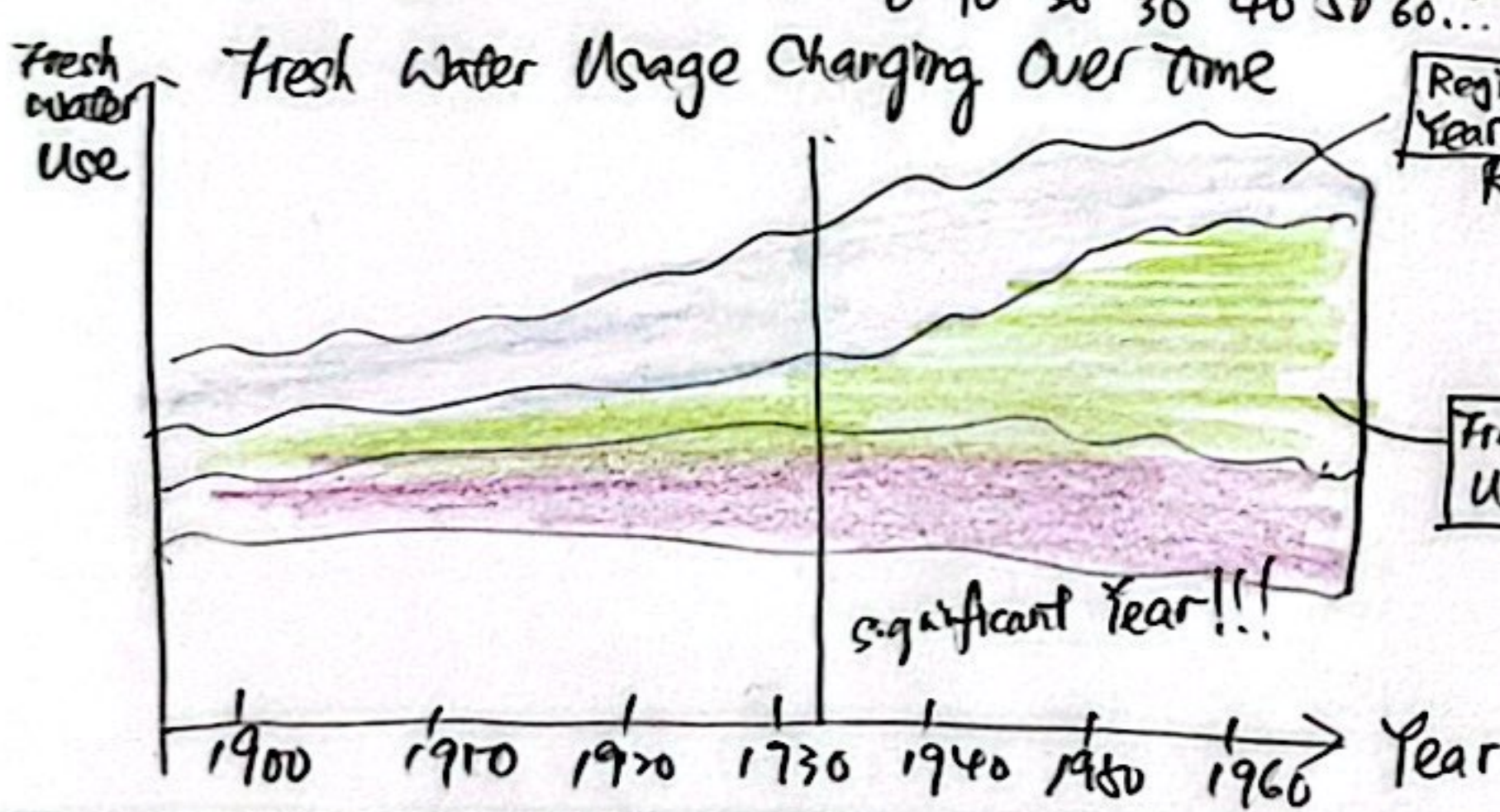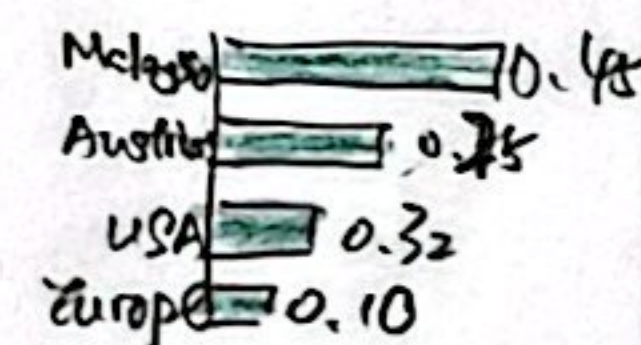## Ideal Water Stress Score

0-1 (Low)
1-2 (Low-Medium)
⋮
1975 → 2024
Zoom Industry Water
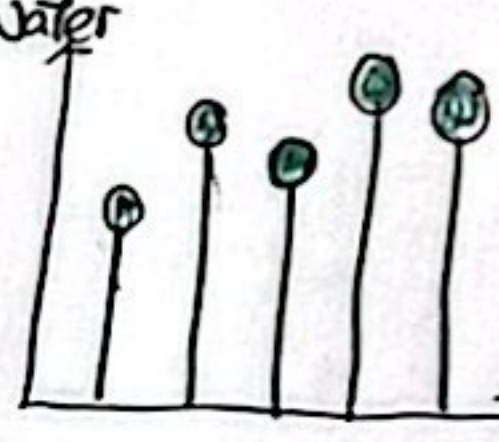
Ideal Region-Specific Water Management

Fresh Water ≈7%

GDP ($)

80,000
60,000
40,000
20,000

0 10 20 30 40 50 60... → Agricultural Water Use (%)

Region
Year
Region

Malay— 0.45
Austin— 0.75
USA— 0.32
Europe— 0.10

Global Water

Fresh water Use: 1,216

Fresh Water Usage Changing Over Time

Fresh water Use

significant Year!!!

1900 1910 1920 1930 1940 1950 1960 → Year

COMBINE 'AND' REFINE

Volume

→ Year

- Easy comparison but hard to observe where overlap!!!

