



# Title- Community Mapping and Air Quality Analysis: Visualizing Health Impacts

## Challenge-Community Mapping

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Team name –INITIATORS  
Solution Category: Data  
analysis and visualization



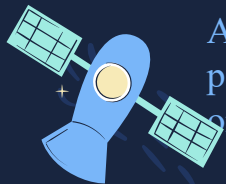
# Community issue:



In this project, we have taken air quality's impact on health as a community issue, recognizing that poses serious risks to the well-being of global populations.

## Impact of this issue:

- The impact of poor air quality on both community and global levels is profound and far-reaching. Locally, air pollution can lead to severe health issues such as respiratory diseases, cardiovascular problems, and increased mortality rates, particularly among vulnerable populations like children, the elderly, and individuals with pre-existing health conditions.
- Communities facing hazardous air quality experience not only immediate health crises but also long-term consequences such as increased healthcare costs and reduced quality of life.
- On a broader scale, air pollution contributes to global challenges like climate change, with greenhouse gas emissions and particulate matter exacerbating global warming and environmental degradation.
- These issues transcend borders, affecting ecosystems, weather patterns, and overall planetary health. Addressing air quality at the community level is crucial for mitigating these global effects, as reducing pollution locally contributes to the worldwide effort to combat climate change and protect public health on a global scale.





# Solution overview

The primary solution offered by our project is the development of an interactive dashboard designed to analyze air quality data and its health impacts within communities.

This solution aims to provide a comprehensive understanding of air quality issues and facilitate informed decision-making for stakeholders.

Key components of the solution include:

## Interactive Data Visualization:

The dashboard features geographical mapping that visualizes air quality levels across different communities, categorizing areas into Good, Moderate, or Hazardous based on the Air Quality Index (AQI).

This allows users to quickly identify regions with significant health risks.





## Comprehensive Data Analysis:

The project utilizes a robust dataset that includes not only air quality metrics (like CO, NH<sub>3</sub>, NO, NO<sub>x</sub>, O<sub>3</sub>, SO<sub>2</sub> and NO<sub>2</sub> levels) but also average temperature data.

By analyzing these factors together, we can gain insights into how temperature fluctuations may exacerbate pollution levels and impact health.

## Health Impact Assessment:

The dashboard provides clear visual representations of the health impacts associated with varying air quality levels. Users can see correlations between air quality, temperature, and health risks, helping to raise awareness about the urgency of addressing these issues.

