Power
Learn
Project

CO_2 Emissions Estimator & Climate Impact Visualizer

AI-powered web app for climate impact awareness

Problem Statement

Despite growing concern about climate change, people often lack:

- Tools to estimate their CO_2 emissions
- Clear visuals of behavior-to-impact relationships
- Actionable steps to reduce footprint

Solution

Our Web App Offers:

- Simple input form for daily activities
- Real-time CO_2 estimates
- Dynamic visualizations (charts, comparisons)
- Personalized reduction tips

Powered by:

- Public GHG conversion factors
- Machine learning (regression models)
- Accessible UI (Streamlit)

Product

Input Categories:

Mode of transport (car, flight, bus, etc.)

Distance travelled

Fuel/electricity use

Output:

Instant CO_2 estimation

Emissions by activity

National comparison

Actionable tips

Deployment:

Lightweight Streamlit app

No login or data storage required

Impact Potential

📍 **Personal Level**

Translates abstract climate data into daily behavior insights

Motivates individuals to make eco-conscious decisions (e.g. transport, energy use)

📍 **Community Level**

Empowers schools, NGOs, and local initiatives with a ready-to-use educational tool

Sparks climate conversations in classrooms and workshops

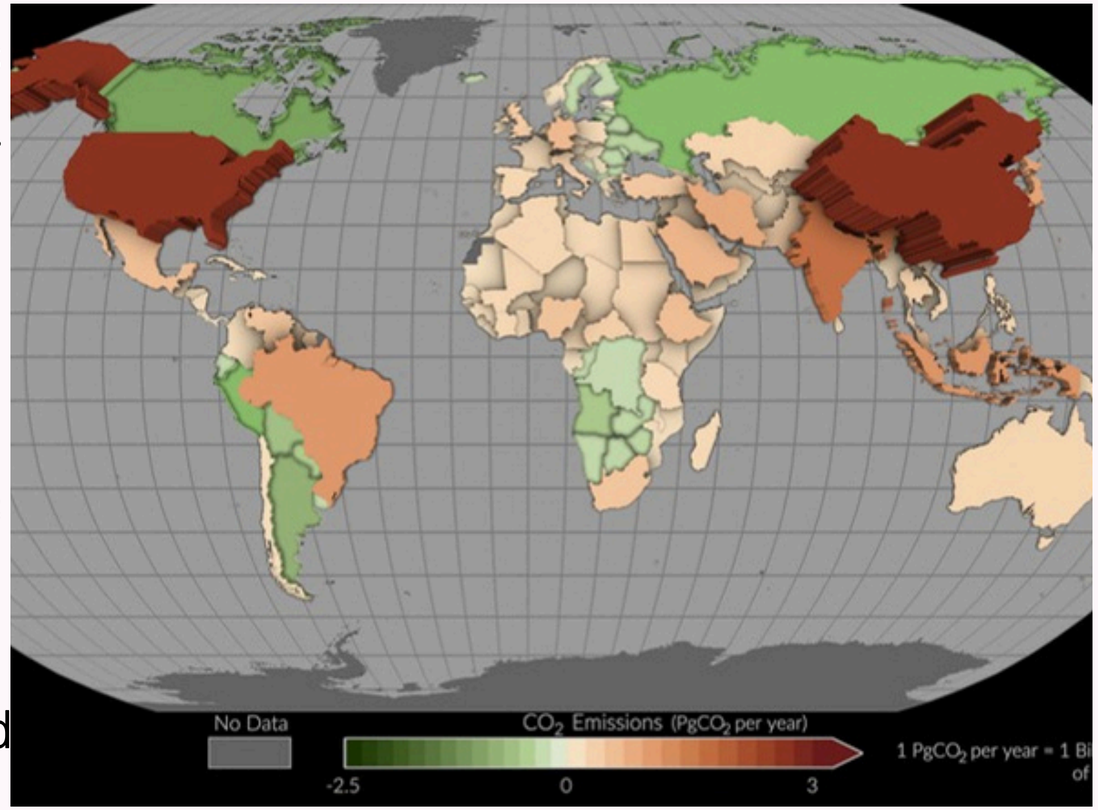
📍 **Global Level**

Scalable model can be localized for different countries

Supports SDG 13 by enabling low-cost climate education and action

Goal: Reach 100K users across 10+ regions by end of Year 1

Long-Term Vision: Become a go-to open-source emissions awareness tool globally

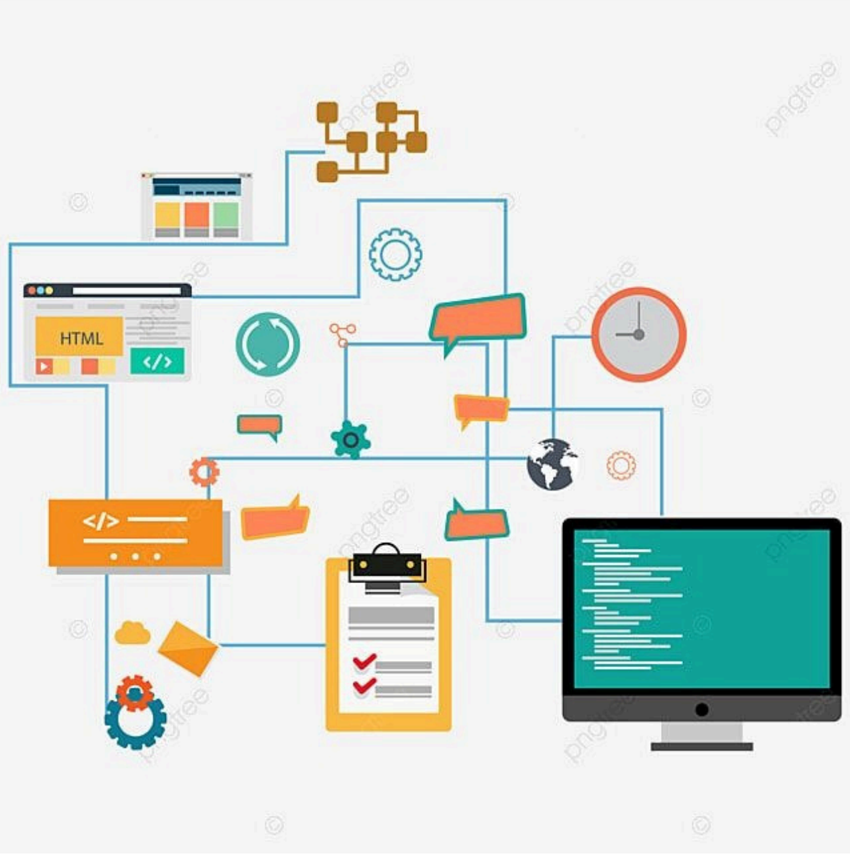


Ethical Considerations

Designing Responsibly

- Data Privacy: No user data is stored; app works without login to protect personal information
- Transparency: Uses publicly available GHG conversion factors and open-source code
- Inclusivity: Accessible to low-bandwidth users, with multilingual support in roadmap