Change Opacity when hover
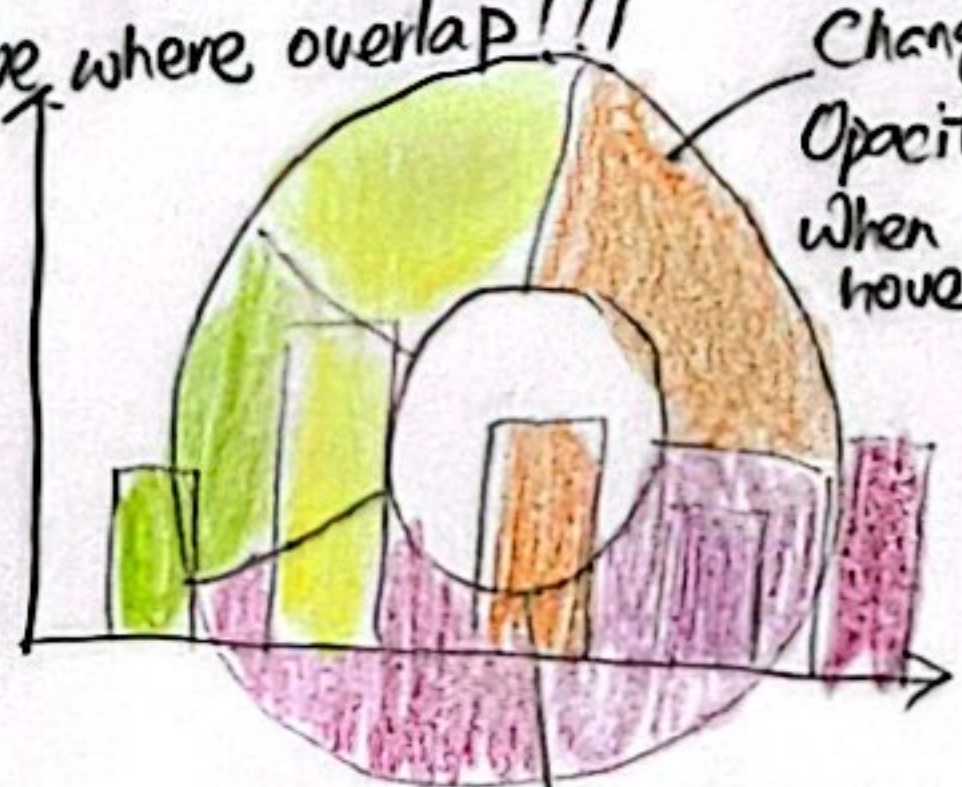
→ Bar can be oriented vertically or horizontally

FILTER

Msia
Aus
USA

Fresh Water

→ Year
Ranking !!!

1	
2	Meat
3	Beef
4	Nuts
5	Rice
6	Vege
	Prawn
7	Fish

CATEGORIES

Navigating Water Use and Stress
⇩
Big Picture: Comprehensive View
⇩
Unpacking Water Use and Stress
⇩
Water Stress Score
⇩
GDP and Food Affect

QUESTION

1. What data do we want to use?
2. What arrangements work best for data?
3. How can we enhance readability in our design?
4. How effectively does the combined chart communicate the intended insights?
5. What additional features, such as interactivity or hover effects, could improve user engagement?
6. What data labelling will help?

LAYOUT

Water Use and Stress
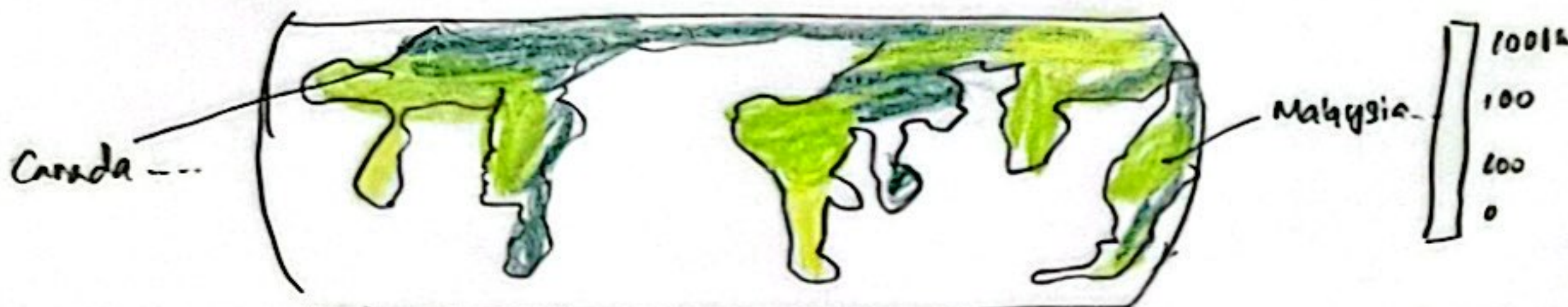
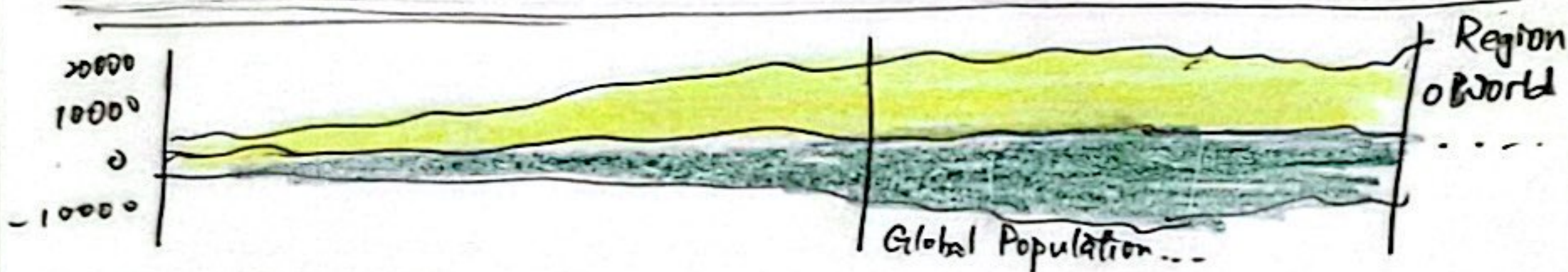Global Water Use have increased dramatically
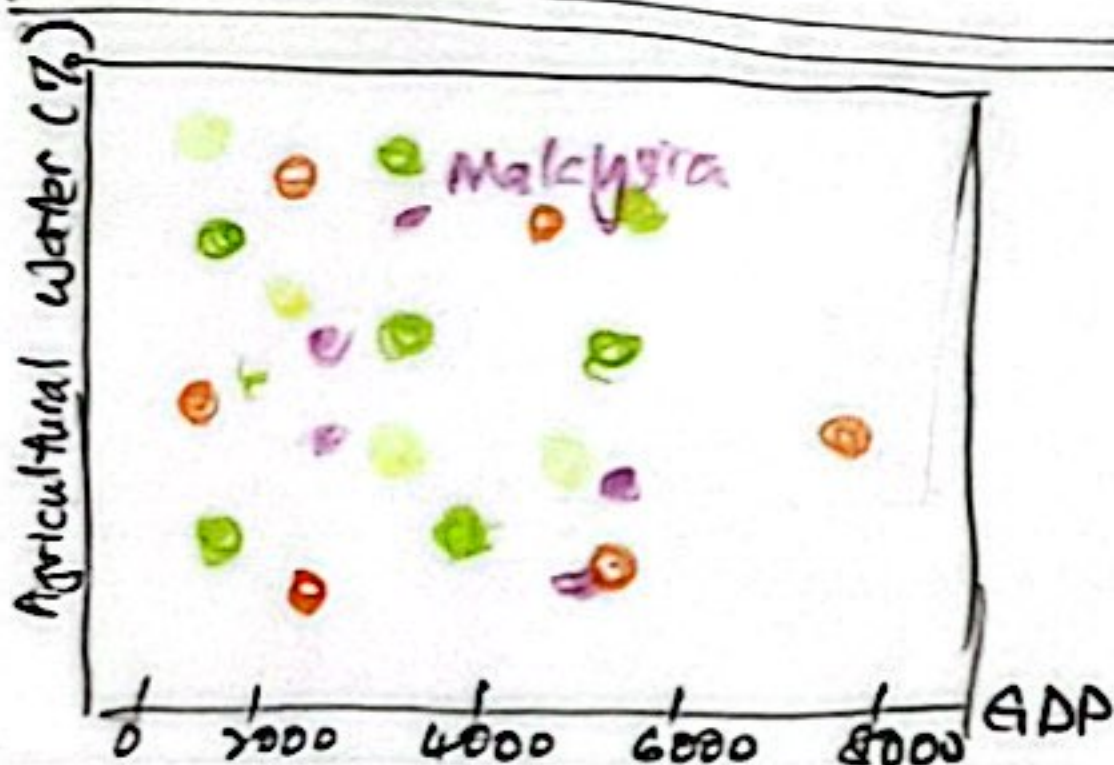
[Intro]

