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Motivation

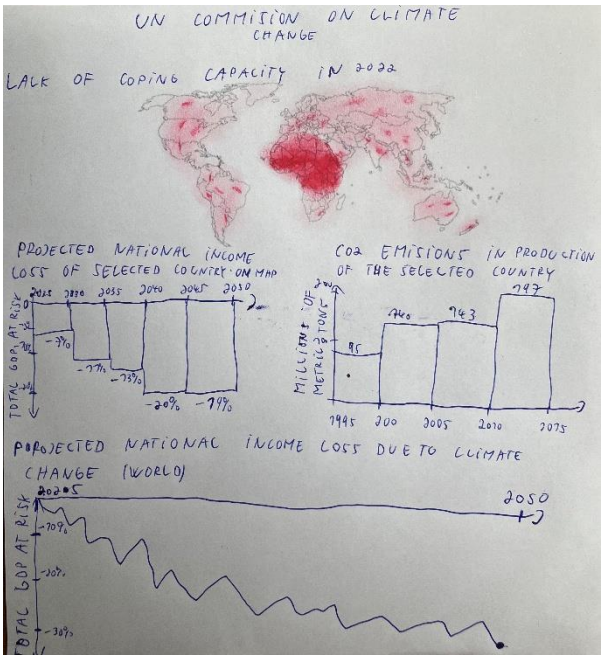
UN commission on climate change

The UNFCCC leads global efforts to address climate change. In this assignment, we aim to guide users in identifying which countries will be most vulnerable and what the potential consequences will be.

Tasks:

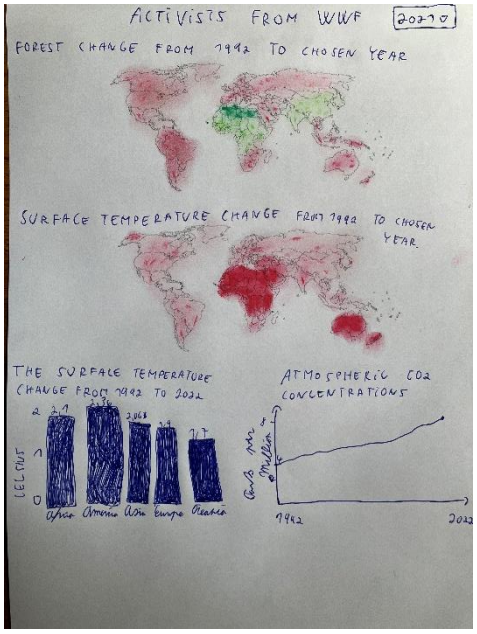
1. Demonstrate which countries are affected most by climate change to debate strategies.
2. Demonstrate the economic impact of climate change for each country.
3. Demonstrate the number of emissions produced by each country.

The proposed design from A4 is shown on the right. It begins with a map of coping capacity to help users identify vulnerable countries [Task 1]. Clicking a country reveals two views: projected income loss [Task 2] and emissions data [Task 3]. Both are key for coordinating climate action.



Activists from WFI

The WWF is one of the world's largest conservation organizations, working to protect nature and biodiversity. This dashboard visualizes threats to biodiversity through changes in forest area, temperature, and CO_2 levels.



Tasks:

1. Investigate the relative impact of climate change on natural habitats in different parts of the world.
2. Investigating the change in surface temperature around the world.
3. Investigating the amount of carbon dioxide.

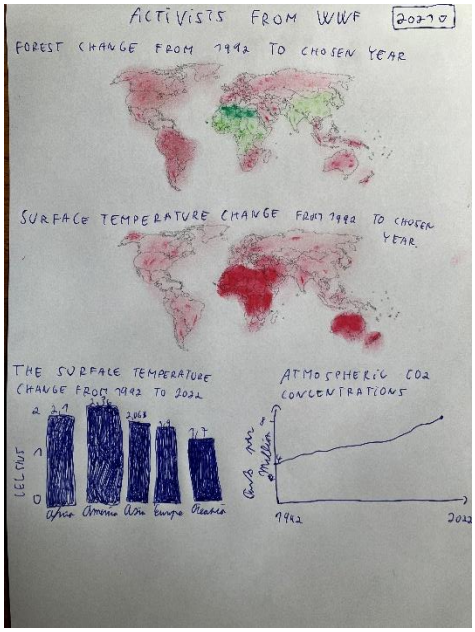
The dashboard includes two maps—tree cover and temperature change since 1992—with a slider to explore yearly data [Tasks 1, 2]. A bar chart shows temperature increases by continent, and a line chart tracks rising carbon dioxide levels over time [task 3].

