**Project Initialization and Planning Phase**

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| Date | 13 June 2025 |
| Team ID | SWTID1749709340 |
| Project Title | Predicting Co2 Emission by countries Using Machine Learning |
| Maximum Marks | 3 Marks |

**Project Proposal (Proposed Solution) template**

This project proposal outlines a solution to address a specific problem. With a clear objective, defined scope, and a concise problem statement, the proposed solution details the approach, key features, and resource requirements, including hardware, software, and personnel.

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| **Project Overview** | |
| Objective | To develop a machine learning-based web application that predicts CO₂ emissions of countries based on user-provided year and country input for aiding policy planning and environmental research. |
| Scope | The project covers data collection, preprocessing, training regression models, developing a web interface for user input, visualizing prediction results, and deploying the application for public and academic use. |
| **Problem Statement** | |
| Description | It is difficult for policymakers, researchers, and citizens to predict future CO₂ emissions for countries easily, as available data is static, scattered, and not user-friendly. This hinders effective planning and climate research. |
| Impact | Solving this enables data-driven climate action, easy trend analysis, and informed policy decisions by providing accessible, interactive, and accurate CO₂ emission forecasts for each country. |
| **Proposed Solution** | |
| Approach | We will collect historical CO₂ emission data, preprocess and train machine learning regression models, and integrate them with a Flask-based web application where users can input a country and year to receive predictions with visual plots |
| Key Features | - User-friendly web interface for input and prediction - Country-wise CO₂ emission prediction with graphical visualization - Uses machine learning for accurate forecasts - Accessible for policymakers, researchers, and students |

**Resource Requirements**

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| **Resource Type** | **Description** | **Specification/Allocation** |
| **Hardware** | | |
| Computing Resources | CPU for development, model training, and testing | Intel i5/i7, 4 cores |
| Memory | RAM for data processing and model execution | 8 GB |
| Storage | Storage for datasets, models, logs | 256 GB SSD |
| **Software** | | |
| Frameworks | Python frameworks | Flask |
| Libraries | Additional Python libraries | scikit-learn, pandas, numpy  matplotlib |
| Development Environment | IDE, version control | Jupyter Notebook, GitHub |
| **Data** | | |
| Data | Source, size, format | Kaggle/World Bank CO₂ dataset, CSV format |