**SDG PROBLEM DEFINITION DOCUMENT**

**Introduction**

Sustainable Development Goal 7 (SDG 7) aims to ensure access to affordable, reliable, sustainable, and modern energy for all. As the world grapples with climate change and the depletion of natural resources, the transition towards renewable energy sources has become paramount. In many regions, especially in developing countries, the adoption of renewable energy technologies is not keeping pace with the growing energy demand. This gap presents a significant challenge to achieving SDG 7 and, more broadly, to fostering sustainable economic growth and environmental sustainability.

**Problem Statement**

The specific problem addressed in this project revolves around the low adoption rates of renewable energy sources among households in various regions. Despite the availability of multiple renewable energy technologies, such as solar panels, wind turbines, and hydropower systems, many households remain reliant on traditional fossil fuels. This reliance exacerbates issues such as air pollution, greenhouse gas emissions, and energy poverty, particularly in low-income communities.

Understanding the barriers to the adoption of renewable energy is essential for crafting effective policies and initiatives that promote sustainable energy solutions. Key factors influencing the adoption rates include:

1. **Economic Factors**: Households often struggle with the upfront costs of renewable energy installations. Even with potential long-term savings, the initial investment can deter many families, particularly those with lower incomes.
2. **Awareness and Education**: A lack of awareness regarding the benefits of renewable energy and the availability of financial incentives can lead to hesitation in making the switch. Many households are unaware of the various renewable energy technologies and how they can benefit from them.
3. **Accessibility and Infrastructure**: In some regions, the necessary infrastructure for renewable energy is lacking. This includes access to technology, skilled installation services, and maintenance support.
4. **Regulatory and Policy Framework**: The existing policies governing energy access and incentives for renewable energy adoption can be inadequate or poorly communicated, limiting household participation in renewable energy programs.

**Objective**

The primary objective of this project is to analyze the factors influencing the adoption of renewable energy among households, particularly focusing on economic, educational, and infrastructural barriers. By leveraging data analytics and visualization tools, the project aims to provide insights into household demographics, income levels, regional disparities, and renewable energy sources adopted. This information will assist in formulating targeted strategies and policies that can effectively promote renewable energy adoption and support the objectives of SDG 7.

**Methodology**

To address the identified problem, a comprehensive approach will be employed, including:

1. **Database Design**: A relational database will be designed to capture relevant data on households, renewable energy sources, and adoption records. This database will serve as the foundation for data analysis.
2. **Data Collection and Analysis**: SQL queries will be used to retrieve and analyze data, enabling insights into adoption trends and barriers.
3. **Data Visualization**: Utilizing Microsoft Excel, the project will create visual representations of the data through pivot tables and charts, facilitating a better understanding of the underlying trends.
4. **Dashboard Creation**: An interactive dashboard will be developed in Excel to provide stakeholders with a user-friendly interface to explore the data and derive insights.