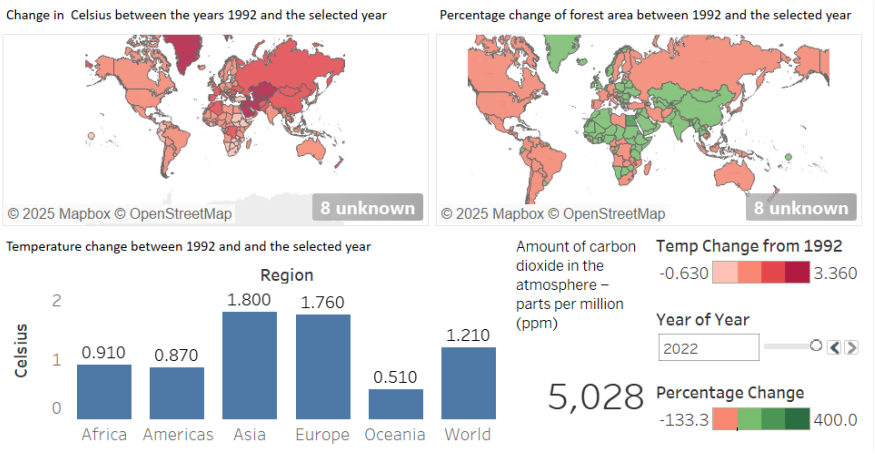
1. **Prototyping / Design process**

Here I am providing pictures side by side of the prototypes and the actual implementation to make the comparing easier.

Activists from WFI

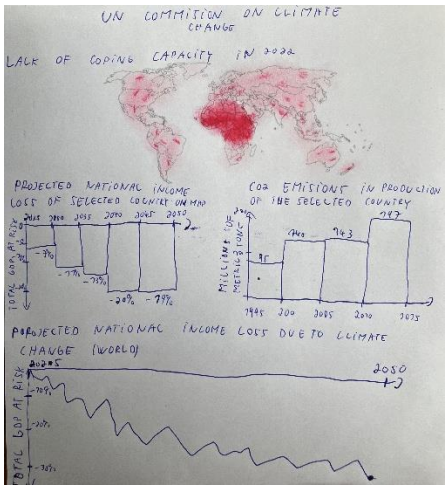
https://public.tableau.com/views/WFI_dashboard_sembera/WFI_activists?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link

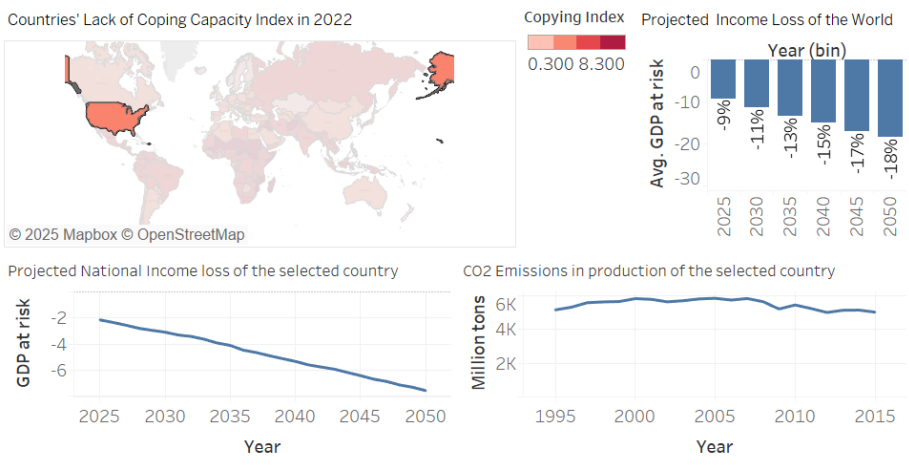




Un commission - The US was selected on the map in the dashboard to display the line charts below

https://public.tableau.com/views/UN_dashboard_sembera/UN_commision?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link





During the implementation process, I did not encounter any major issues and was able to implement all my ideas. However, I made several adjustments based on the teacher's feedback. These are the changes:

- I switched from portrait to landscape orientation. In the WFI dashboard, I used a two-column, two-row layout. I placed the maps side by side in the first row instead of stacking them vertically, to make better use of the available width. I applied the same two-column, two-row layout in the UN Commission dashboard.