Global Annual Freshwater withdrawals

Author Metadata

Canada ---

Malaysia

10012
100
100
0

Year ——— o —— 2024
Zoom ——— o —— 100

20000
10000
0
-10000

Global Population ---

Region of World

Renewable Water Resources

Iceland
Gabon
Congo

Agricultural Water (%)

Malaysia

0   2000   4000   6000   8000   GDP

1	
2	Meat
3	Fish
4	Prawn
5	Beef
6	Lego
7	Egg
8	Rice
	PigMeat

OPERATIONS

Zoom !!!

Zoom —— ⤵
Zoom ——

change opacity

when hovering

Animation over Year !!!

DISCUSSION

➕ Easy Scanning (presenting multiple pieces of information)

➕ Compact arrangement and vertical flow can guide viewer's eye

➕ Visual Hierarchy to emphasis on each element and logical progression

➕ Design Flexibility (Easily integrated with other design elements like radial bar chart)

➕ Vertical format allows for creative designs, like using different colors or icons for each idiom.

➖ If the vertical layout requires a lot of space, it could lead to excessive scrolling

➖ Potential Aesthetic Imbalance (Loss of flow)

FOCUS

- Annual Freshwater Withdrawals
- Freshwater Use by Aggregated Region
- Renewable Freshwater
- Country Water Stress Ranking
- Agricultural vs GDP

Monitoring annual freshwater withdrawals is crucial for accessing overall water consumption trends and sustainability

Analysing freshwater use by region can reveal geographical disparities in water consumption patterns and resources
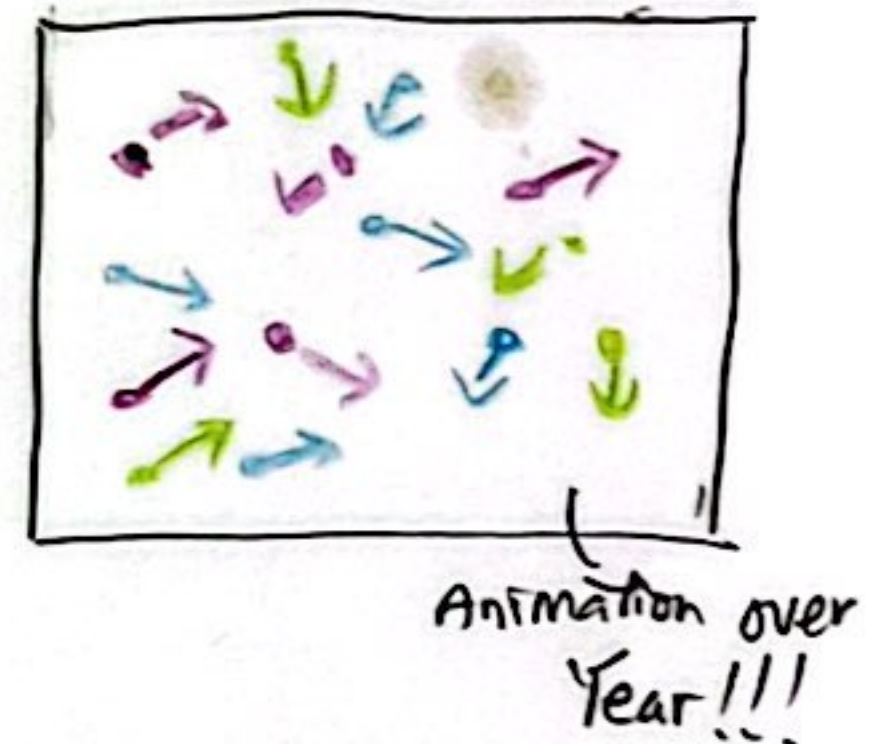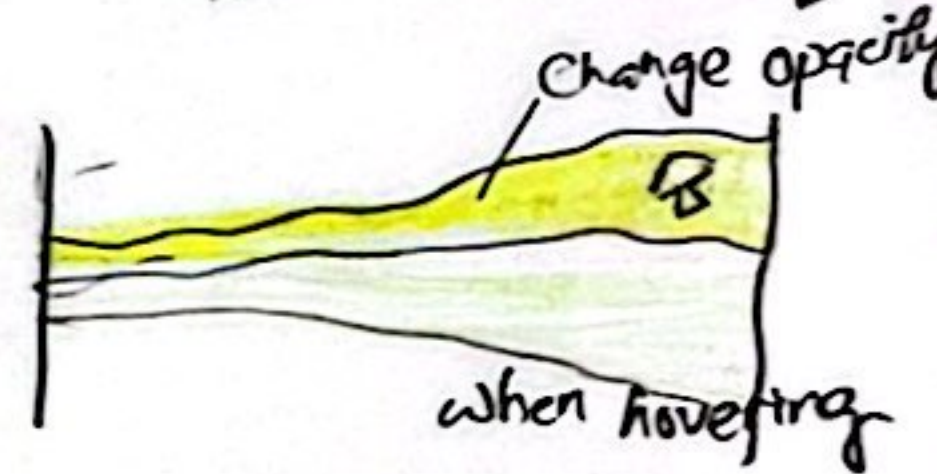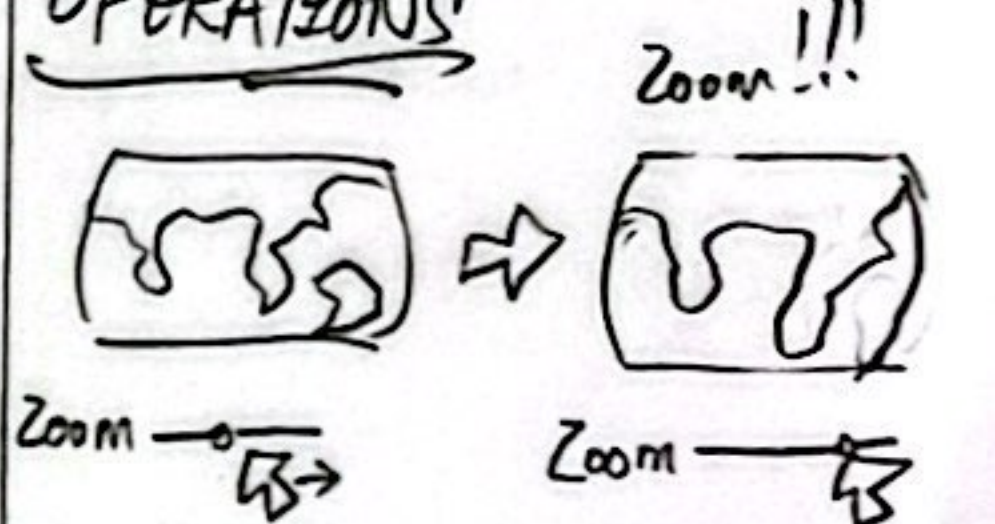
Assessing the availability of renewable freshwater resources is fundamental to understanding sustainability

