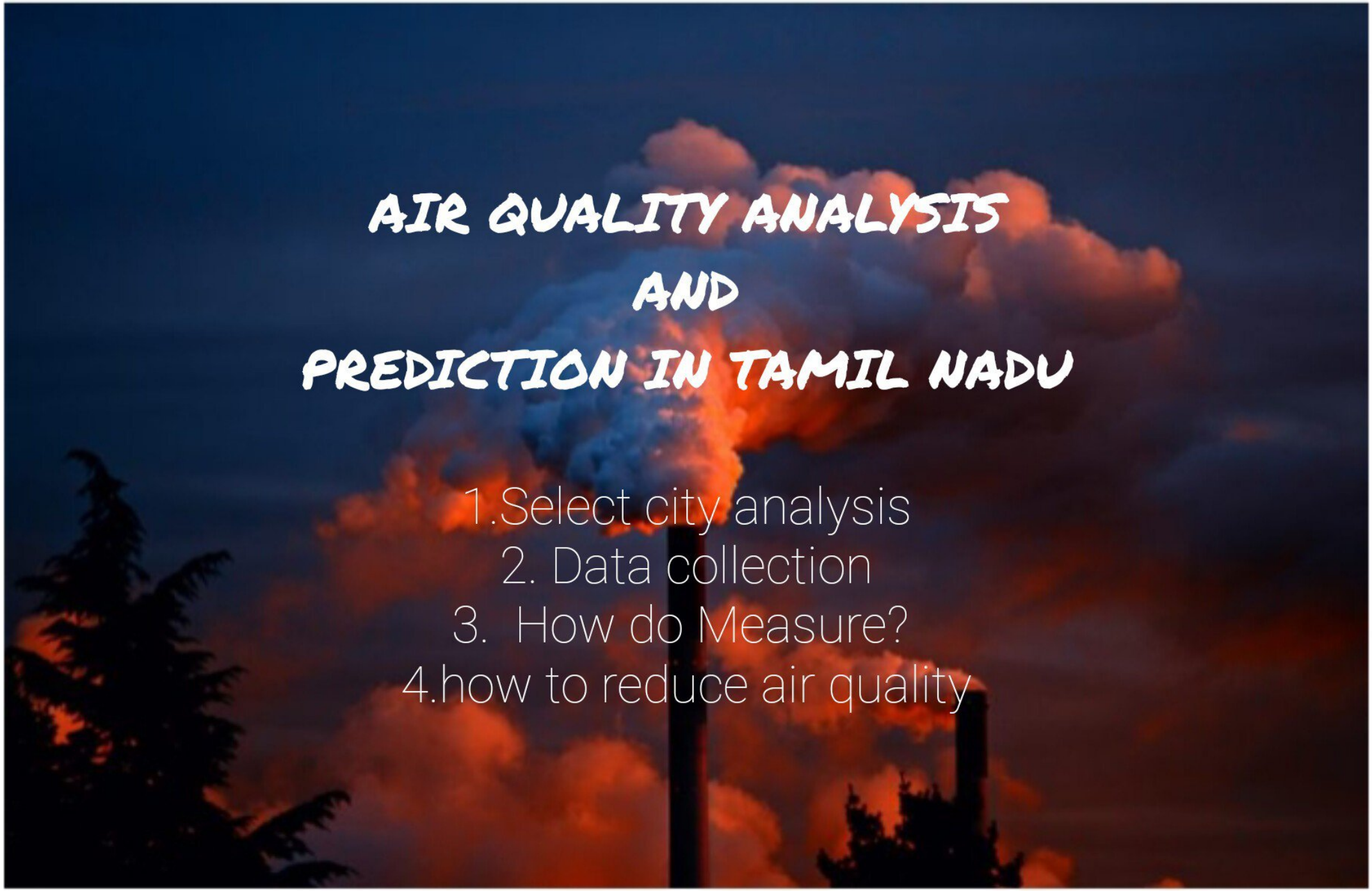
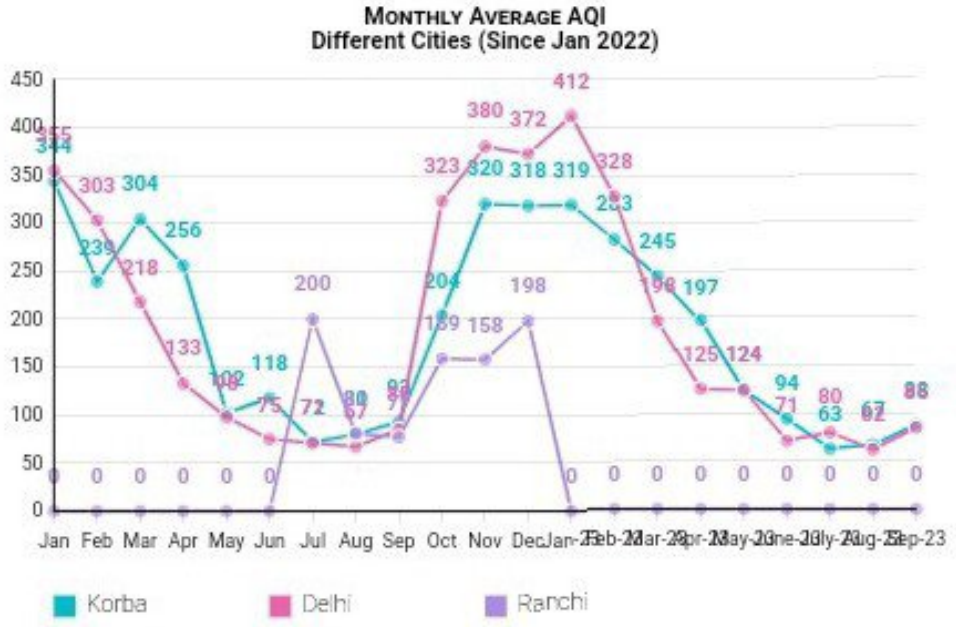