- Bias Mitigation: Models are based on standardized government data to avoid regional or socioeconomic bias

System Architecture



emissions_model.py (ML logic)

calculator.py (main logic)

visuals.py (charts)

tips.py (personalized advice)

app.py (UI with Streamlit)

ghg_factors.csv (open data)

Model Workflow

Step-by-step Flow:

- User Input: Users enter transport, energy, and travel data.
- Data Preprocessing: Inputs are validated and normalized.
- Emission Estimation: Regression model applies GHG conversion factors.
- Visualization: Charts show breakdown and comparisons.
- Personalized Tips: App generates custom suggestions to reduce impact.

Scaling the Vision

MVP:

- Estimate CO_2 from transport, energy
- Show chart visualizations
- Offer simple tips

Next Phases:

- Add temperature impact scenarios
- Add regional/national comparisons
- Multilingual support (Swahili, French, etc.)

Social Impact

🎯 Primary SDG Alignment

- SDG 13: Climate Action - Empowers individuals and communities to track and reduce emissions, fostering a culture of accountability and climate resilience.

🌱 Additional SDG Support

- SDG 4: Quality Education- Simplifies complex environmental concepts for learners of all ages; ideal for integration in school curricula and public awareness programs.
- SDG 17: Partnerships for the Goals- Designed for collaboration with local governments, schools, NGOs, and climate tech communities worldwide.
- SDG 10: Reduced Inequalities- Prioritizes accessibility for underserved regions — optimized for low bandwidth, mobile-first use.
- SDG 5: Gender Equality- Features inclusive design principles, ensuring the tool is relevant and usable across gender and socioeconomic lines.

📈 Long-Term Vision

Foster a global shift in climate consciousness by making emissions literacy as accessible as weather updates.

Team Members

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HEAD OF PRODUCT

Thank you!

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