Water stress rankings provide a clear indicator of how much pressure a country's water resources are under

One of the largest consumers of freshwater globally. Highlight the efficiency of water use in different economic contexts!

LAYOUT

Water Use and Stress

Global freshwater withdrawals have increased dramatically over the past century, rising approximately six-fold since 1990, with a sharp rise from the 1980s onwards.

Global Annual Freshwater Withdrawals

Canada

Australia

Year —o—
Zoom —o—

Agriculture Freshwater

Year
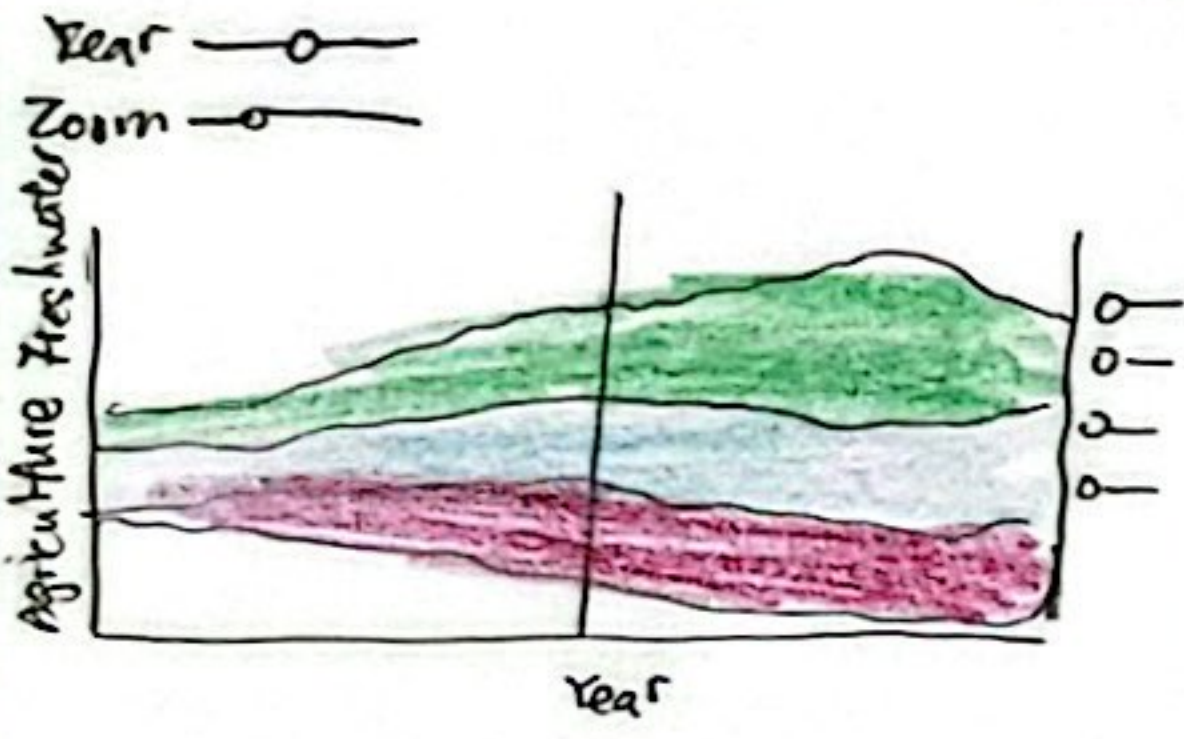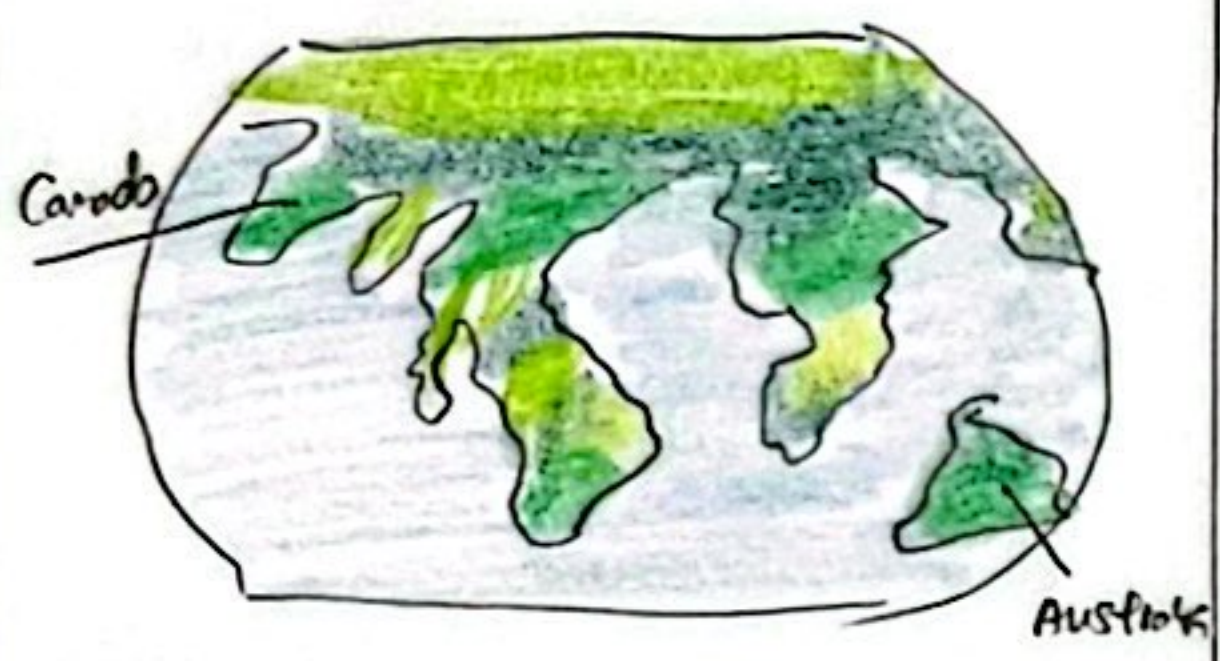
Agricultural Water vs. GDP per Capita by Continent

