

Executive Summary

Project Title: Global Warming - Fact or Fiction?

Team Members: Danielle Dejean, Kaidon Kennedy, Carolyn Scheese, Harpreet Singh

Date: August 6, 2024

Objective: This project aims to explore the evidence and impacts of global warming by analyzing environmental data sets, focusing on the role of CO₂ and other greenhouse gases, temperature changes, and potential correlations.

Project Goals:

- Analyze temperature changes over 25 years (1995-2020) across countries and continents.
- Examine CO₂ emissions and their impact on surface temperatures.
- Develop prediction models for temperature increases using country data.

Methodology:

- Data collection from Kaggle and other sources.
- Data cleaning, merging, and preparation for analysis.
- Creation of 9 data visualizations to illustrate findings.

Results:

- Significant temperature differences observed in regions like Cyprus and Thailand.
- CO₂ emissions vary greatly, with Qatar showing the highest increase and Malawi the lowest.
- Europe experienced the highest temperature changes, while North America saw the least.
- No direct 1:1 correlation between CO₂ levels and temperature variability, but higher CO₂ generally leads to more predictability.

Conclusion: The project highlights the complexity of global warming, emphasizing the need for a multi-faceted approach combining emission reduction and adaptation strategies. Further research is required to clarify the correlations and impacts of various factors on global warming.

Key Findings from Research - Background:

1. Greenhouse Gases and Temperature Increases:

- CO₂, methane, and nitrous oxide are significant contributors to the enhanced greenhouse effect.
- Critics suggest considering other factors like solar radiation and volcanic activity.

2. Temperature Trends:

- Data from the past 50 years show a clear warming trend.
- Predictive models need refinement to capture natural climate variability.

3. Mitigation and Adaptation:

- Emphasis on reducing greenhouse gas emissions through technology and regulation.
- Importance of adaptation strategies to enhance resilience, especially in vulnerable communities.

4. Equity and Policy:

- International efforts like the Paris Agreement focus on reducing emissions with differentiated responsibilities.
- Policies should balance historical emissions from developed nations and developmental needs of emerging economies.