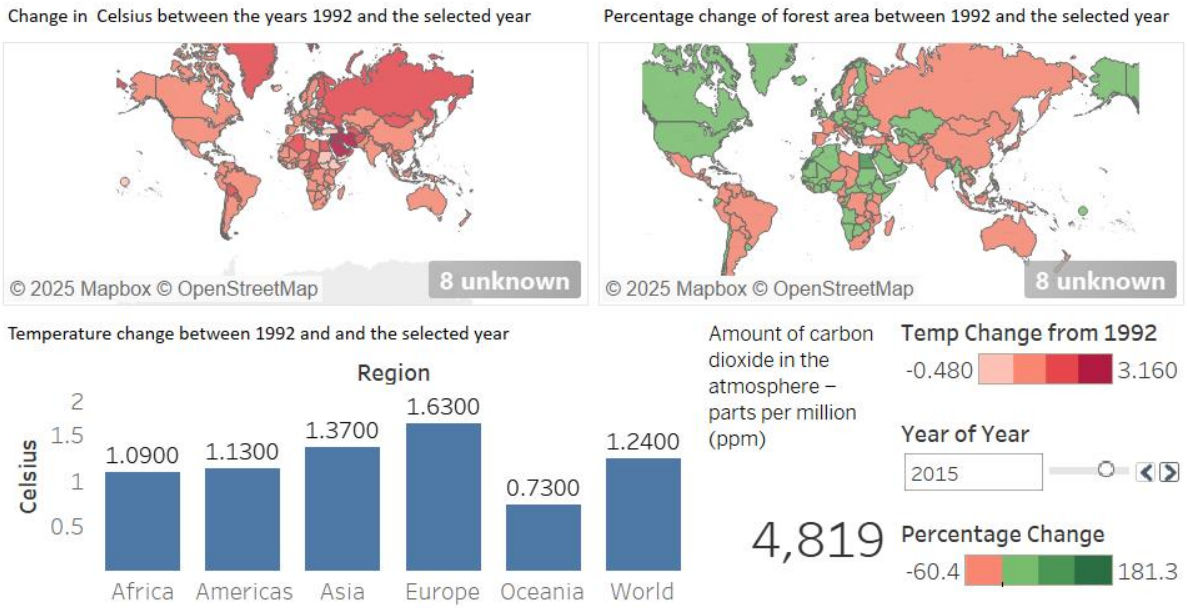
- In the WFI dashboard, I linked the two previously static views (bar chart and line chart). The bar chart is now dynamic and shows temperature changes from 1992 to the selected year, instead of only from 1992 to 2022. I removed the line chart and replaced it with a numeric indicator showing emissions for the selected year. Now, all visualizations are filtered and linked by year.
- I added scales to the WFI Activists dashboard.
- There were concerns about placing an upside-down histogram next to a standard one in the UN Commission dashboard, as it could confuse users. To avoid this, I used line charts instead. I kept the histogram only in the final view, which shows the projected national income loss globally.

2. Implementation details

Here are the screenshots of the dashboards:

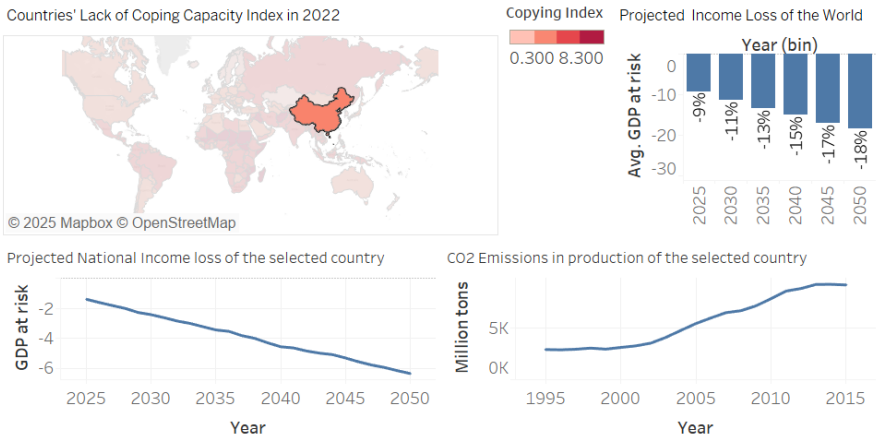
WFI activists in year 2015:

https://public.tableau.com/views/WFI_dashboard_sembera/WFI_activists?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link



UN commissions dashboard – China is selected:

https://public.tableau.com/views/UN_dashboard_sembera/UN_commision?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link



In the WFI Activists dashboard, all views are linked to the selected year. The user can gradually increase the year to observe how each view changes and explore the effects of climate change over time.

