PROJECT 3 PROPOSAL AND LITERATURE REVIEW

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Problem Selection
Impact of Renewable Energy Adoption on Global Carbon Emissions

Interest and Importance: Our chosen field of interest is the impact of renewable energy adoption on reducing global carbon emissions. This topic is intriguing due to our passion for sustainable development and climate change mitigation. Its significance is pivotal within the broader scope because the shift towards renewable energy is a critical tactic in the fight against climate change, diminishing dependence on fossil fuels, and advocating for a sustainable future. Understanding the dynamics of this transition and its effects on carbon emissions can help inform policy decisions and public awareness, contributing to global efforts to limit global warming and its associated risks.

Literature Review
Source: "The role of renewable energy in the global energy transformation"
Energy Strategy Reviews, Volume 24 - April 2019.

Summary: This article examines the growth of renewable energy sources within the global energy sector, analyzing trends, challenges, and prospects. It highlights the increasing share of renewables in power generation, driven by technological advancements and policy support. The study also discusses the potential of renewables to significantly reduce carbon emissions and outlines the barriers to their adoption, including economic, technical, and infrastructure challenges.

Relevance: This article provides a fundamental understanding of the state of renewable energy adoption and its potential impact on carbon emissions. It emphasizes the importance of renewables in achieving emission reduction targets and the need for comprehensive policy frameworks to overcome existing barriers. This knowledge is instrumental in framing our research questions, as it underscores the direct link between renewable energy expansion and carbon emission trends. Furthermore, the discussion on challenges presents an avenue to explore the effectiveness of different technologies in accelerating the transition to renewables.

Questions to answer
1. How have Global CO2 emissions changed over time?
Purpose: To identify trends, such as increases or decreases in emissions, and potentially correlate them with major global events or implementations.

2. What nations are the primary contributors to CO2 emissions, and how has this situation evolved in the recent past?
Purpose: To pinpoint which countries have consistently been the largest emitters and to observe any shifts in the rankings, which could indicate significant changes in national energy regulations or industrial activities.

3. What is the correlation between renewable energy usage and CO2 emissions in major economies?
Purpose: To explore the relationship between the adoption of renewable energy sources and the level of carbon emissions, highlighting the effectiveness of renewable energy.

4. How do CO2 emissions vary by sector across different regions?
Purpose: To identify key sectors that contribute the most to CO2 emissions in different parts of the world, which can inform targeted practices and technology interventions.

Dataset
Global Carbon Atlas https://globalcarbonatlas.org/

Description: The Global Carbon Atlas dataset offers extensive data on CO2 emissions from fossil fuel combustion and cement production, categorized by country and year. This dataset is instrumental for analyzing global and national trends in carbon emissions, providing a benchmark for assessing the impact of renewable energy adoption.

Key Columns
Country: Allows for country-specific analyses and comparisons between nations at different stages of renewable energy adoption.

Year: Enables the examination of trends over time, crucial for understanding the progress in emissions reduction.

Total CO2 Emissions: The primary indicator of interest, used to measure the impact of renewable energy on reducing global carbon footprints.

Emissions by Sector: Offers insights into which sectors have seen significant reductions in emissions, potentially correlating these trends with increased use of renewable energy sources.

Citations
Dataset: Global Carbon Atlas

Source: IRENA (2019) "The role of renewable energy in the global energy transformation" Energy Strategy Reviews, Volume 24 - April 2019.