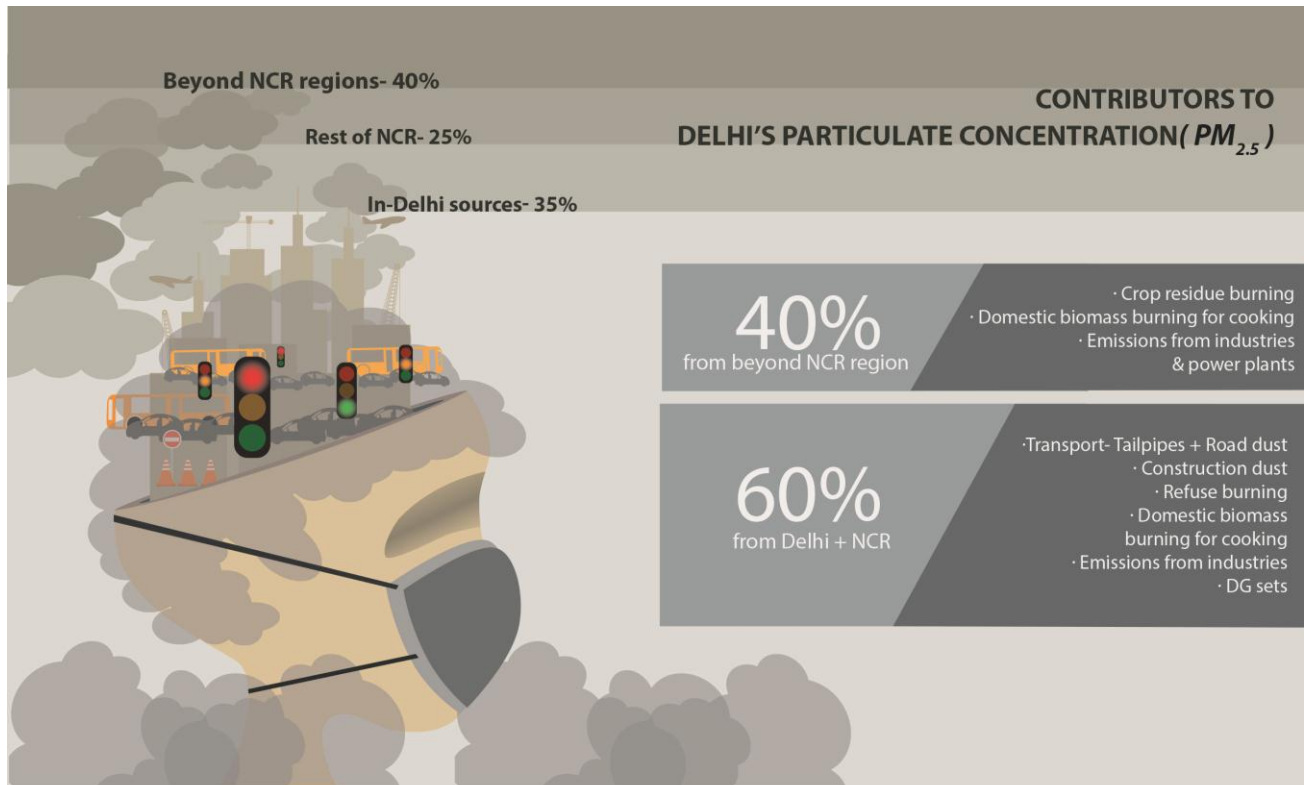


TERI releases 10-point Emergency Response Plan for improving air quality in Delhi-NCR



EMERGENCY RESPONSE PLAN: 10 steps for cleaning Delhi's air When particulate level ($PM_{2.5}$) > $400\mu\text{g}/\text{m}^3$

REDUCE TRANSPORT EMISSIONS		Increase parking charges; free public transport		Vacuum clean & water the roads		Congestion pricing at hotspots		Ban movement of 10 year old vehicles	REDUCE CROP RESIDUE BURNING		Government to buy crop residue from farmers to produce biochar/ briquettes		
	REDUCE POWER PLANT EMISSIONS		Shut power plants, ensure power from central grid	STOP REFUSE BURNING		Stop all landfill fires	REDUCE CONSTRUCTION DUST			Stop construction activities	SAFEGUARD CITIZENS' HEALTH		Shut schools/colleges & issue 'work-from-home advisory' to offices

Source :

TERI releases 10-point Emergency Response Plan for improving air quality in Delhi-NCR

In the wake of the worsening air quality in Delhi NCR, The Energy and Resources Institute (TERI), has submitted a 10-point Emergency Response Plan to the Delhi government and the Ministry of Environment, Forests and Climate Change (MoEFCC). TERI has recommended that this plan should be enforced immediately in whole of NCR on forecasted days of very high pollution in Delhi. The recommendations are based on TERI's modelling and technology development experience.

Speaking on the occasion, Dr Ajay Mathur, Director General, TERI, said, "Seven consecutive days of extremely hazardous air quality has taken a heavy toll on the health of Delhi's citizens. TERI is presenting a set of emergency response measures to save lives and protect the health of both the very young and older citizens. These need to be put in action every time we find ourselves in this extremely hazardous air quality situation. In addition, we also need to start taking steps to diffuse some of the causes which lead to such a situation."

