World Air Quality Report 2020

Why in News

The **World Air Quality Report,** prepared **by Swiss organisation IQAir,** mentions that **22 of the top 30 most polluted cities globally are in India.**

- The Report **aggregated PM2.5 data from 106 countries.**

PM 2.5

- It is an atmospheric particulate matter of diameter of fewer than 2.5 micrometres, which is around 3% the diameter of a human hair.
- It causes respiratory problems and also reduces visibility. It is an endocrine disruptor that can affect insulin secretion and insulin sensitivity, thus contributing to diabetes.
- It is very small and can only be detected with the help of an electron microscope.
- Some are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks or fires.
- Most particles form in the atmosphere as a result of complex reactions of chemicals such as sulfur dioxide and nitrogen oxides, which are pollutants emitted from power plants, industries and automobiles.

Key Points

- **World Capital City Ranking:**
    - **Delhi** has been ranked as the **world's most polluted capital city** followed by **Dhaka (Bangladesh), Ulaanbaatar (Mongolia), Kabul (Afghanistan), Doha (Qatar).**
- **World Country Ranking:**
    - **Bangladesh** has been ranked as the **most polluted country followed by Pakistan and India.**
    - The **least polluted country** is **Puerto Rico, followed by New Caledonia, US Virgin Islands** respectively.
- **World City Ranking:**
    - **Hotan in China** is the **most polluted city** with an average concentration of 110.2 µg/m³ **followed by Ghaziabad in Uttar Pradesh at 106.**
- **Indian Scenario:**
    - Shows a **boost in Delhi's air quality** by approximately **15% from 2019 to 2020.**
        - Delhi has been listed as the **10th most polluted city** and the **top polluted capital city in the world.**
    - **Ghaziabad is the second most polluted city in the world** followed by Bulandshahar,

Bisrakh Jalalpur, Bhiwadi, Noida, Greater Noida, Kanpur and Lucknow.
    - Compared to **north Indian cities,** the cities in the **Deccan recorded relatively better air quality,** remaining above the daily WHO limits of 25 µg/m3 for most part of 2020.
        - However, **every city in India observed air quality improvements compared to 2018 and earlier,** while 63% saw direct improvements against 2019.
    - **Major sources of India's air pollution** include transportation, biomass burning for cooking, electricity generation, industry, construction, waste burning, and episodic agricultural burning.
        - 2020 was a particularly **severe year for agricultural burning** in which farmers set fire to crop residue after a harvest. **Farm fires in Punjab increased 46.5% over 2019.**
- **Covid and Its Impact :**
    - In 2020, the spread of Covid-19 raised new concerns as **exposure to particle pollution was found to increase vulnerability to the virus and its impact on health.**
    - Early reports suggest that the **proportion of Covid-19 deaths attributed to air pollution exposure ranges from 7% to 33%.**

Air Pollution in Delhi

- Air pollution in Delhi-NCR and the Indo Gangetic Plains is a complex phenomenon that is dependent on a variety of factors.
- **Change in Wind Direction:**
    - October usually marks the withdrawal of **monsoons** in Northwest India and during this time, the predominant direction of winds is northwesterly.
    - The direction of the wind is northwesterly in summers as well, which brings the dust from northern Pakistan and Afghanistan.
- **Reduced Wind Speed:**
    - High-speed winds are very effective at dispersing pollutants, but winters bring a dip in wind speed overall as compared to in summers which makes the region prone to pollution.
    - Also, Delhi lies in a landlocked region which does not have a geographical advantage that eastern, western or southern parts of the country enjoy where the sea breeze disperses the concentrated pollutants.
- **Stubble Burning:**
    - Stubble burning **in Punjab, Rajasthan and Haryana is blamed for causing a thick blanket of smog in Delhi during winters.**
        - It **emits large amounts of toxic pollutants in the atmosphere** which contain harmful gases like methane (CH4), carbon monoxide (CO), volatile organic compounds (VOC) and carcinogenic polycyclic aromatic hydrocarbons.
    - Farm fires have been an easy way to get rid of paddy stubble quickly and at low cost for several years.
- **Vehicular Pollution:**
    - It is **one of the biggest causes of dipping air quality in Delhi** in winters and around 20% of **PM2.5** in winters comes from it.
- **Dust Storms:**
    - **Dust storms from Gulf countries enhance the already worse condition.** Dry cold weather means dust is prevalent in the entire region, which does not see many rainy days between October and June.
    - **Dust pollution contributes to around 56%** of PM10 and the PM2.5 load.
- **Dip in Temperatures:**

- As temperature dips, the **inversion height is lowered and the concentration of pollutants in the air increases** when this happens.
    - **Inversion height** is the layer beyond which pollutants cannot disperse into the upper layer of the atmosphere.
- **Firecrackers:**
    - Despite the ban on cracker sales**, firecrackers are a common sight on Diwali.** It may not be the top reason for air pollution, but it definitely contributed to its build-up.
- **Construction Activities and Open Waste Burning:**
    - Large-scale construction in Delhi-NCR is another culprit that is increasing dust and pollution in the air. Delhi also has landfill sites for the dumping of waste and burning of waste in these sites also contributes to air pollution.

Major Measures Taken

- **Subsidy to farmers for buying Turbo Happy Seeder (THS)** which is a machine mounted on a tractor that cuts and uproots the stubble, in order to reduce stubble burning.
- The **introduction of** BS-VI vehicles, push for **electric vehicles** (EVs), **Odd-Even** as an emergency measure and **construction of the Eastern and Western Peripheral Expressways to reduce vehicular pollution.**
- **Implementation** of the **Graded Response Action Plan** (GRAP) to tackle the rising pollution in the Capital. It includes measures like shutting down thermal power plants and a ban on construction activities.
- **Development of the National AQI** for public information under the aegis of the **Central Pollution Control Board** (CPCB). AQI has been developed for eight pollutants viz. PM2.5, PM10, Ammonia, Lead, nitrogen oxides, sulfur dioxide, ozone, and carbon monoxide.

Way Forward

- Appropriate political will and aware citizenry is a prerequisite to tackle the menace, otherwise, all the measures will remain on paper only and greater public transparency is essential to the success of winning the war on air pollution.
- There is no better watchdog than active citizens, which is why the pollution targets must be made public every year for their perusal and to be evaluated at the end of the year.
- Breathing clean air is a fundamental right of every Indian citizen. Therefore, human health must become a priority when it comes to tackling air pollution.

Source: IE