**Project Documentation**

**Title: "Transition to Renewable Energy: A Decade-long Study of Global Shifts in Energy Sources"**

**Introduction:**

In the wake of escalating climate change concerns, the global energy landscape is witnessing an unprecedented shift towards renewable energy sources. This project aims to unravel the complexities of energy consumption patterns, focusing on several key indicators including access to electricity, electric power consumption, and sources of electricity production. This project delves deep into the energy choices of major countries over the past decade, highlighting the progress and pitfalls in our collective journey towards a sustainable future.

**Project Overview:**

* **Project Name:** Transition to Renewable Energy: A Decade-long Study of Global Shifts in Energy Sources
* **Author:** Alisha Minj
* **Date:** May 2022
* **Objective:** Analyze and visualize global energy consumption patterns and trends from 2010 to 2021, with a focus on renewable energy sources.

**Data Sources:**

* The project utilized the World Development Indicators dataset, available at [worlddev.xyz](https://www.worlddev.xyz/).
* Additional data sources were accessed via the following URL: <https://raw.githubusercontent.com/alishaminj12/alisha_data690/main/Individual_Project/wdi_data.csv>

**Methodology:**

1. **Data Acquisition:** The project began by obtaining the necessary datasets from the provided sources.
2. **Data Preprocessing:** Data cleaning, transformation, and feature engineering were performed using Python and Pandas to prepare the data for analysis.
3. **Data Analysis:** The project involved the analysis of key indicators such as access to electricity, electric power consumption, electricity production from various sources (coal, natural gas, oil), CO2 emissions, and renewable energy production.
4. **Data Visualization**: Interactive visualizations were created using Python libraries including Matplotlib, Plotly, and Pandas. Line charts, bar charts, and bubble plots were employed to visualize and compare energy-related indicators across countries and over time.
5. **Key Insights**: The project identified significant trends and correlations, emphasizing the global shift towards renewable energy and its impact on economic growth.

**Key Insights:**

1. Global trends indicate a notable transition towards renewable energy sources, with hydroelectric, solar, and wind power emerging as promising alternatives.
2. Strong positive correlations were observed between a country's economic growth (GDP) and its transition to renewable energy, highlighting the economic benefits of sustainability.
3. The project proposed actionable strategies for countries to transition to renewable energy sources, emphasizing the adoption of hydroelectric, solar, and wind power for long-term economic and environmental benefits.

**Technical Skills:**

* Python for data manipulation and analysis.
* Pandas for data wrangling and transformation.
* Matplotlib, Plotly, and Pandas for data visualization.

**Impact:**

The project's insights can guide policymakers, businesses, and environmental organizations in making informed decisions about sustainable energy strategies. By understanding global energy consumption patterns and trends, stakeholders can work towards a greener and more sustainable future.

**Conclusion:**

This project provides a comprehensive analysis of global energy consumption patterns and trends, with a focus on renewable energy sources. The insights gained highlight the importance of transitioning to sustainable energy options and the potential economic benefits of doing so. As we step into a new decade, this analysis serves as a valuable resource for shaping global energy policies and ensuring a more environmentally friendly future.