

Costs associated with increasing Air Pollution in India

1) Introduction

- Air pollution is a major environmental health problem affecting the developing and the developed countries alike.
- It is not only the ambient air quality in the cities but also the indoor air quality in the rural and the urban areas that are causing concern.
- Air pollutants that are inhaled have serious impact on human health affecting the lungs and the respiratory system
- These pollutants are also deposited on soil, plants, and in the water, further contributing to human exposure.

2) Economic cost

- High out of pocket expenditure for the people affected by air pollution which push many into poverty
- Strain on state resources because of stress on public healthcare system.
- Loss of manpower and working hours in case of death or disease which in turn reduces productivity.
- Land degradation causes reduced output. Increase in the cost of agricultural production and agricultural goods.
- Resources which could be used for welfare activities are consumed in abetting pollution and it's after effects.
- Air pollution affects the tourism potential in India
- shutting down of industries leads to loss in employment of those involved in that sector
- Government needs to allocate more funds for setting up and maintaining monitoring stations, enforcement teams and awareness campaigns
- Inflation owing to demand for higher wages to work in polluted environment
- Reduction in crop yields because of air pollution and acid rains
- India reported the highest loss in labour output in 2013 owing to air pollution
- Air pollution alone might be offsetting the Indian economy's growth efforts.
- economically weakest section is the worst hit because of limited access to health care facilities
- exposure to bad air quality and other risks will ultimately widen the existing economic inequalities
- A World Bank study shows that welfare costs and lost labour income due to air pollution amounted to 8.5% of India's GDP in 2013

3) Environmental cost

- **Global warming**

- a) According to estimates, at the current rate of increase, the average global temperature up by 3°C to 8°C in the next 100 years.
- b) This will affect the climate of different regions, distribution of plants and animals, disturbance in agriculture and food production, melting of snow caps and resultant increase in sea levels

- **Formation of photochemical smog**

- a) When pollutants like hydrocarbons and nitrogen oxides combine in the presence of sunlight, smog is formed.
- b) It forms a yellowish brown haze especially during winter and hampers visibility.
- c) It also causes many respiratory disorders and allergies as it contains polluting gases.

- **Formation of acid rain**

- a) Sulphur dioxide and nitrogen oxides react with water in the atmosphere producing sulphuric acid and nitric acid. These acids come down along with the rain.
- b) causes respiratory and skin disorders, affects productivity of plants by damaging the leaves
- c) enters the soil and affects the soil and causes leaching, enters the ground and river waters which causes harm to the aquatic life
- d) Causes damage to marble and thus damages buildings and monuments (like Taj Mahal).

- **Aerosol formation**

- a) Aerosol is formed by the dispersion of solid or liquid matter in the atmosphere.
- b) If the aerosols form a thick layer in the troposphere, they affect the weather conditions by blocking the solar radiation.
- c) Aerosols are also deposited on the leaves and affect the photosynthesis.

- **Depletion of Ozone**

- a) Hydrocarbons such as the chlorofluorocarbons (CFCs) destroy the ozone molecules which deplete the ozone layer.

4) Social cost

- Deteriorate the health of the public and rise in the incidence of diseases like asthma, bronchitis, hypertension etc especially among children
- with spread of diseases, the children may show more absenteeism this may affect educational outcomes
- A set back to reaping demographic dividend to its full potential when people fall sick and die

- Indoor air pollution affects health of women and young children
- Air pollution violate Right to life(Article 21) as noted by Supreme Court
- Might trigger migration while looking for safer places which induces pressure on these places.
- Air pollution kills more people than tobacco, alcohol or drug use or unsafe sex
- The number of deaths due to air pollution is higher for children and older people.
- total welfare losses between 1990 and 2013 because of premature deaths from air pollution increased by 94%

5) severity of Air Pollution

- The World Bank study report ranks air pollution as the fourth biggest fatal risk factor in the world
- Damages from ambient PM 2.5 air pollution and household air pollution from cooking with solid fuels
- lack of adequate information and data might be hampering the global battle against air pollution
- significant amount of coal-fired power generation and industry that makes a hefty contribution to air pollution
- Vehicles are a special problem as they emit in the breathing zone of people. Congestion further aggravates emissions
- The current European standards allow diesel vehicles to emit several times more oxides of nitrogen than petrol vehicles and are lenient on particulate standards.
- CO2 emissions from transport are increasing at the fastest rate – at more than 6 per cent per annum
- Since air pollutants are generally concentrated in and around urban areas, the outdoor urban pollution levels are far higher than in the rural areas.
- Fires are another major source of air pollution and can lead to severe problems if the smoke is inhaled for a period of time.
- severe air pollution is slowing photosynthesis in plants

6) Solution

- It calls for using satellite-level data along with ground-based information to get a holistic picture of the extent of air pollution in a given region
- Putting in place a robust mechanism to understand air pollution and its sources so that interventions can have their intended effect.
- Implementing well-tailored and targeted interventions

- stricter pollution control in India would not only help save lives, but would also be a win for the planet as a whole
- Improve air quality monitoring to include more pollutants and more areas in cities to assess the risk of air pollution
- India needs strong policy interventions to enable research in the field of air pollution.
- Health-based criteria should become the basis of air quality regulations
- Break the business and political resistance to hard mitigation measures to combat air pollution
- Implement gaseous fuels (natural gas and liquefied petroleum gas (LPG)) programmes with the effective fiscal support and incentives
- Both natural gas and LPG have the potential to cut particulate emissions from vehicles to negligible levels.
- Need for uniform and tighter emissions standards for the entire country
- aggressive roadmap for sustainable mobility to reduce usage of cars and increase ridership of public transport
- Measures such as improved cook stove technology for rural areas, or cleaner coal consumption and diesel filters on trucks in urban areas
- addressing sources of the short-lived pollutants like black carbon and ozone will have more immediately perceptible effects