AIR QUALITY ANALYSIS
AND
PREDICTION IN TAMIL NADU
1.Select city analysis
2. Data collection
3. How do Measure?
4.how to reduce air quality

AIR POLLUTION refers to the release of **pollutants** into the **air** that is detrimental to human health and the planet as a whole.

Air Quality Selected Locations

For Date - 4 October 2023

City / State	PM2.5	PM10	AQI
Korba	59	62	98
Delhi	67	76	124



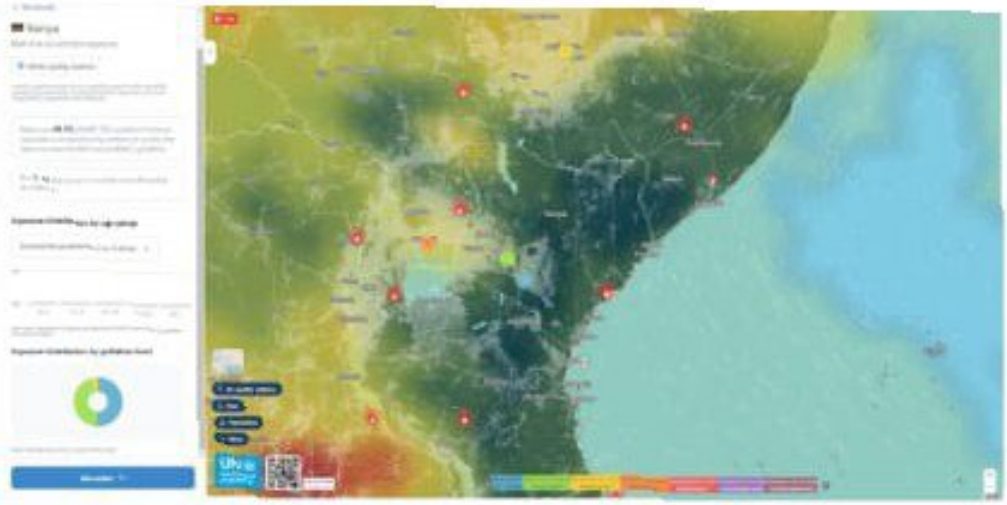
Data

This data is a cleaner version of the Historical Daily Ambient Air Quality Data released by the Ministry of Environment and Forests and Central Pollution Control Board of India under the National Data Sharing and Accessibility Policy (NDSAP).

The dataset contains the following features :

1. **stn_code** : Station code. A code is given to each station that recorded the data.
2. **sampling_date**: The date when the data was recorded.
3. **state**: It represents the states whose air quality data is measured.
4. **location**: It represents the city whose air quality data is measured.
5. **agency**: Name of the agency that measured the data.
6. **type**: The type of area where the measurement was made.