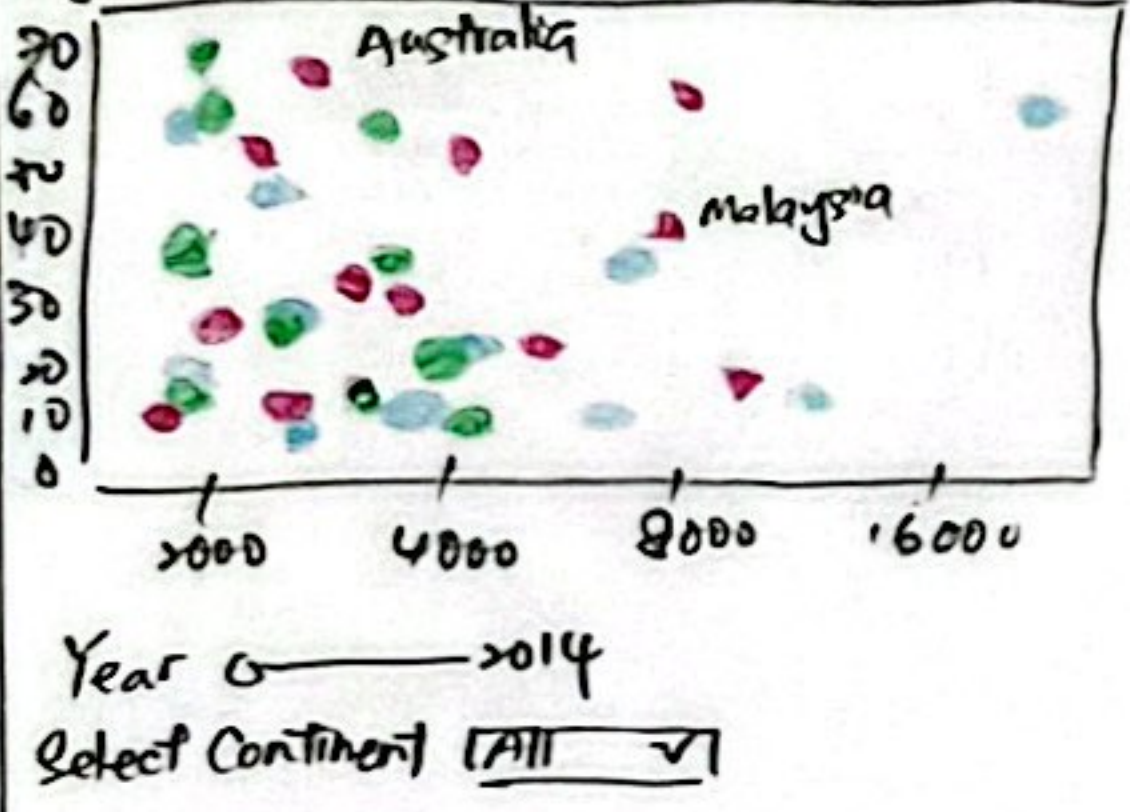Agricultural water use (%)

Australia

Malaysia

70
60
50
40
30
20
10
0

2000   4000   8000   16000

Year o——————>2014
Select Continent [All ▽]

Iceland
Guyana
Bhutan
Gabon
Congo

Renewable Water Resources

Global Water Stress

1	
2	Meat
3	Nuts
4	Prawn
5	Fish
6	Vege
7	Mutton
8	Lamb
9	Rice
10	Beef
	Pig

OPERATION

▷ 1975 ————o———— >2024
       ←⊡→

⇒ Enabling users to easily identify change in freshwater usage over the years.

Country: Msia
Water: 1.5B
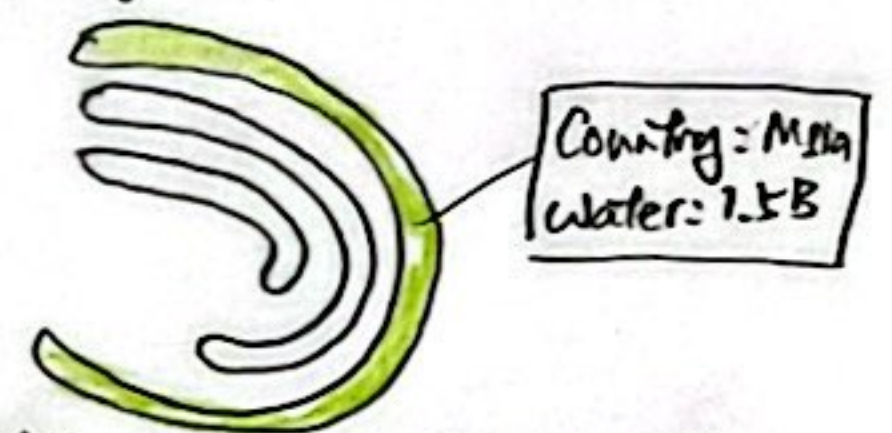
⇒ Allowing users to see the magnitude of renewable water resources.

