EcoSath

The 360° Platform for Verifiable Sustainability

Challenge: INFOMINDS: Tech4Transparency

Meet Team EcoSath

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Our Solution

Project Name: EcoSath

Brief Description: A real-time Environmental, Social, and Governance (ESG) monitoring dashboard for EcoSath.

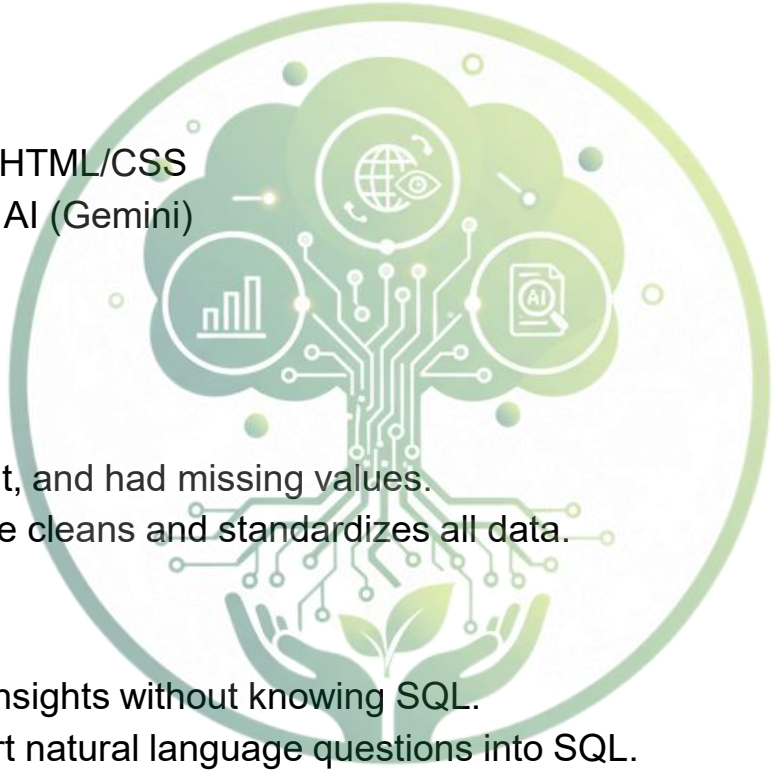
Goals & Impact: Our system simulates(Noisy and Real-World Data) and tracks live ESG metrics across three pillars (Emissions, Social, Governance) to provide transparent, actionable insights for sustainability monitoring.

How we solved the challenge

Our Approach We built a real-time ESG dashboard using **FastAPI microservices** for the backend and a lightweight **Vanilla.js + Plotly** frontend. A Python data pipeline cleans, generates, and merges live data, which is cached every 30 seconds for a real-time experience.

Tech Stack

- **Backend:** Python, FastAPI, Pandas
- **Frontend:** Vanilla JavaScript, Plotly.js, HTML/CSS
- **Infra/AI:** Docker, Google Cloud, Vertex AI (Gemini)



Challenges & Solutions

1. Messy ESG Data

- **Problem:** Data was messy, inconsistent, and had missing values.
- **Solution:** An automated Python pipeline cleans and standardizes all data.

2. SQL Knowledge Barrier

- **Problem:** Business users couldn't get insights without knowing SQL.
- **Solution:** We used Gemini AI to convert natural language questions into SQL.

3. Multi-Database Complexity

- **Problem:** Managing queries across three separate, different databases.
- **Solution:** A unified LLM service intelligently routes questions to the correct database.

Live Demo