## Tools and technologies used :

Data processing, analysis and Visualization: Power BI, ArcGIS

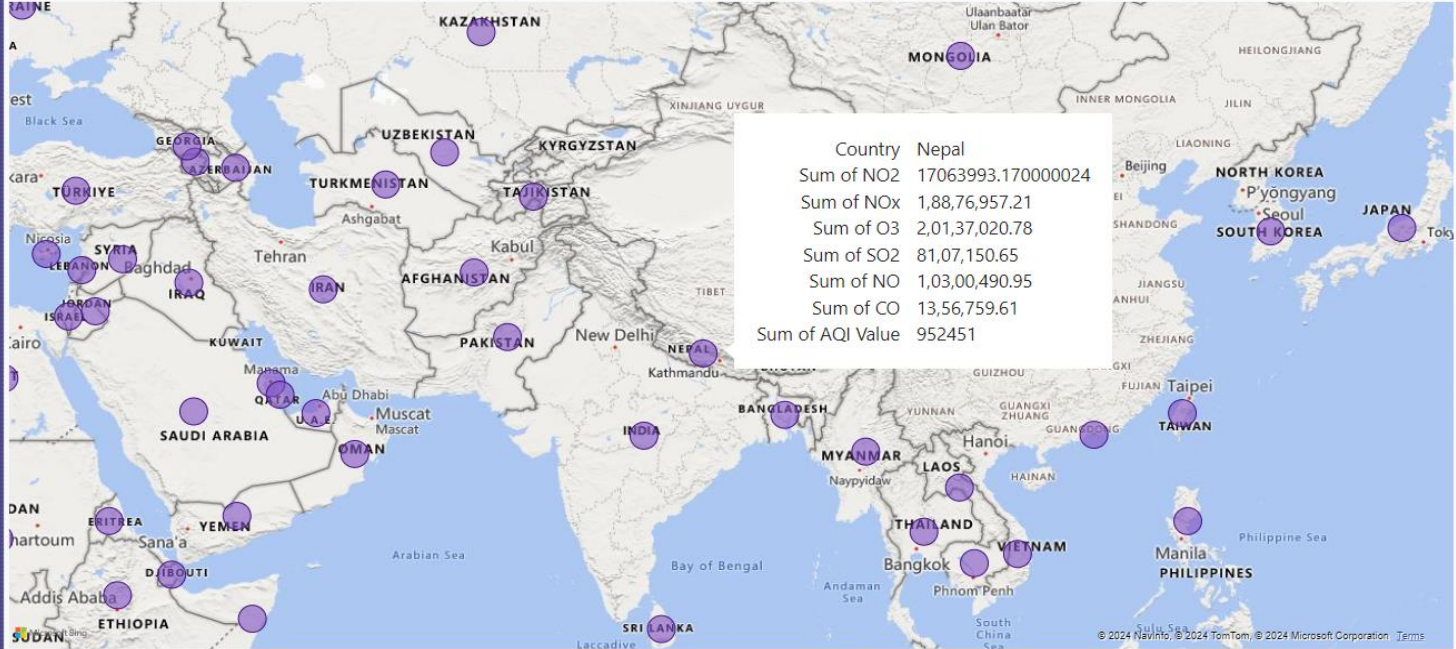


# Dash Board Overview

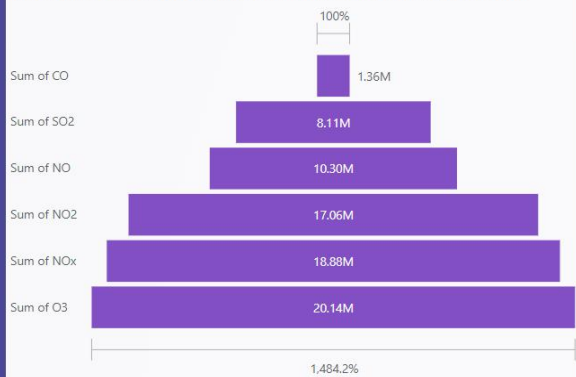


## Community Mapping and Air Quality Analysis: Visualizing Health Impacts

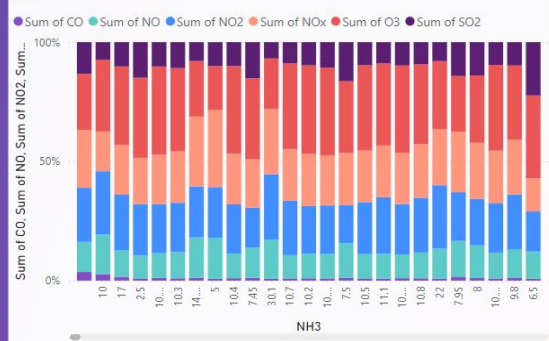
Sum of NO2, Sum of NOx, Sum of O3, Sum of SO2, Sum of NO, Sum of CO and Sum of AQI Value by Country



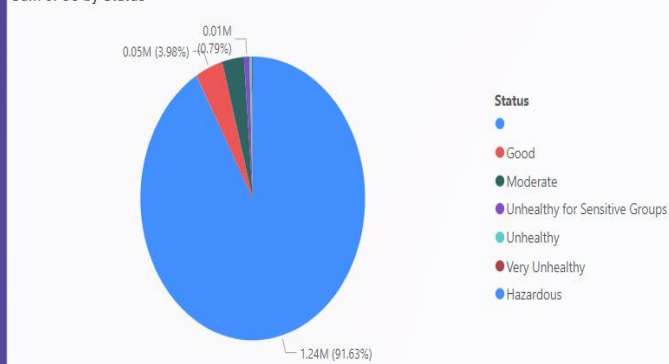
Sum of CO, Sum of SO2, Sum of NO, Sum of NO2, Sum of NOx and Sum of O3



Sum of CO, Sum of NO, Sum of NO2, Sum of NOx, Sum of O3 and Sum of SO2 by NH3

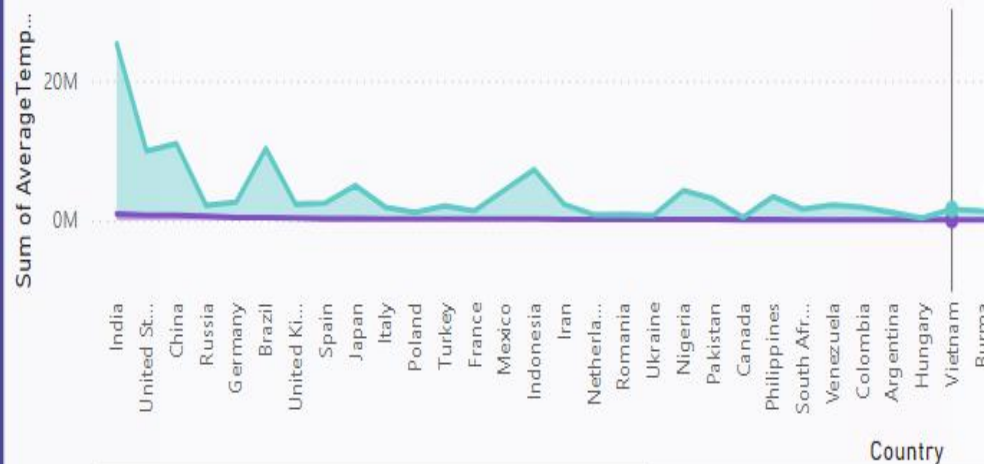


Sum of CO by Status



Sum of AverageTemperatureUncertainty and Sum of AverageTemperature by Country

Sum of AverageTemperatureUncertainty (purple dot) Sum of AverageTemperature (teal dot)



### Vietnam

Sum of AverageTemperatureUncertainty 42,796.67  
Sum of AverageTemperature 15,45,994.33



# Conclusion

- In conclusion, our community mapping and air quality analysis project serves as a vital tool for understanding the intricate relationship between air quality and public health.
  - By providing an interactive dashboard that visualizes air quality data, assesses health impacts, and promotes community engagement, we empower local stakeholders to make informed decisions and take proactive steps towards improving air quality.
- The integration of temperature data further enriches our analysis, highlighting the complex interactions between environmental factors and health outcomes.
- As air quality continues to pose significant challenges at both community and global levels, our project not only addresses localized issues but also contributes to a broader understanding of the urgent need for collective action.
- By advocating for sustainable policies and fostering community awareness, we can work together to mitigate the effects of pollution, enhance public health, and contribute to a cleaner, more sustainable future for all.
- Ultimately, this project underscores the critical importance of clean air as a fundamental human right and a shared responsibility that transcends borders, encouraging collaboration and commitment towards a healthier planet.