Carbon Footprint Tracking Application
Bussiness Requirements Document

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1 Introduction

1.1 Purpose

The purpose of this document is to define the functional requirements for the Personalized Carbon Footprint Tracking Application. This document outlines the key features and functionalities that the system must possess to meet the project objectives.

1.2 Scope

This document covers the functional requirements necessary for the development of the application. It includes user interactions, data input/output, processing requirements, and other system features. Non-functional requirements, such as performance, security, and usability, are not covered in this document.

1.3 Definitions, Acronyms, and Abbreviations

- **CO2**: Carbon Dioxide
- **kWh**: Kilowatt-hour
- **API**: Application Programming Interface
- **LPG**: Liquefied Petroleum Gas

1.4 References

- Project Charter: Personalized Carbon Footprint Tracking Application
- Any other relevant documents or standards

2 System Overview

The Personalized Carbon Footprint Tracking Application is a tool designed to help users understand and reduce their carbon footprint. The application tracks key daily activities, such as electricity usage, travel, water consumption, dietary choices, waste management, and LPG usage, and provides personalized insights to encourage sustainable habits.

3 Functional Requirements

3.1 User Registration and Authentication

- **FR1.1** The system shall allow users to register using their email address.
- **FR1.2** The system shall verify the user's email address through an email verification process.

- **FR1.3** The system shall allow users to log in using their email address and password.
- **FR1.4** The system shall provide a password recovery option for users who have forgotten their password.

3.2 Data Input

- **FR2.1** The system shall provide forms for users to input their electricity usage data (e.g., monthly kWh used).
- **FR2.2** The system shall allow users to log their travel activities, including mode of transport, distance traveled, and fuel type.
- **FR2.3** The system shall allow users to input water consumption data, including monthly liters used and the heating method.
- **FR2.4** The system shall allow users to log their dietary habits, including the amount of meat and vegetables consumed weekly.
- **FR2.5** The system shall allow users to log waste production data, including the amount of waste generated and the percentage recycled.
- **FR2.6** The system shall allow users to input their LPG usage data for cooking or heating purposes.

3.3 Carbon Footprint Calculation

- **FR3.1** The system shall calculate the user's carbon footprint in real-time based on the data inputs provided.
- **FR3.2** The system shall convert electricity usage (kWh) to CO2 equivalent emissions using predefined emission factors.
- **FR3.3** The system shall calculate CO2 emissions from travel based on the mode of transport and distance traveled.
- **FR3.4** The system shall calculate CO2 emissions from water usage, dietary habits, waste production, and LPG usage.

3.4 Personalized Insights

- **FR4.1** The system shall provide personalized recommendations for reducing carbon footprint based on the user's data inputs.
- **FR4.2** The system shall display insights related to each category (electricity, travel, water, dietary, waste, LPG) separately.

3.5 Progress Tracking

- **FR5.1** The system shall display a dashboard showing the user's carbon footprint over time.
- **FR5.2** The system shall allow users to set goals for reducing their carbon footprint and track their progress.
- **FR5.3** The system shall provide visualizations (e.g., graphs, charts) to illustrate the user's progress towards their goals.

3.6 API Integration

- **FR8.1** The system shall integrate with external APIs to fetch real-time data, such as the carbon intensity of the energy grid.
- **FR8.2** The system shall process and store the data retrieved from external APIs for use in carbon footprint calculations.

4 Assumptions and Dependencies

- The system assumes that users will have regular access to the internet.
- The system assumes that necessary APIs for real-time data will be available and reliable.
- The system is dependent on the accuracy of user-provided data for reliable carbon footprint calculations.

5 Acceptance Criteria

- The system must be able to handle the registration, authentication, and data input for at least 1000 concurrent users.
- The system must calculate and display the carbon footprint within 2 seconds of data entry.
- The system must provide accurate carbon emission calculations based on the user inputs and predefined emission factors.
- The system must provide personalized insights that are relevant to the user's lifestyle and habits.