



Right to Breathe at Risk

*This article is based on [“The weakest link in the air pollution fight”](#) which was published in *The Hindu* on 02/11/2022. It talks about the issue related to air pollution in India and related regulatory challenges.*

For Prelims: PM2.5, PM10, Mercury Emissions, Stubble Burning, National Ambient Monitoring Programme (NAMP), Smog, System of Air Quality and Weather Forecasting and Research (SAFAR) Portal, Graded Response Action Plan, Net Zero Emission, Electric Vehicles (EVs), National Clean Air Strategy

For Mains: Major Sources of Air Pollution, Issues Associated with Air Pollution in India, Initiatives taken by India for Controlling Air Pollution.

In recent years, [Air Pollution](#) has acquired critical dimensions and the air quality in most Indian cities fail to meet [WHO guidelines](#) for safe levels.

According to the report of [The Lancet Planetary Health](#), Air pollution was responsible for 16.7 lakh deaths in India in 2019, or 17.8% of all deaths in the country that year and air pollution is most severe in the **Indo-Gangetic Plain**. [Burning of biomass in households](#) was the single largest cause of air pollution deaths in India, followed by **coal combustion**.

The levels of [PM2.5 and PM10](#) as well as concentration of dangerous carcinogenic substances such as **Sulphur Dioxide (SO₂)** and **Nitrogen Dioxide (NO₂)** have reached alarming proportions in most Indian cities, putting people at additional risk of respiratory diseases and other health problems.

At the rate with which air pollution is increasing in the country, **immediate action has become an absolute necessity**. It is therefore necessary to **revitalise the government's efforts to curb this menace**.

What are the Major Sources of Air Pollution?

- **Urbanisation:** Rising [urbanisation](#) and associated anthropogenic activities such as construction are the prime reasons that lead to air pollutant emissions and poor air quality.
 - It is expected that by 2030, around **50% of the global population will be residing in urban areas**, further contributing to air pollution.
 - A result of urbanisation is the presence of large numbers of cars and other vehicles on the roads that **contribute to traffic congestion on the roads**, affecting the air quality of that particular area to a great extent.
- **Burning of Fossil Fuels:** Air pollution takes place due to the [incomplete burning of fossil fuels](#). These include **coal, oil, and gasoline** that are used to produce energy for electricity and transportation.
 - When fossil fuels are burned, they emit more than just CO₂:
 - Coal-fired power stations alone account for **80% of harmful mercury emissions** in

India.

- The great majority of **dust (particle pollution)** is released in our air due to fossil fuel burning.
- **Industrial Emission: Particulate matter 2.5 and 10, NO₂, SO₂, and CO** are key pollutants that are emitted from industries that use **coal and wood as their primary energy source** for the production of their goods.
- **Agriculture & Allied Sources:** The farming industry is one of the sources of pollution due to **ammonia** produced from livestock manure and fertilisers, which blows into the cities.
 - Further, **stubble burning** is also one of the major sources of air pollution in **Northern India**, especially in winters.
- **Household Pollution:** Use of toxic products also called **Volatile Organic Compounds (VOCs)**, **inadequate ventilation, uneven temperature, and humidity level** can cause indoor air pollution.
 - The use of **wood stoves or space heaters** is capable of increasing the humidity level which can directly affect the health of a person in no time.
 - Carcinogens and toxins from indoor air pollution cause **17% of deaths** from **lung cancer**.
- **Climate Change Induced Wildfire:** The average temperature is increasing day by day due to the greenhouse effect. As a result, the **rise in temperature affects the rate of wildfires**.
 - **Climate change** is not just increasing wildfire but also spiking **air pollution**. It causes **increased PM_{2.5}** in the air which collides with other harmful substances like **chemical gas** and pollen creating **smog**.

What are the Issues Associated with Air Pollution in India?

- **Rural Negligence:** Air pollution in India is generally **perceived as a problem of the cities and by the cities**. Quite predictably, solutions have been designed for the cities. **Initiatives to alleviate poor air quality remain conspicuously absent in rural areas**.
 - **96% Air quality monitoring stations are within the city** boundaries and do not cover surrounding rural hamlets.
 - And within the arena of cities, tier-2 and tier-3 cities receive less attention, For instance, India has **804 manual monitoring stations under the National Ambient Monitoring Programme (NAMP)** and **274 real-time monitoring stations (CAAQMS)**.
 - Most of these are disproportionately located in tier-1 cities and a few are in tier-2 cities.
 - Also, many **State Pollution Control Boards and Pollution Control Committees are falling short in meeting their statutory mandate**.
- **Toll on Indian Economy:** A World Bank report titled **'Diagnostic Assessment of Select Environmental Challenges in India'** highlighted that the **annual cost of air pollution**, specifically pollution from particulate matter (burning of fossil fuels) **amounts to 3% of the GDP of the country**, outdoor air pollution accounting for 1.7% and indoor air pollution for 1.3%.
 - Therefore, it is clear that air pollution takes its toll on the Indian economy to a great extent.
- **Health Hazard:** The **Air Quality Life Index** shows that **particulate matter pollution reduces life expectancy more than communicable diseases**.
 - Inhaling air induced with pollutants due to the burning of natural gas and fossil fuel **reduces the heart's ability to pump enough oxygen**. Hence causing one to suffer from **various respiratory and heart illnesses**.
 - Furthermore, the **nitrogen oxides are responsible for acid rain** that increases the **chances of skin cancer**.
 - Not only humans but **animals too are affected by air pollution**, it adversely affects their **lungs, triggers asthma** and causes **chronic obstructive pulmonary disease**.
- **Disproportionate Impact on Women:** Research has established that women are disproportionately affected by household air pollution caused by **burning biomass**.
 - Air pollution is also linked to **higher rates of miscarriages, pregnancy complications and stillbirths, affecting women's reproductive health**.
- **Ecological Imbalance:** Air pollution can **damage crops and trees in a variety of ways**. Ground-level ozone can lead to **reductions in agricultural productivity and commercial forest yields**, reduced growth and survivability of tree seedlings, and **increased plant**