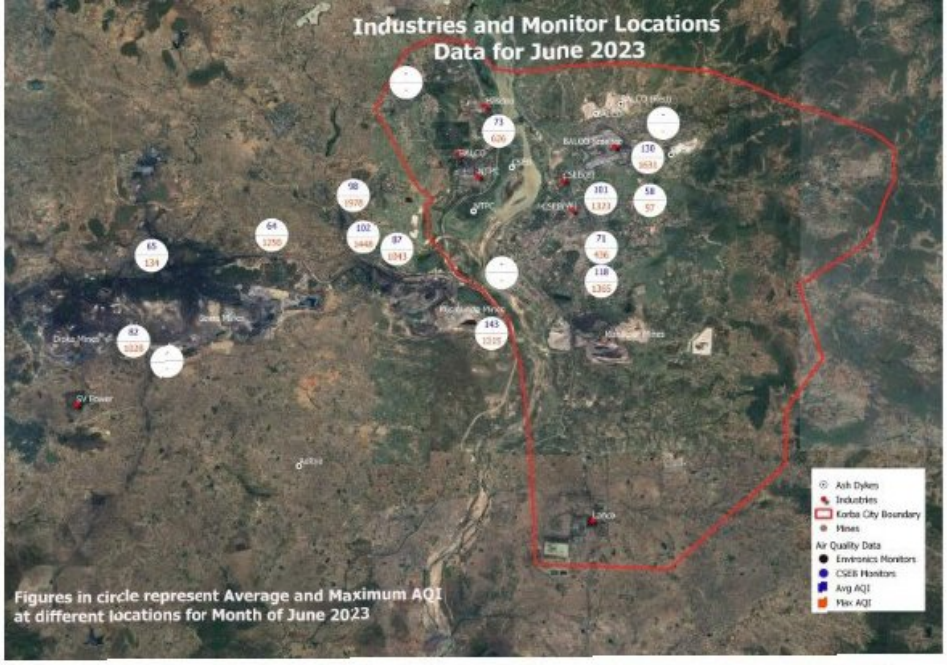
How is air quality measured?



Real-Time Air Pollution Exposure in Kenya. Credit: UNEP

Air pollutants come from a variety of sources, including human-caused emissions – like fossil fuel use in vehicles and cooking – and natural sources, such as dust storms and smoke from wildfires and volcanoes.

Air quality monitors are outfitted with sensors designed to detect specific pollutants. Some use lasers to scan particulate matter density in a cubic metre of air, while others rely on satellite imaging to measure energy reflected or emitted by the Earth.



Air Pollution is a big issue in India especially in the Northern part. However, even though the issue is highlighted in the media and lot of steps are announced by the government to curtail air pollution, situation on the ground remain unchanged to a large extent. With the onset of monsoon, the problem takes a back seat as the air quality improves due to favourable weather conditions and the governments start claiming that the improvement is due to their efforts. This issue needs to eb taken seriously and permanent solutions found so that air quality improves all year round. Below is a brief representation of data captured by portable devices installed in multiple locations in Korba and Delhi. The analysis has been done for two reporting periods – 1 June to 30 June 2023 and Jan 2022 to June 2023. **Section 1 – Data Analysis for period Jan 2022 to June 2023**

3. Data Cleaning

3.1. Handling Outliers

From Table 4, the maximum and minimum possible values for the weather dataset can be inferred as shown below:

Band	Dew (°C)	Temperature (°C)	Wind Direction (°)	Wind Speed (Km/Hour)	Humidity (%)
Minimum	-98.2	-93.2	1	0	0
Maximum	36.8	61.8	360	324	100

Table 4: Limits for weather features

Since these values are obtained from the reference for the weather dataset, any value outside these limits can be considered as outliers and confidently discarded.

The London Air Quality Network (LAQN) specifies the following values for the different bands of pollutants [4]:

Band	Index	O_3 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	PM2.5 ($\mu g/m^3$)
Low	1-3	0-100	0-200	0-35
Moderate	4-6	101-160	201-400	36-53
High	7-9	161-240	401-600	54-70
Very High	10	241 or more	601 or more	71 or more

Ways to Reduce Air Pollution in Cities

Ways to Reduce Air Pollution in Cities are using Public transportation, Control emissions from industries, Promote Green Spaces & Electric vehicles.

Air pollution is a major problem affecting cities worldwide. The concentration of harmful pollutants in cities poses serious health risks for living beings and contributes to environmental degradation.

Luckily, there are multiple strategies and measures that can be implemented to reduce air pollution and create cleaner, healthier cities.

Five practical ways to improve your air quality at home:

1. Think about the air pollution that's coming from inside your home.

2. Keep your house as dust-free as possible.

3. Check, remove, and prevent mold.

4. Consider getting an air cleaner.

5. Test your air quality and monitor your air with air sensors.

CONCLUSION

While the effects of air pollution on materials, vegetation, and animals can be measured, health effects on humans can only be estimated from epidemiological evidence. Most of the evidence comes from occupational exposure to much higher concentrations of pollutants than the general public is exposed to. Moreover, the health effects of smoking and other lifestyle characteristics and exposures confound the observations of air pollutant effects. Ethical considerations preclude deliberate exposure of human subjects to concentrations of pollutants that might produce adverse effects, so evidence from sources other than epidemiology is virtually impossible

epidemiology is virtually impossible to obtain. All of the evidence we have suggests that air pollutants threaten human health and well-being to an extent that control of these pollutants is necessary.