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## 1. Project Idea

## 1.1 Title

Analyzing the Impact of Renewable Energy Adoption on Economic Recovery of Developing Nations

## 1.2 Objective

* To investigate the relationship between renewable energy adoption and its effects on economic recovery in developing nations.
* To provide data driven approach to the policy decisions related to SDG 7 and other interconnected SDGs.

## 2. Relevance to Sustainable Development Goals

This project is highly relevant to the United Nations Sustainable Development Goals, particularly:

* SDG 7: Affordable and Clean Energy: The project directly addresses this goal by focusing on the impact of renewable energy adoption.
* SDG 8: Decent Work and Economic Growth: By examining how renewable energy affects employment and economic recovery, the project contributes to promoting sustained economic growth and decent work.

## 3. Literature Examples

3.1 Unravelling the role of financial development in shaping renewable energy consumption patterns: Insights from BRICS countries[1]

This paper investigates between financial development and renewable energy utilization in BRICS economies, contributing to UNSDGs-7 and -13. The findings reveal a positive correlation between economic growth and renewable energy consumption, as well as significant positive relationships between the consumer price index, domestic credit, and renewable energy consumption. A counterintuitive relationship between foreign direct investment and renewable energy consumption is also uncovered.

3.2 Renewable energy and economic growth: New insight from country risks[2]

This study examines the relationship between renewable energy consumption and economic growth in OECD countries from 1997 to 2015, considering political, financial, economic, and composite risks. Using a panel threshold model, the results reveal a single threshold for composite and political risks, where exceeding the threshold enhances the positive impact of renewable energy on economic growth. For economic and financial risks, a double threshold exists: exceeding the first but not the second threshold positively impacts economic growth, while not lying between the two thresholds results in an insignificant negative correlation.

## 4. Describe Your Data

The data required for the study will be sourced by UNDP Data Futures Platform[3] and World Development Indicators from World Bank[4]. The size of the dataset will be around 30 years of data of 45 Least Developed Countries i.e 1350. The timespan of the data will be from 1990-2020 which will be arranged in CSV format. Necessary preprocessing of data will be done in order to eliminate outliers and replace missing values through normalization. The probable features will be per capita electricity cost, renewable energy percentage to total energy consumption, cost to import or export electricity, domestic and foreign debts etc.

## 5. Approach

Since, the complexity of data will not be very much, muti feature regression approach will be good enough for the study. The Algorithms like Decision Tree, Support Vector Regression, Multiple Polynomial Regression will be used and necessary evaluation will be done using adjusted R2 score method.

## References

[1] Yadav A, Bekun F V, Ozturk I, Ferreira P J S and Karalinc T 2024 Unravelling the role of financial development in shaping renewable energy consumption patterns: Insights from BRICS countries Energy Strategy Reviews 54 101434

[2] Wang Q, Dong Z, Li R and Wang L 2022 Renewable energy and economic growth: New insight from country risks Energy 238 122018

[3] Anon Access all data | Data Futures Exchange

[4] Anon World Development Indicators | DataBank