

Title: Global Air Pollution Dashboard using Power BI

## 1. Overview

This project focuses on analyzing worldwide air pollution data using interactive data visualization techniques in Power BI. The dashboard provides actionable insights into pollution levels across countries, pollutant types, and time ranges, enabling environmental tracking and policy recommendations.

## 2. Objectives

To visualize global pollution levels geographically and temporally

To identify countries and cities with the highest pollution exposure

To provide user-driven insights using slicers, drill-through, and filters

To design a clean, modern, and interactive analytics dashboard

## 3. Dataset Information

Source: Kaggle – World Air Quality Data

Fields Used: Date, Country, City, Pollutant, Latitude, Longitude, AQI

Volume: ~3 million records from multiple countries

## 4. Tools & Technologies

Power BI Desktop

DAX (Data Analysis Expressions)

Power Query (ETL & data cleaning)

Bookmarks & Selection Pane (for slicer panel)

Drill-Through pages

KPI Cards, Line Chart, Map Visual, Bar Chart



## 5. Dashboard Features

- ◆ KPI Cards: Total Readings, Unique Cities
- ◆ Map Visual: Pollution levels by geographic location
- ◆ Line Chart: Pollution trend over time
- ◆ Bar Chart: Top pollutants and their frequency
- ◆ Drill-through Page: Country-specific insights
- ◆ Slicers: Country, Pollutant, Date
- ◆ Collapsible Slicer Panel: Toggle filters with a button using bookmarks



## 6. Data Cleaning Steps

Removed duplicates

Filtered out rows with null pollutant, date, or coordinates

Verified valid city entries

Related date dimension table with primary dataset

Built calculated columns and measures with DAX

## ☐ 7. Key Insights

India and China have the highest pollutant readings

PM2.5 and NO2 are the most frequently occurring pollutants


Pollution peaks in winter months in industrial regions


Some cities lack data for certain pollutants — indicating data collection gaps

## ☒ 8. Conclusion

The dashboard effectively highlights global air pollution patterns and provides flexible filtering by country, pollutant type, and time. The inclusion of interactive components like drill-through and slicer panels gives users a dynamic view of the data, making this project both insightful and industry-aligned.

## ☐ 9. Recommendations

 Governments can prioritize monitoring in high-risk areas identified by the dashboard

 Industries in pollution-heavy cities should implement emission control strategies

☒ Future enhancements could integrate real-time air quality APIs for live data monitoring

☐ Encourage data consistency across all countries to avoid blank segments (e.g., cities missing in Japan)