Filter By Continent !!!
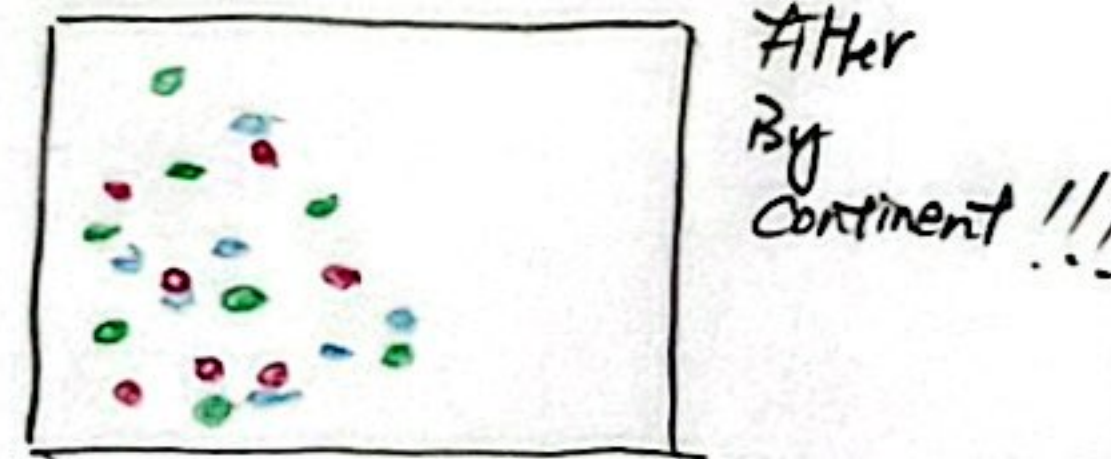
Select Continent [All ▽]   Click!!

⇩

Select Continent [Asia ▽]
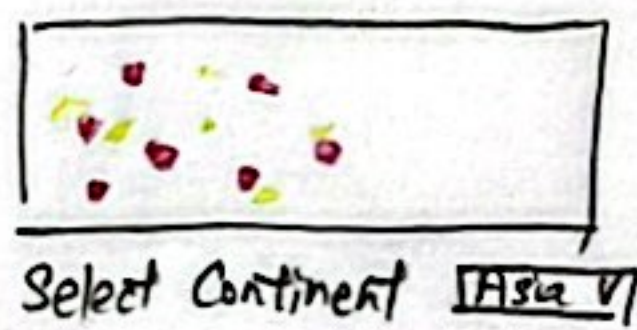
DISCUSSION

✚ Create a balanced and symmetrical appearance, making the design aesthetically pleasing.

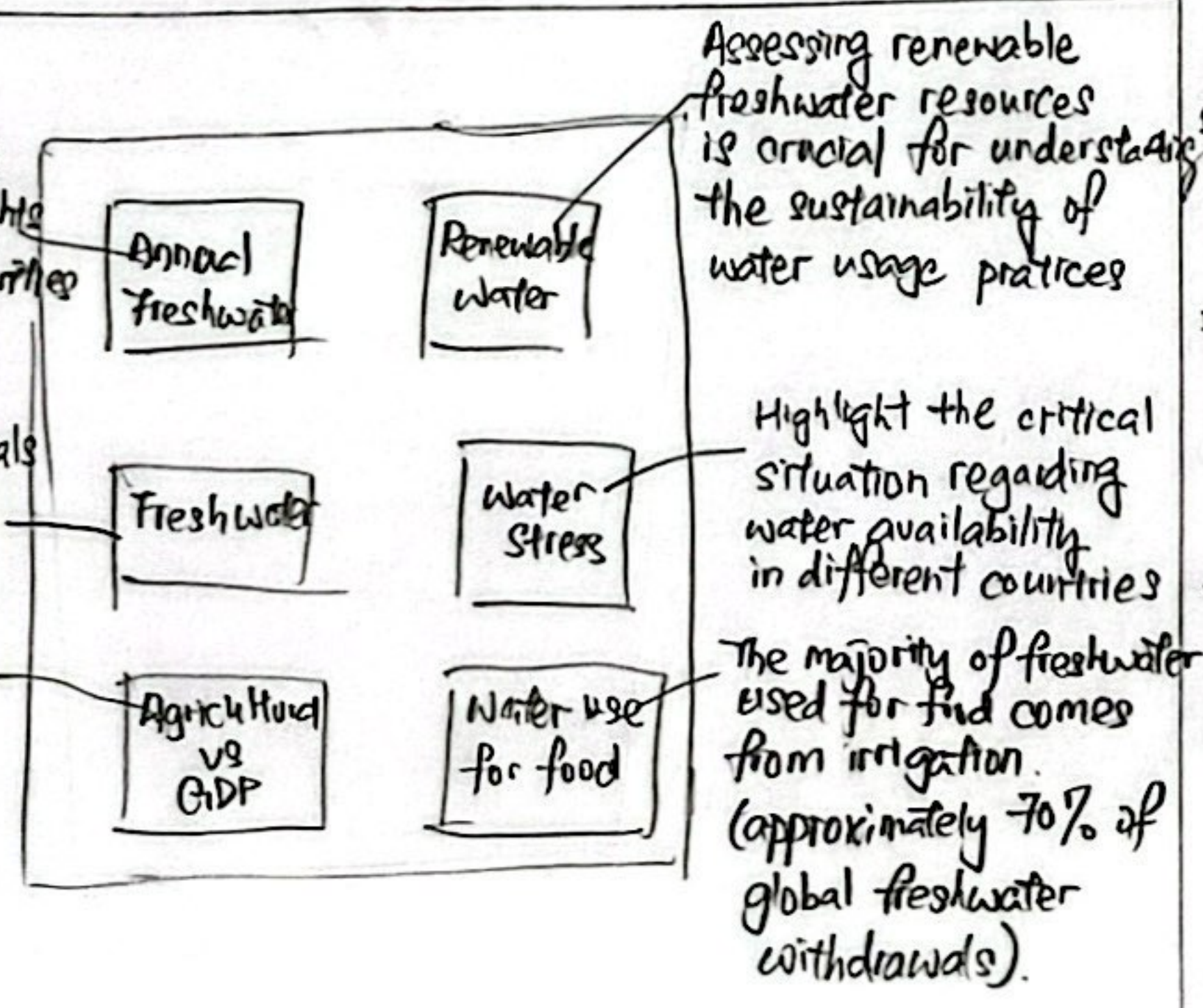✚ The layout facilitates direct comparisons between related idioms or concepts.

▭ Too much content !!! Risk of clutter especially for map!

▭ Loss of Emphasis and uneven distribution.

▭ Overlapping Concept and complexity in interpretation

▭ Different audiences may interpret the arrangement differently, potentially leading to miscommunication of key messages.

FOCUS

Analysing freshwater use by region provide insights into geographical disparities in water consumption.

Provides an overview of total freshwater withdrawals and helps to identify trends over time.

The balance between water usage for agriculture and the economic output of a country

Annual Freshwater

Freshwater

Agricultural vs GDP

Renewable Water

Water Stress

Water use for food

Assessing renewable freshwater resources is crucial for understanding the sustainability of water usage practices

Highlight the critical situation regarding water availability in different countries

The majority of freshwater used for food comes from irrigation. (approximately 70% of global freshwater withdrawals).

