Business Requirements Document (BRD)

Project Title: Environmental Impact Tableau Dashboard

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1. Project Overview

The objective of this project is to develop a Tableau dashboard to visualize and analyze the environmental impact of various operations across industries and regions. The dashboard will provide actionable insights into carbon emissions, water consumption, energy usage, waste generation, recycling rates, air quality, and compliance levels.

2. Objectives and Goals

- Visualize Environmental Metrics: Provide an interactive view of key environmental metrics such as carbon emissions, water consumption, energy usage, and waste generated.
- Compare Across Dimensions: Enable comparisons across regions, industries, product types, and compliance levels.
- Monitor Trends: Display trends over time to identify patterns and opportunities for improvement.
- Enhance Decision-Making: Support strategic decisions to improve environmental compliance and reduce negative impact.

Requirements:

Component	Details	Columns Used
1. Key Numeric Indicators (KNIs)		
Total Carbon Emissions	Display the total carbon emissions across all data.	Carbon Emissions (kg)

Average Recycling Rate	Display the average recycling rate across all data.	Recycling Rate (%)
Total Energy Usage	Display the total energy usage across all data.	Energy Usage (kWh)
Total Water Consumption	Display the total water consumption across all data.	Water Consumption (liters)
2. Filters		
Region	Filter the data based on geographical regions.	Region
Industry	Filter the data based on specific industries.	Industry
Compliance Level	Filter the data based on compliance levels (e.g., High, Medium, Low).	Compliance Level
Product Type	Filter the data based on product categories.	Product Type
Time Period	Filter data based on a time dimension (if available) or aggregate by year/quarter/month for trends.	Time Dimension (if applicable)

3. Chart Views		
Bar Chart	Display total carbon emissions by region.	Carbon Emissions (kg), Region
Line Chart	Display trends of energy usage over time.	Energy Usage (kWh), Time Dimension
Heatmap	Show recycling rates by region and industry.	Recycling Rate (%), Region, Industry
Pie Chart	Display the distribution of compliance levels.	Compliance Level
Scatter Plot	Show the relationship between carbon emissions and recycling rates, identifying areas for improvement.	Carbon Emissions (kg), Recycling Rate (%)

3. Scope

In Scope:
- Data visualization and interactive filtering for:
  - Carbon Emissions (kg)
  - Water Consumption (liters)
  - Energy Usage (kWh)
  - Waste Generated (kg)
  - Recycling Rate (%)
  - Air Quality Index (AQI)
  - Compliance Levels
- Comparative analysis across regions, industries, and product types.

- Exportable reports and charts.

Out of Scope:
- Predictive analytics or forecasting.
- Real-time data integration.
- Detailed operational-level drill-downs beyond the provided dataset.

4. Stakeholders

- Business Users: Sustainability teams, compliance officers, and operations managers.
- IT Team: Responsible for data integration and Tableau setup.
- Executives: Interested in high-level insights and compliance performance.

5. Data Requirements

- Dataset: The provided dataset contains 50,000 records with the following columns:
  - ID
  - Carbon Emissions (kg)
  - Water Consumption (liters)
  - Energy Usage (kWh)
  - Waste Generated (kg)
  - Recycling Rate (%)
  - Air Quality Index (AQI)
  - Region
  - Industry
  - Product Type
  - Category
  - Subcategory
  - Compliance Level
- Data Format: CSV file, provided as input.
- Data Validation: Ensure data integrity, completeness, and removal of duplicates or inconsistencies.

6. Functional Requirements

- Filters:
  - Region
  - Industry
  - Product Type
  - Compliance Level

- Charts and Visuals:
  - Bar chart: Carbon emissions by region.
  - Line chart: Trends of energy usage over time.
  - Heatmap: Recycling rates by industry and region.
  - Pie chart: Distribution of compliance levels.
  - KPI indicators: Highlight key metrics for each region.

- Interactivity:
  - Dynamic filtering and drill-down capabilities.
  - Hover tooltips displaying additional data.
  - Export options for visuals and underlying data.

7. Non-Functional Requirements

- Performance: Dashboards must load within 5 seconds for up to 100,000 records.
- Accessibility: Ensure compatibility with major browsers and devices.
- Scalability: Prepare for potential integration of additional datasets.

8. Assumptions and Constraints

- The dataset provided is accurate and up-to-date.
- Tableau is the chosen platform for visualization.
- No additional external data sources will be integrated initially.

9. Risks and Mitigation

- Risk: Dataset anomalies or missing data.
  Mitigation: Perform thorough data cleaning and validation.

- Risk: Performance issues with large datasets.
  Mitigation: Optimize Tableau extracts and use aggregated data views.

10. Success Metrics

- Dashboard adoption by key stakeholders.
- Reduction in time taken to generate environmental compliance reports.
- Identification of actionable insights leading to measurable improvements.