susceptibility to disease, pests and other environmental stresses (such as harsh weather).

What are Initiatives taken by India for Controlling Air Pollution?

- [System of Air Quality and Weather Forecasting and Research \(SAFAR\) Portal](#)
- [Graded Response Action Plan \(for Delhi\)](#)
- [Turbo Happy Seeder](#) and [Microbe Pusa](#) (for reducing stubble burning)
- [National Air Quality Monitoring Programme \(NAMP\)](#)

What Should be the Way Forward?

- **Link Zero Emissions with Human Rights:** Air pollution needs to be recognized more as a **human right issue rather than merely as an environmental challenge**, and should be linked with the [mission of net zero emission](#). (by 2070)
 - The [UN General Assembly \(UNGA\)](#) has also passed a resolution recognizing the **right to a clean, healthy, and sustainable environment as a human right**.
- **Green-Transition Finance:** There is a need to **create a financial architecture that can mobilise private finance for clean-air solutions in India**. Green sectors such as **clean energy and e-mobility** offer tangible solutions to improve air quality.
 - An **investment fund linked with Finance** with a **dedicated green focus could play an instrumental role in catalysing growth** and simultaneously **addressing the twin problems of air pollution and climate change**.
 - The procurement of [electric vehicles \(EVs\)](#) should be mandatory for vehicles for **at least central government use as of now**.
- **Carrot and Stick Approach in Industrial and Agricultural Sector:** [Niti Aayog](#) has suggested a **carrot-and-stick policy** towards air pollution adopted in many European countries.
 - Carrot and stick motivation is a motivational approach that involves offering a **“carrot” (a reward—for good behaviour)** and a **“stick” (a negative consequence for poor behaviour)**.
- **Ready-Made Concrete for Construction:** Construction dust is a major contributor to pollutants in air in expanding cities. To deal with this situation, Niti Aayog has suggested the **use of ready-made concrete** that can minimise environmental impacts of building activities.
- **Decommissioning of Inefficient Power Plants:** [Older Power plants](#) primarily run on coal and contribute heavily to air pollution.
 - These plants should be decommissioned and replaced by **efficient super-thermal plants** or with **power generators** that are based on **renewable energy**.
- **Push to Roof-top Solar Panel Generators:** Increasing [solar power generation](#) is a critical measure that needs to be adopted in order to reduce air pollution.
 - Solar energy should be encouraged by the government so that rooftop solar panel power generators can be put into place.
 - It should be complemented with **simplification of rules, regulations and leasing policy for operations and called for power distribution reforms**.
- **Integrated Surveillance Platform:** India needs an integrated surveillance platform for health and exposure surveillance.
 - Population exposure surveillance via **biological and environmental monitoring** can inform **risk attributions of bad air quality**.
- **Reducing Emission, Securing Purse:** Recent [World Bank](#) report observed that a **30% reduction in particulate emissions by 2030** would save India 105 billion dollars in health-related costs.
 - India's [National Clean Air Strategy](#) aims to reduce emissions of particulate matter by as much as **30% by 2024**.

Drishti Mains Question

Discuss major issues associated with increasing air pollution in India. Cite some recent government initiatives for improvement of air quality.

UPSC Civil Services Examination Previous Year Question

Prelims

Q.1 Which of the following are the reasons/factors for exposure to benzene pollution? (2020)

1. Automobile exhaust
2. Tobacco smoke
3. Wood burning
4. Using varnished wooden furniture
5. Using products made of polyurethane

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only
- (b) 2 and 4 only
- (c) 1, 3 and 4 only
- (d) 1, 2, 3, 4 and 5

Ans: (a)

Q.2 In the cities of our country, which among the following atmospheric gases are normally considered in calculating the value of the Air Quality Index? (2016)

1. Carbon dioxide
2. Carbon monoxide
3. Nitrogen dioxide
4. Sulphur dioxide
5. Methane

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only
- (b) 2, 3 and 4 only
- (c) 1, 4 and 5 only
- (d) 1, 2, 3, 4 and 5

Ans: (b)

Mains

Q. Describe the key points of the revised Global Air Quality Guidelines (AQGs) recently released by the World Health Organisation (WHO). How are these different from its last update in 2005? What changes in India's National Clean Air Programme are required to achieve revised standards? **(2021)**