WWF – Views:

1. **Map of temperature change since 1992** (upper left corner, first row, first column) – This interactive map shows temperature changes compared to 1992. It updates based on the year selected by the user. This view supports Task 2 – investigating surface-level temperature change. The user can explore the map to identify the regions most affected by surface-level temperature changes.
2. **Map of changes in forest tree cover since 1992** (upper right corner, first row, second column) – This interactive map also updates with the selected year. It supports Task 1 – examining the impact of climate change on natural habitats, with a focus on forested areas.
3. **Bar chart of surface-level temperature change by continent since 1992** (lower left corner, second row, first column) – This chart complements the temperature change map by providing an overview by continent. It is interactive and updates by year. It supports Task 2. The bar chart provides a simplified overview of the temperature map.
4. **Numeric indicator of atmospheric CO_2 concentration** (lower right corner, second row, second column) – This value updates based on the selected year and shows the level of carbon dioxide in the atmosphere. It supports Task 3 – analyzing CO_2 levels, which contribute to ocean acidification and negatively affect biodiversity.

In the UN Commission dashboard, the user has the opportunity to explore the map to see which countries are most affected and then examine each country individually.

UN Views:

1. **Map of lack of coping capacity index (2022)** (upper left corner, first row, first column) – This static map highlights countries most vulnerable to climate change. It supports Task 1 – identifying high-risk regions. Users are encouraged to explore this map.
2. **Histogram of projected global national income loss** (upper right corner, first row, second column) – This view provides an overview of the economic impact of climate change globally. It supports Tasks 1 and 2, offering context and enabling comparison with country-specific data.
3. **Line chart of projected national income loss for selected country** (lower left corner, second row, first column) – This interactive chart displays income loss for a selected country (e.g., China). It supports Task 2 – analyzing country-level economic impacts of climate change.
4. **Line chart of emissions produced by selected country** (lower right corner, second row, second column) – This interactive chart updates based on the selected country. It supports Task 3 – demonstrating emissions by country.

Technical Decision:
I switched both dashboards to landscape orientation to improve layout efficiency and visibility. I did not encounter any difficulties while implementing the prototypes.

4. Data Stories

Link to WFI activists: https://public.tableau.com/views/WFI_sembera/WFI?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link

Link to UN commission: https://public.tableau.com/views/UN_sembera/UN?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link

WWF Storytelling:

In the WWF storytelling, we gradually explore global warming over time. We begin with an introductory story point that introduces WWF and explains the aim of the story: to explore the effects of global warming on natural habitats.

The first story point is set in the year 1992, where we see a baseline (zero change) on the dashboard — this is where our story begins. We then proceed through subsequent story

points for the years 2000, 2010, and 2022. Each of these years represents a separate story point, showing how climate change has affected natural habitats over the past 30 years.

There is an additional story point focused on carbon dioxide levels. The final story point presents a conclusion that summarizes what the user has observed: rising surface temperatures across the globe, deforestation, and increasing atmospheric CO_2 concentrations.

UN Commission Storytelling:

In the UN Commission storytelling, we begin by introducing the UN task force on climate change and explaining that the story will explore countries affected by climate change.

The next story point focuses on the Lack of Coping Capacity Index. Users are encouraged to explore it on their own. In the following story points, we select the USA to explore the projected national income loss and then its emissions data.

Afterward, we switch to Argentina to demonstrate that users can explore different countries. Next, we present a histogram of projected global income loss, providing a broader overview.

The final story point offers a conclusion and encourages users to continue exploring data for other countries.

5. Discussion

I learned from and understood the mistakes I made in my A4. The most valuable lesson was realizing that it was a mistake to design my dashboards in portrait rather than landscape orientation. I also explored the storytelling feature in Tableau, which I really liked — it helps guide the user through the visualizations in a more structured way.

I believe the defined tasks can be carried out effectively by the user. However, there are still some limitations. For example, completing the tasks requires some geographical knowledge, and there is a data mismatch: the coping capacity index is only available for the year 2022, but I would have preferred to include data for 2025 as well. Unfortunately, that data is not currently available, so the issue cannot be solved at this time.

During implementation, I also encountered technical issues when trying to link views. I frequently received the error: "It is not possible to use filtering on logical tables." It took me a long time to find a workaround, but I eventually managed to resolve it.

6. Conclusion

I was able to implement the proposed designs and incorporate the feedback to correct the dashboards. The storytelling feature provides a clear guide for the user, walking them through the dashboards.