LAYOUT

Freshwater

Significant

Year

[Description]

Water Use and Stress

M
E
N
U
B
A
R

Agricultural Water Use

Year — o
Select Continent [____ ▽]

[Description]
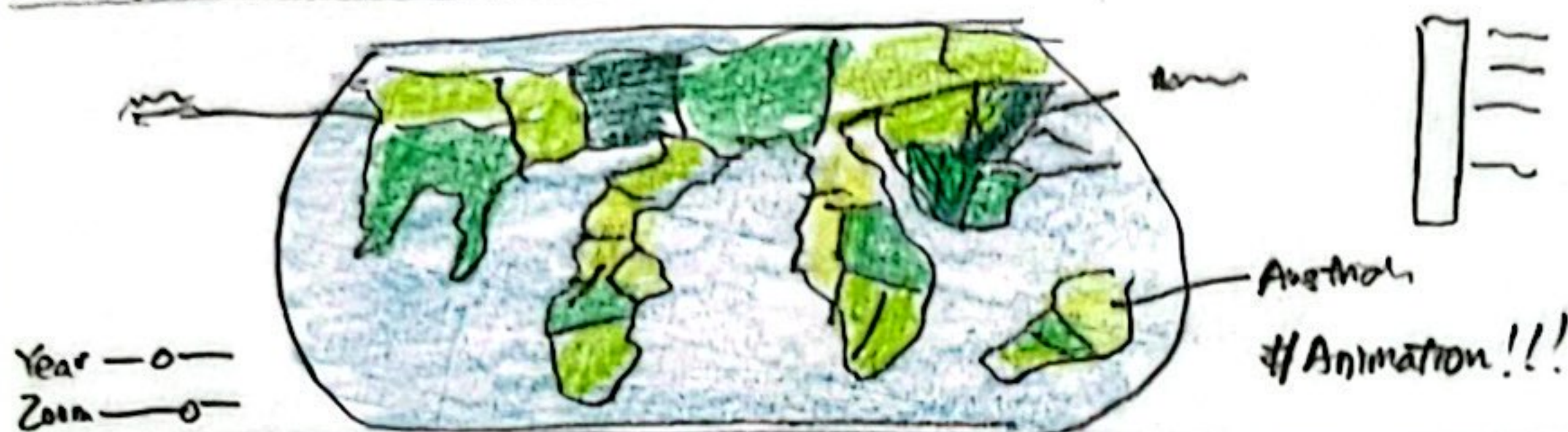
1
2
3
4
5
6
7
8
9
10

SAVE WATER !!!

FOCUS

1. Intro to Water Use for Food
   - Discuss how water is vital resource for agriculture, food production, and food security

2. Agricultural water withdrawals
   - Explain different types of irrigation and their efficiency.

3. Livestock and Water Use
   Explain that livestock requires significant water, not just for drinking but also for producing animal feed.

4. Freshwater Resources and sustainability
   - Discuss the distinction and the implications for water management.

5. Policy and technological innovations.
   - Discuss the importance of adopting efficient irrigation practices and crops selection to reduce water use.

6. Call to action.
   - Summarize the key message and encourage proactive steps

---

OPERATION

1. Clickable Infographics.
   - User can click on to reveal additional info

   [____] Tooltips

2. Hover effects
   - Use to display supplementary information or fun facts

3. Animation
   - Will use timer to add automated animation

   [→ ↙ ↘ ↗] over time!"

DISCUSSION

✚ Interactive elements encourage viewers to actively engage with the content

✚ Viewers can provide instant feedback, which can be valuable for gauging public opinion on water use and food.

▭ Partitioned layouts lead to a disjointed narrative.

▭ Loss of flow

▭ Limited Space (Content constraints, potential for clutter)

▭ Cognitive Overload !!!

▭ Difficult navigation

▭ Aesthetic Concerns.

▭ Rigidity in structure

LAYOUT

WATER USE AND STRESS

[Description]

GLOBAL ANNUAL FRESHWATER WITHDRAWALS (1975-2020)

Year —o—
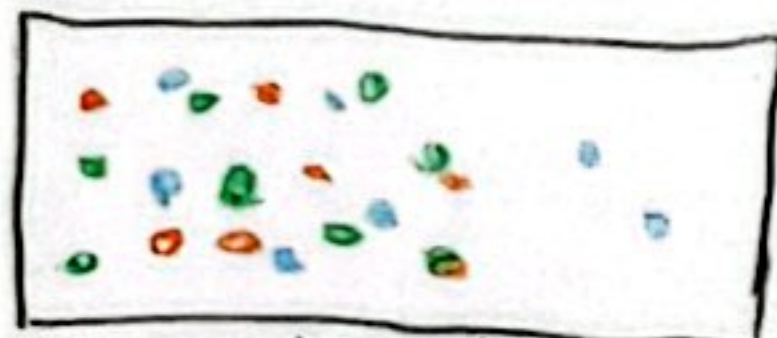Zoom —o—

Australia
#Animation!!!

How is Freshwater Usage Changing Across Global Regions Over Time?
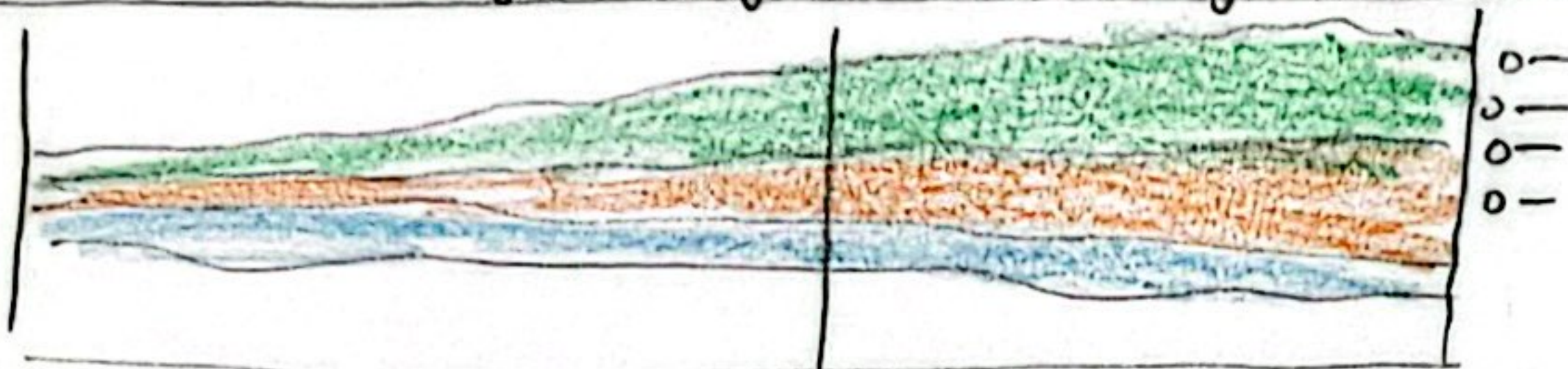
RENEWABLE WATER RESOURCES PER CAPITA OVER TIME

