GES 3050 - Group1: Final Project

**Concept: *Deforestation Then, Now, and Possible Futures***

An interactive scroll-driven map experience exploring the story of global deforestation, showing change over time, and letting users see how different future choices might impact forests & carbon storage.

**Map Timeline Structure:** *Temporal*

**1. Past (Historical Deforestation)**

* 1970 → 1990 → 2010 → 2020
* Data: Global Forest Loss (Global Forest Watch, ESA, NASA, Mapbox satellite layers)

**2. Present (2020)**

* Baseline layer of current forest cover

**3. Future Scenarios (Choose Your Path)**

* Best Case: Global Restoration
* Moderate: Current Trends Continue
* Worst Case: Accelerated Loss

Use the Scrollama timeline to transition between these maps.

**!!Optional Layer: Socio-Economic Data!!**

Keeping this *optional* chart or *overlay-style* due to time constraints.

Great datasets for this:

* World Bank (Population Density, GDP, Land Use)
* UN Human Development Index (poverty, rural population)
* FAO Cropland vs Forest Land
* Global Forest Watch has pressure & livelihood layers

Strategy: Add toggle buttons for "Show socio-economic chart or map overlay" vs. "Hide overlay" OR incorporate static infographics into your story panels.

**Technical Tools Recommendation:**

* Mapbox Studio (map layers)
* Scrollama.js (scroll interaction)
* HTML / CSS / JS (basic)
* Canva/Figma (design assets)
* Google Sheets (data cleaning)
* GitHub (hosting site)

**What Will Keep This Project Successful:**

1. Limit number of maps to 4-6 max.
2. Keep socio-economic data optional or simplified.
3. Be intentional about colors/symbols for clarity.
4. Focus on telling the clearest story — don't over-complicate.
5. Team divide + conquer: Don't all try to do maps together — split tasks.

**Recommended Project Structure (Team Roles)**

| **Team Role** | **Main Task** | **Tools / Skills** |
| --- | --- | --- |
| Map Designer | Create & style base maps of deforestation timeline | Mapbox Studio |
| Data Curator | Gather & clean historical + scenario data | ArcGIS OpenData, WRI, Global Forest Watch, FAO |
| Story Developer | Build scrollable storytelling framework | HTML + Scrollama.js |
| Visual & Content Lead | Write story content, source images/icons, design timeline | Canva, Figma, ArcGIS Media, Free sources |

**Free + Public Deforestation / Restoration Data:**

**Historical & Current Forest Loss Data**

**1. Global Forest Watch (Forest Change Data)**

High-quality global forest cover, loss, gain data — downloadable by year, region, or globally.

* Data Hub: https://data.globalforestwatch.org/
* Forest Loss/Gain by Year: https://data.globalforestwatch.org/datasets/global-tree-cover-loss-2001-2022/explore
* API / Visualization tools too.

**2. Hansen Global Forest Change (University of Maryland)**

The data powering Global Forest Watch (raw source)

* Download: https://earthenginepartners.appspot.com/science-2013-global-forest/download\_v1.9.html
* Years: 2000 - 2022
* File format: GeoTIFF (Raster)

**3. NASA Land Cover Data (MODIS / ESA CCI)**

Global land cover classes — forest, cropland, urban, water.

* MODIS Land Cover: https://developers.google.com/earth-engine/datasets/catalog/MODIS\_006\_MCD12Q1
* ESA Climate Change Initiative: https://maps.elie.ucl.ac.be/CCI/viewer/

**Future Scenarios — Restoration Potential & Carbon Storage**

**4. Globil PANDA Restoration Potential (ESRI)**

Great for visualizing positive future scenarios — "what could be restored"

* Direct Map Link: <https://globil-panda.opendata.arcgis.com/maps/000abd3315a14a4b9c7ea801a3069f1f/about>
* Download option available (ArcGIS features)

**5. World Resources Institute (WRI) Carbon Sequestration Estimates**

Global restoration potential + estimated carbon capture in Gt CO₂ / year

* Report/Data Hub: https://www.wri.org/data/global-forest-restoration-opportunity-map
* Carbon Storage Map: https://www.wri.org/data/atlas-forest-landscape-restoration-opportunities

**Socio-Economic & Human Impact Layers**

**6. World Bank Open Data**

Global socio-economic indicators (GDP, rural population, land use)

* Explore Data: <https://databank.worldbank.org/source/world-development-indicators>
* Land Use by Country: <https://databankfiles.worldbank.org/public/ddpext_download/Land-Use-Data.xls>

**7. UN Human Development Index**

Human factors influencing deforestation (poverty, education, health)

* Data Explorer: https://hdr.undp.org/data-center

**Optional Layers for Context or Styling**

**8. FAO Global Forest Resources Assessment**

Official UN global forest statistics (country-level)

* Main Data Portal: <https://fra-data.fao.org/>
* Global Forest Statistics: <https://fra-data.fao.org/assessments/fra/2020/data-download>

**9. OpenStreetMap (Basemap Layers / Human Impact Features)**

Cropland, roads, urban footprint, etc.

* Export Tool: https://export.hotosm.org/en/v3/

**Summary of Where Each is Best Used:**

| **Purpose** | **Source** | **Best For** |
| --- | --- | --- |
| Past / Present Forest Loss | Global Forest Watch | Time series maps 2001-2022 |
| Restoration Future | Globil Panda | Positive scenarios |
| Carbon Impact | WRI | Gigatons CO₂ storage modeling |
| Socio-Economic Overlay | World Bank, UN HDI | GDP, population, poverty |
| Visual Land Use / Cover | NASA MODIS / ESA CCI | Supporting map layers |

**Pro Tip:**

→ Combine Global Forest Watch + Globil PANDA to show:

* *"What We've Lost"* vs *"What We Could Restore"*

→ Then let users "choose their future" with scenarios changing:

* Forest Extent
* Carbon Storage
* Human Impact Layer Visibility