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Q15

Mumbai, Delhi and Kolkata are the three Mega cities of the country but the air pollution is much more serious problem in Delhi as compared to the other two. Why is this so?

UPSC Civil Services Mains 2015 · GS I · 12 marks · World's Physical Geography

Salient features of world's physical geography.

Core demand of the question

- Explain why Delhi's air pollution is a more serious problem than that of Mumbai and Kolkata, though all three are megacities
- Stress geography, weather, sources, and surrounding region, not only 'more cars'

Revision summary

All three megacities pollute, but Delhi is landlocked and winter-trapped.

Himalayan-plain geography and low mixing height hold smoke in the breathing zone.

NCR sprawl, dust, and Punjab-Haryana stubble add a regional plume Mumbai and Kolkata do not share in the same way.

Mumbai's **sea breeze** and Kolkata's bay and monsoon rain dilute more often.

Delhi's crisis is therefore geography plus regional sources, not only city size.

Flow diagram

Landlocked Gangetic basin -> Winter inversion trap

Himalaya weak wind -> Winter inversion trap

NCR vehicles dust industry -> Winter inversion trap

Farm fire plume -> Winter inversion trap

Winter inversion trap -> Severe Delhi smog

Coastal sea breeze rain -> Mumbai Kolkata dilution

Conclusion

- Delhi needs regional action on farms, NCR industry, dust, and winter transport, because city-only odd-even rules cannot beat a landlocked inversion.

Delhi's air is more serious than Mumbai's or Kolkata's mainly because of inland location, winter inversion, Himalayan-plain trapping, and a surrounding farm-and-town smoke ring. The two older port megacities have the sea and, for Kolkata, heavier rains as natural vents. Emission control must therefore be regional for Delhi, not only municipal.

Facts & figures

Indo-Gangetic plain

Interior basin where Delhi sits, prone to winter calm, fog, and trapped aerosols.

Temperature inversion

Winter condition in which cold air near the ground holds pollutants below a lid of warmer air.

Stubble burning

Post-harvest fire in neighbouring farm states that spikes Delhi's October-November pollution.

Sea breeze

Daily coastal wind that helps ventilate Mumbai and, with bay winds, Kolkata more than inland Delhi.

National Capital Region

Multi-state urban industrial ring whose emissions add to Delhi's own traffic and dust.

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