Capstone Project Proposal

Project Title: Environmental Sustainability Dashboard

1. Executive Summary:

This project aims to develop an interactive dashboard using Power BI/Tableau to monitor and analyze environmental sustainability metrics. The dashboard will help a city's environmental agency track real-time emissions, monitor air and water quality, and evaluate the success of various sustainability initiatives. By providing a centralized visual platform, the project intends to support timely, data-driven environmental policy decisions.

2. Problem Statement:

Background: Increasing pollution levels and scattered sustainability efforts make it difficult to track and optimize environmental impact initiatives.

Objective: Create a centralized dashboard that consolidates key environmental metrics for better monitoring and strategic action.

Scope: Focus areas include air quality index (AQI), carbon emissions, waste management data, and renewable energy adoption trends.

3. Data Sources:

Primary Data: Real-time sensor data on air quality, carbon emissions, and city utility waste collection.

Secondary Data: Government open datasets on environmental quality, weather patterns, and public sustainability initiatives.

4. Methodology:

- Data Integration: Extract and clean data from sensors and open sources using Excel/SQL.
- Dashboard Design: Work with environmental experts to identify key metrics.
- Visualization: Use Tableau/Power BI to create an intuitive and interactive layout for real-time insights.
- Usability Testing: Collect feedback from users and iterate on usability and readability.

5. Expected Outcomes:

- An interactive sustainability dashboard for continuous monitoring.
- Data visualizations that highlight trends in emissions, waste levels, and green energy usage.
- Improved policymaking through access to real-time environmental insights.
- Increased public awareness via simplified sustainability reporting.

6. Tools and Technologies:

- Tableau/Power BI for dashboard creation.
- Excel/SQL for data preparation and transformation.
- APIs and CSV downloads for real-time sensor and government data.

7. Risks and Challenges:

- Data availability and inconsistency across sources.
- Real-time sensor integration could present technical difficulties.
- Ensuring clear communication of complex metrics to non-technical stakeholders.

8. Conclusion:

This project will deliver an easy-to-navigate dashboard that empowers environmental authorities to act swiftly and effectively. With the rise of sustainability initiatives, such a solution can serve as a key component in city planning and public accountability.