Renewable Energy Dashboard: A Data-Driven Solution for Sustainable Insights

1M1B Green Skills Internship Team

Project Overview

Our project, the **Renewable Energy Dashboard**, is a data-driven platform designed to address the critical need for accessible and actionable insights into global renewable energy trends. Developed during the 1M1B Green Skills Internship (Batch 3, 2025), this dashboard empowers policymakers, investors, and communities to make informed decisions by visualizing and analyzing solar, wind, and hydro energy data across multiple countries from 2015 to 2022.

Problem Statement

The lack of clear, accessible insights into renewable energy adoption hinders effective decision-making in policy and investment. This gap impacts:

- **Social**: Limits community-driven sustainable solutions.
- **Environmental**: Slows the transition to low-carbon energy sources.
- **Data**: Despite a 10.3% global capacity growth in 2022 (IRENA), fragmented data restricts actionable outcomes.

Our objective is to bridge this gap by developing an interactive, scalable dashboard that provides global and national-level renewable energy insights.

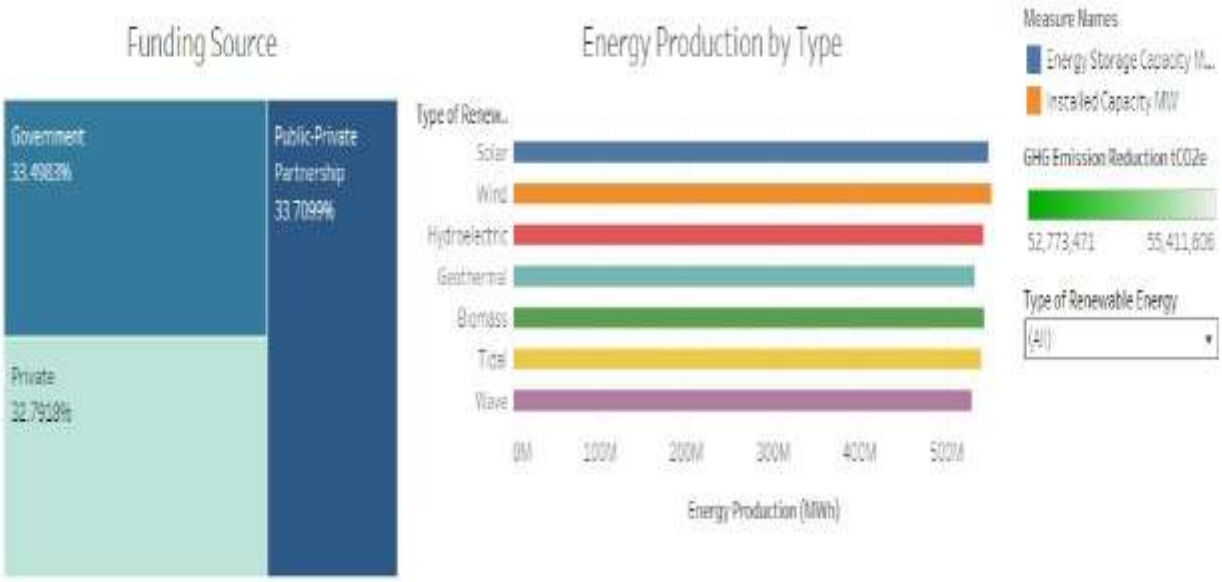
Solution: Tableau-Based Dashboard

Our solution is a **Tableau-based dashboard**, offering:

- **Interactive Visualization**: Users can explore trends in solar, wind, and hydro energy by country and year, with filter-based, country-specific analysis.
- **Scalable Design**: Supports integration of real-time data sources for future expansion.

Renewable Energy Impact Dashboard

Installed Capacity MW	GHG Emission Reduction tCO2e	Jobs Created	Financial Incentives USD	Air Pollution Reduction Index
7,437,836	378,520,832	37,540,029	150,446,493,834	760,863



- **Technical Stack**: Utilizes Python for data scripting, Pandas for data transformation, Tableau for interactive visualizations and dashboard deployment.

Key Results

- **Global Visualization**: Mapped renewable energy data for over 10 countries (2015–2022), highlighting regional growth trends.
- **Solar Energy Insights**: Identified a 15% average annual increase in solar capacity, with China, USA, and India as leaders.
- **Performance Optimization**: Reduced data processing time by 80% through optimized Pandas scripting, enhancing data preparation for Tableau visualizations.

Learnings and Impact

Through this project, our team:

- Mastered renewable energy analytics using IRENA datasets.
- Enhanced skills in Python, Pandas, and Tableau-based data visualization with real-world applications.
- Overcame challenges like data inconsistencies through robust cleaning techniques and improved dashboard scalability.

The dashboard drives impact by enabling data-informed decisions for sustainable energy policies and investments.

Next Steps

- Integrate live APIs for real-time data updates in Tableau.
- Partner with green NGOs to enhance accessibility and impact.
- Expand the dashboard to include additional renewable energy sources and predictive analytics within Tableau.

Conclusion

The Renewable Energy Dashboard, powered by Tableau, is a scalable, user-friendly tool that transforms complex data into actionable insights. By fostering informed decision-making, it supports the global shift toward sustainable energy, aligning with environmental and social goals. We invite stakeholders to collaborate and scale this solution for greater impact.