Agricultural Water Withdrawals vs GDP per Capital
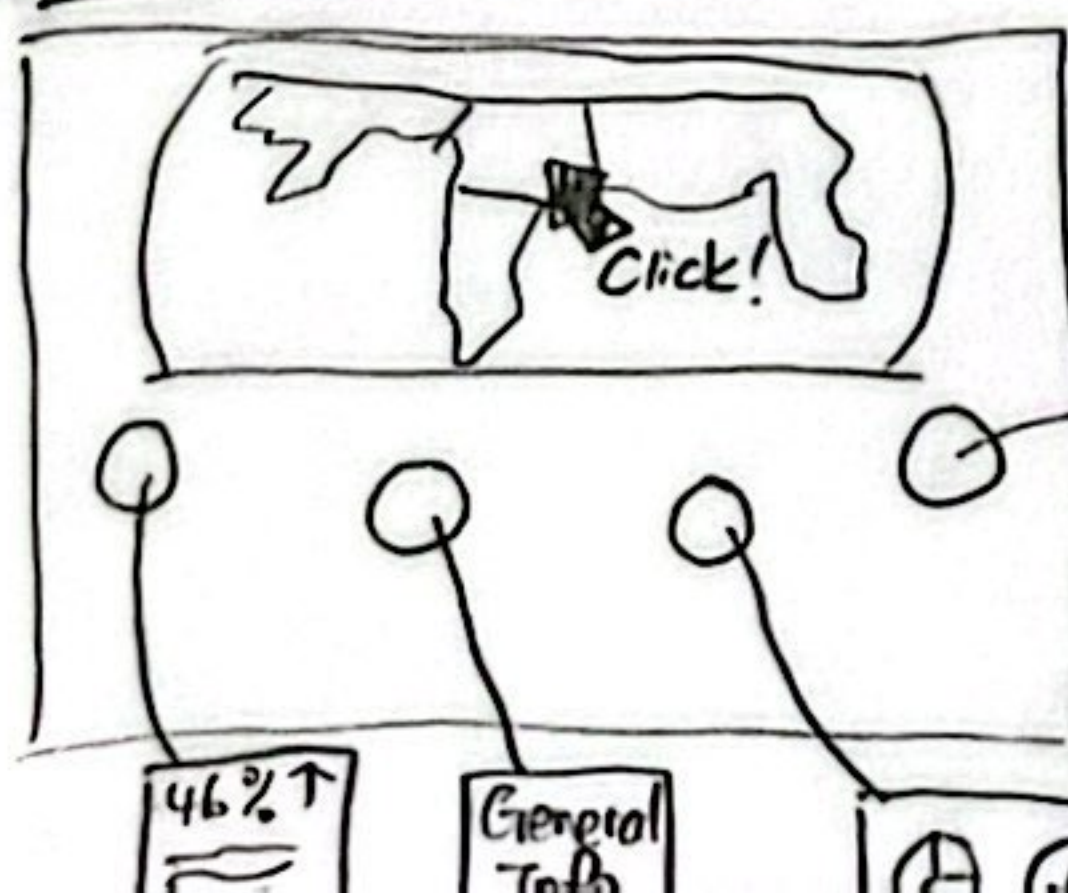
#Animation!!!
(Automated)

Year —o—2020
Select Continent [____ ▽]
(PAUSE)

WATER USE OF FOOD PRODUCTS

FOCUS

Click!
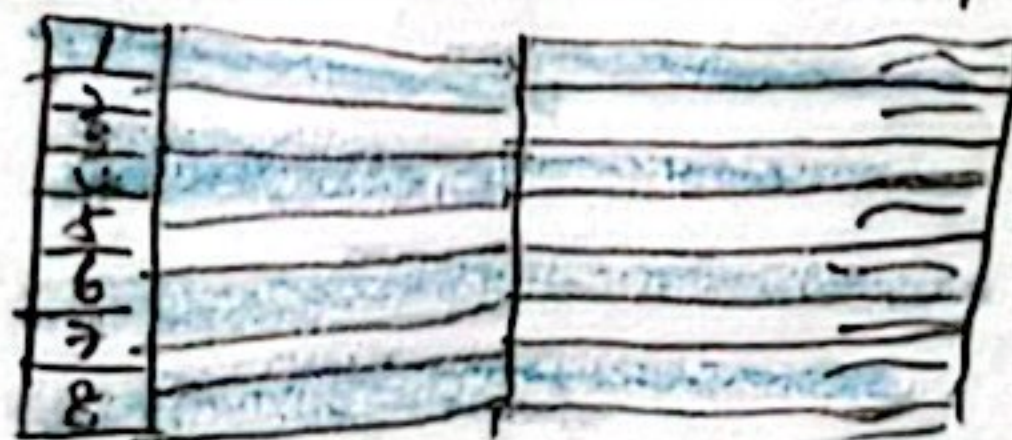
Color channel
Size channel

Use vconcat to arrange
and also use brushing

Trend
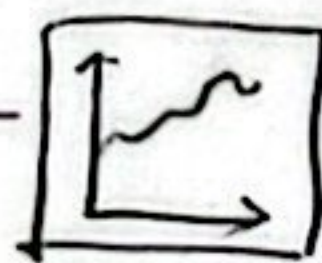
Button for pausing
and resume
animation!

46%↑ General
Info   Compare

Title: Final Design Sheet
Author: Ong Chong How
Date: 08/10/2024
Sheet: 5
Task: Final Visualization
Dashboard Design.

OPERATION

1. Clear Section Titles and Heading
   - Use bold and font size.

2. Use of Visual Hirarchy
   - Differentiate heading, subheading
   and body-text

3. Integrated Graphics and
   Images:
   Use relevant graphics, charts
   and images to complement
   in text.

   Interaction:
   - Hover effect
   - QR code if possible
   - Interactive Polls.
   - Feedback section?
   - Interactive Map
   - Gamification Element

DETAIL

◎ Front-End tech
   - HTML
      - Structure the content
      - Organize different sections

   - CSS
      - Style the poster for appealing
      design

   - Java script
      - Add interactivity to the
      poster

◎ Back-End tech
   - Node.js
   - A JS runtime for building
   server-side applications.

   - Libraries
      - Vega-Lite
      - D3.js
      - Chart.js

Ensure
screen
size!

◎ 1 week to finish all visualization