Sumit Sharma, air quality expert at TERI, further added, "It is time that stringent measures are taken for control of emissions based on scientific assessments. Multi-sectoral regional scale plans are required for entire NCR and beyond for control of pollution in the city of Delhi"

Additionally, TERI has also released a 10-measure plan for medium- to-long term for air quality improvement in Delhi-NCR.

Latest study released by TERI shows the following contributing sources of PM 2.5 in Delhi:

- In-Delhi sources- 35% (Transport (tail-pipe, road dust), construction, refuse burning)
- Rest of NCR- 25% (Domestic biomass burning for cooking, industries, transport, DG sets)
- Beyond NCR regions- 40% (Crop residue burning, domestic biomass burning, industries)

Based on sectoral contributions and regional scale atmospheric transport of pollutants, TERI has suggested the following as the Emergency Response Plan for immediate relief to the residents from severely high air pollutant concentrations.

10-point Emergency Response plan (ERP) (only when 24-hourly PM_{2.5} > 400 µg/m³)

Reduce crop residue burning

- 1) Strict enforcement through heavy penalties on agricultural waste burning using satellite based tools detecting fires and mobile based applications in NCR. To avoid burning of agricultural residues, the State/Central governments should buy the agricultural residue (at ~Rs 3 per kg) from the farmers in advance which can be later used for producing biochar or briquettes to be used as a direct energy source with controls.

Reduce transport emissions

- 2) Ten times increase in parking charges at all the government parking spaces (except in hospitals and other similar places) in entire NCR. Heavy penalties on any unauthorized parking. Free public transport based on buses and metros to discourage private vehicle use in NCR.
- 3) Congestion pricing/Odd-even scheme for all private vehicles in NCR. Declare low emission zones (about 10 main commercial areas in Delhi) with no/priced entry for vehicles. Run only registered e-rickshaws/cycles/electric vehicles in the region.
- 4) Ban on entry/movement of all 10 year old vehicles (checks and penalties) in Delhi-NCR. Strict enforcement and heavy penalties on violation of speed limits and not having a valid PUC certificate in NCR. Stringent traffic management (electronic/manual) with penalties to reduce congestion and time of travel in NCR.
- 5) Vacuum cleaning/watering of the roads in NCR

Reduce power plant emissions

- 6) Stop power plants in Delhi and upwind in NCR (e.g. in Panipat) and ensure power from the central grids. Ensure 24x7 power supply from other grids to prohibit the use of DG sets in NCR. Ban the use of DG sets except in emergencies like hospitals.

Reduce construction dust

- 7) Stop all major construction activities in NCR.

Reduce refuse burning

- 8) Immediately stop all landfill fires in the whole NCR. Heavy penalties on refuse burning (use of mobile technologies to detect and control) in NCR. Provide heated home shelters to the needy in winters.

Safeguard citizens' health

- 9) Closure of schools/colleges for next few days and enforce 'work from home' for 50% of the staff for the companies ensuring low exposure to people and lower travel requirements in NCR.
- 10) Advisories: All buildings to reduce outdoor air intake through air conditioners to reduce exposure to outdoor air pollution. Free distribution of air masks to the needy (e.g. government hospitals). Stay indoors as far as possible (especially vulnerable children, elderly and others) and for the use of indoor air purifiers. Promote community celebrations during Diwali and discourage individual cracker burning. Major awareness campaigns and sensitization to cut down personal energy use in NCR.

The ERP is only aimed to reduce dangerously high pollutant concentrations in a short time frame. TERI based on its past scientific studies also recommended the following measures for medium- to-long term air quality improvement in Delhi-NCR.

Ten measures in medium- to-long term for air quality improvement in Delhi-NCR

- 1) Use of technologies to convert agricultural wastes into bio-char and briquettes. To avoid burning of agricultural residues, as a sustainable business model the State/Central governments should buy the agricultural residue from the farmers in advance which can be later used for producing biochar or briquettes as a direct energy source with controls.
- 2) Congestion pricing for all vehicles (payment through manual/internet modes initially; can be supplemented by electronic pricing systems) in Delhi. Revenues generated should be used for enhancement of bus based public transport (safe, comfortable and reliable) preferably on electric modes. Feeder buses for metro connectivity.

- 3) Timely enforcement of BS-IV in 2017 and BS-VI vehicle emission norms in 2020 and strengthening of PUC system of inspection and management using On-board diagnostics.
- 4) Gradual phase out of old vehicles; Fleet modernization; Gradual restrictions on old inter-state buses entering Delhi.
- 5) Emission trading scheme for industrial clusters and mandatory installation of tail-pipe controls (like flue gas desulphurisation units- FGD) for SO₂ reduction in major coal consuming plants. SO₂ converts to sulphates and add to PM_{2.5}. Cleaner production technologies for industries like bricks Tunnel kiln, Zig Zag. Cleaner gaseous fuels for industries and other use.
- 6) Enhanced penetration of LPG and improved cook-stoves in NCR and beyond NCR regions.
- 7) Wall to wall paving/landscaping and cleaning of roads.
- 8) 24x7 power supply to NCR to avoid DG set usage.
- 9) Scientific management of refuse to recover landfill gases and eliminate open burning.
- 10) Regular source apportionment studies and proactive planning based on scientific evidences. Major awareness campaigns and sensitization to cut down personal energy use; appropriate behavioral change communication tools must be used.