🌦️ Weather Analytics Dashboard – Project Report

🔎 Project Overview

In this project, I developed a **real-time weather monitoring system** by connecting to a **live API**. The data was processed, visualized, and presented in **Power BI** to provide city-wise insights, forecasts, and environmental metrics.

📍 Current Weather Conditions

The dashboard highlights current weather for multiple cities:

Agra

26.6 °C

Clear skies

Ajmer

28.3 °C

Warm & dry

Hyderabad

24.1 °C

Light rain showers

Korba

26 °C

Rain & high humidity (86%)

💡 This allows real-time comparison of weather across locations.

📅 Forecast Insights

The 7-day forecast (from the API) shows two distinct patterns:

1	2

Dry Regions

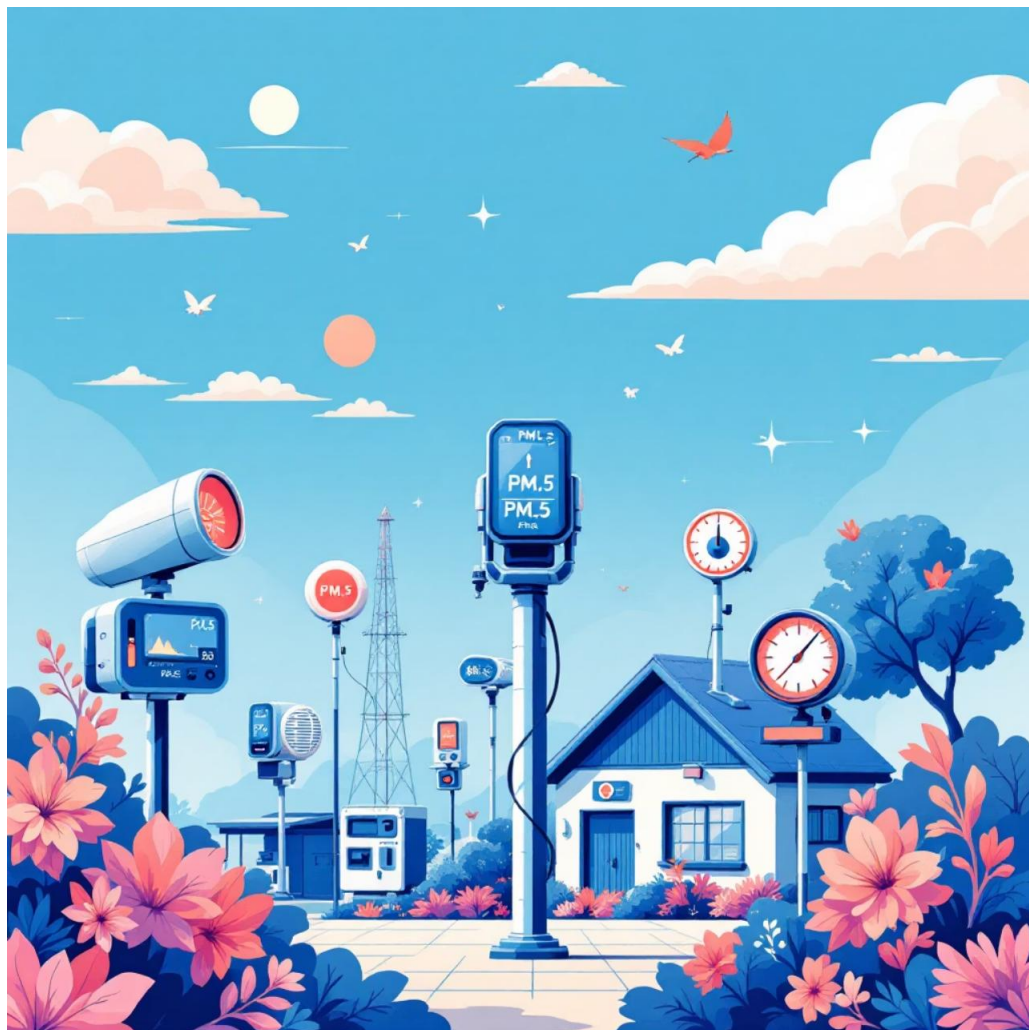**Agra & Ajmer** → Consistently dry and warm (26–29 °C).

Wet Regions

Hyderabad & Korba → Persistent rainfall, with precipitation probability above 85% daily.

📊 This demonstrates the power of API-driven forecasting inside Power BI.

🌍 Air Quality Monitoring

The API also provides comprehensive air quality metrics, including AQI, PM2.5, PM10, CO, SO2, and O3 levels across all monitored locations.

> ⊘ For example, **Korba's AQI is 46 (Good)** → Clean and healthy air quality conditions.

✅ This integration shows how multiple datasets (weather + air quality) can be combined into one comprehensive report.
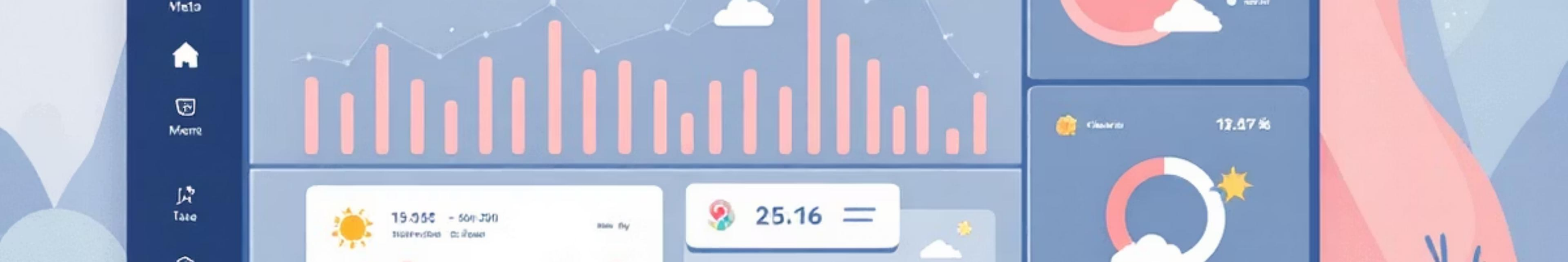
🚀 Key Learnings & Features

01

API Integration

Built live connection to fetch weather & environmental data from external sources.

02

Data Modeling in Power BI

Cleaned, structured, and modeled the dataset for optimal visualization performance.

03

Visualization & Storytelling

Designed interactive dashboards showing current conditions, 7-day forecast, air quality analysis, sunrise/sunset, humidity, wind speed, and pressure.

04

Real-Time Updates

Dashboard refreshes automatically with live data directly from API calls.

📖 Project Takeaway

This project demonstrates how **real-time API data can be transformed into business-ready insights**. By integrating weather and air quality metrics, the dashboard provides a **holistic environmental monitoring solution** valuable across multiple industries:

Logistics & Transportation

Route optimization based on weather conditions and air quality alerts.

Event Planning

Strategic scheduling and contingency planning for outdoor activities.

Agriculture

Crop management decisions based on precipitation and temperature forecasts.

Smart Cities & IoT

Urban planning and environmental monitoring for sustainable city development.