Environmental Pollution in New Delhi, India: A Critical Examination of Air and Water Quality

Executive Summary

New Delhi, India, is facing severe environmental pollution, with air quality being a major concern, responsible for 10,000 premature deaths per year [S1]. The city's air pollution is the most harmful of any major city in the world, with poor air quality irreversibly damaging the lungs of 2.2 million children [S2]. Water pollution is also a significant issue, with nearly 70% of surface water being unfit for consumption, affecting 163 million Indians lacking access to safe drinking water [S3]. The government has implemented initiatives to mitigate air pollution, but their benefits have been marginal [S4]. This report examines the sources and health impacts of air pollution, causes and consequences of water pollution, and mitigation strategies and policy initiatives.

Air Pollution Sources and Health Impacts

The air pollution in New Delhi is primarily caused by vehicular emissions, dust, and industrial emissions [S2]. The city's air quality index generally falls within the Satisfactory and Moderate ranges between March and September, but drastically deteriorates to Poor, Severe, or Hazardous levels between October and February [S2]. The high pollution level of fine particulate matter (PM1) in New Delhi has attracted global attention, but the true level of PM1 pollution could still be underestimated due to hygroscopicity-induced bias associated with particle hygroscopic growth [S1]. A study found that the more severe pollution the larger underestimation, with an average underestimate of up to 20% (or 50 μg/m3) of PM1 concentration on humid winter morning rush hours [S1].

The air pollution in Delhi has severe health impacts, with India having the world's highest death rate from chronic respiratory diseases and asthma [S2]. Poor air quality has irreversibly damaged the lungs of 2.2 million children in Delhi [S2]. A multi-sectoral emissions inventory for 2010 estimated health impacts in terms of premature mortality and morbidity effects, with 7,350–16,200 premature deaths and 6.0 million asthma attacks per year [S4].

The government has implemented initiatives to mitigate air pollution, including the compressed natural gas (CNG) switch for public transport, introduction of new CNG buses, metro system, and Bharat-IV stage fuel [S4]. However, their marginal benefits have fallen short over the years due to increasing passenger vehicles, lack of public transport, and growing demand for electricity and construction activities [S4].

Water Pollution Causes and Consequences

Water pollution in India refers to the contamination of water bodies by harmful substances or pathogens, making them unfit for human use or harmful to aquatic life [S3]. The country holds about 4% of freshwater resources, yet nearly 70% of surface water is unfit for consumption, affecting 163 million Indians lacking access to safe drinking water [S3]. Untreated sewage is the largest source of water pollution in India, followed by agricultural runoff and unregulated small-scale industry [S3].

Most rivers, lakes, and surface water in India are polluted due to industries, untreated sewage, and solid wastes, limiting the available water for Indian consumers, industry, and agriculture [S3]. The pollution of water bodies has severe consequences, including the spread of waterborne diseases and the degradation of aquatic ecosystems [S3].

Mitigation Strategies and Policy Initiatives

The government has implemented initiatives to mitigate air pollution, including the compressed natural gas (CNG) switch for public transport, introduction of new CNG buses, metro system, and Bharat-IV stage fuel [S4]. However, their marginal benefits have fallen short over the years due to increasing passenger vehicles, lack of public transport, and growing demand for electricity and construction activities [S4].

To address water pollution, the government needs to implement policies to reduce untreated sewage, agricultural runoff, and unregulated small-scale industry [S3]. This can be achieved through the implementation of wastewater treatment plants, the promotion of sustainable agricultural practices, and the regulation of small-scale industries [S3].

Conclusion

Environmental pollution is a significant concern in New Delhi, India, with air and water pollution having severe health and environmental impacts. The government needs to implement effective policies and initiatives to mitigate pollution, including the reduction of vehicular emissions, dust, and industrial emissions, and the implementation of wastewater treatment plants and sustainable agricultural practices. The benefits of these initiatives will be marginal if not accompanied by a reduction in passenger vehicles, an increase in public transport, and a decrease in demand for electricity and construction activities.

References

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