Fixing Delhi's Pollution: Recommendations

	Urgent	Important	Significant	Sustainability	Avoid
Biomass Burning	**Paddy to Other Crops** 1. CG+SG - Incentivize sowing of other crops like pulses, cotton, fruits, vegetables in Kharif. 2. CG - FCI to stop purchases of paddy from Punjab and Haryana.	**Unprofitable Field Burning** 1. CG+SG - Coal power plants to include straw in their inputs. 2. CG+SG -Real-time satellite image-based warning mechanism integrated with local police stations. 3. SG - Ensure zero-till machines in every gram panchayat.	**LPG Home Stoves** 1. Each District Commissioner mandated with ensuring 100 percent coverage of LPG stoves in Delhi, Punjab, and Haryana. 2. Parallel monitoring to ensure uninterrupted supply of LPG in these states.	**Green Belt** 1. Thick green belt on the western and northern side of Delhi. 2. In the absence of public land, promote orchards and tree-based farming in western and northern Delhi and bordering areas in Haryana.	**X** 1. Banning crop burning cannot work and will only alienate farmers, it is better to work with them in changing crops and practices. 2. Punishing informal sector workers and businesses also has little environmental impact with great human misery.
Vehicular Pollution	**Cleaner fuel** 1. CG - Import or buy low sulphur petrol and diesel. 2. CG - Accelerate conversion of public sector refineries to low sulphur immediately - not in 2020. 3. CG - Introduce pollution cess that applies to high sulphur fuel, and use it to facilitate conversion to low sulphur fuel.	**Better engines** 1. CG - Lower GST for BSVI compliant vehicles OR High Pollution Cess on non-BS VI vehicles. 2. CG - High R&D funding and awards for 2 wheeled BSVI compliant engines. 3. CG – High R&D funding for operation of electric 2 wheelers to accelerate shift	**More public transport less private** 1. CG+SG - Doubling of Metro carrying capacity - more cars per train and frequency. 2. SG - Subsidy for public transport including to Metro and DTC/Pvt Buses. 3. SG - Increase state taxes/fees/cesses on private 2, 3, and 4 wheeled vehicles by more than 100% - including taxis.	**Urban planning & governance** 1. CG - Urban planning and design centered on public transport and footpaths. Walkability to take precedence over car parking or traveling. 2. MG - Parking of private vehicles (i) at charges pegged to land values, and (ii) not allowed to block footpaths or roads in residential or commercial areas.	**X** 1. Focusing on 4 wheelers or commercial vehicles or luxury vehicles will not solve the problem as more than half the vehicular pollution is caused by 2 wheelers. 2. Electric vehicles are too expensive for now to significantly affect Delhi's pollution. 3. Focusing on old vehicles also ineffective as many more vehicles are added every year.
Coal and Fly Ash	**Cleaning Emissions** 1. CG - Mandate wet scrubbers and electric precipitators in all coal-using power and industrial plants. 2. CG+SG - 100% disposal of fly ash for example for brick making made mandatory. 3. CG+SG - Community/public real-time emissions monitoring.	**Better Coal** 1. CG - Mandate only superior and less polluting coal for plants in North-western India, import if not available in India. 2. CG - Mandate increased use of washed coal in plants in these areas.	**Less Coal** 1. CG - Stop all small coal power plants and put up additional capacity in gas-based power plants. 2. Subsidize gas power with high pollution cess on coal power.	**Reducing coal dependence** 1. CG - Do away with coal power within 10 years. 2. In the interim, only allow the following type of coal plants (a) large and efficient coal power plants that follow strict emission norms, (b) located in high wind areas such as coasts, and (c) located in low population density areas.	**X** Put up more coal power plants, especially in the northern India region spanning Punjab to West Bengal.
Soil and Road Dust	**Unsurfaced Roads** 1. SG - Converting all Delhi roads to the surfaced category. Similar actions by Punjab, Haryana, Rajasthan, and UP would benefit all, across North India.	**Poor Quality Roads** 1. SG -Resurface/Repair all roads where bitumen is lose or there are potholes, half the roads of Delhi belong to this category conservatively.	**Unclean Surfaced Roads** 1. SG+MG - Change subcontracting practices to ensure quick completion of digging related public works and road building. 2. SG+MG - Covering and water spraying of all roads that have been dug. 3. SG+MG - Vacuuming roadsides to have complete coverage over all roads.	**Rural dust + Implementation** 1. SG - Creation of green belt around Delhi either through forests or through orchards or commercial forestry. 2. SG+MG - For proper monitoring of contractors and municipal workers build a community-based monitoring mechanism whose cost to be borne by vehicle registration fees.	**X** Vacuuming roads during high traffic time periods as during that time the fine particles of road dust are already airborne. Best to vacuum roadsides during low traffic times - night times and early mornings.
Solid Waste Burning	**Remove waste rapidly and burn less** 1. CG/SG+MG - Make local police and municipal officers responsible in case burning is detected. 2. Make the process of handing out burning related challans simpler and less time intensive. 3. Municipal commissioners should be made liable for non-collection of waste or open dumping.	**Existing waste plants** 1. SG-Ensure proper maintenance and 100% capacity utilization of all plants in Delhi and surrounding areas. 2. SG - Ensure 24x7 monitoring of emissions and maintenance.	**Waste disposal capacity** 1. CG - put up new waste to energy plants with latest emission control technologies. 2. CG - Establish new landfills on land owned by government agencies.	**Segregation** 1. SG+MG - Segregation of garbage works everywhere in the world. It requires a system of rewards and liabilities for non-performance or non-delivery, and this is possible with a more empowered set of RWAs to monitor and enforce the rules at ground level and made liable for them as well.	**X** Burning of waste in energy plants or elsewhere without 24x7 monitoring by the community and civil society.
Others (industrial, construction, etc.)	**Construction** 1. MG - Covering of materials and the area being constructed and also regular spraying. 2. MG - Community and NGO Monitoring and reporting. 3. MG - Simpler challan/Public fining method of construction-related polluters.	**Electricity is best source** 1. CG+SG - Guaranteed 24x7 and 100% supply of electricity for all residential and commercial establishments in Delhi NCR. 2. SG - Eliminate all generators and machinery drawing energy from petroleum fuels in Delhi NCR, only battery-based backup systems should be allowed, apart from emergency services like Hospital, ICUs etc.	**Improved technology** 1. SG - Mandatory change of old transformers, generators, etc. 2. SG - Convert presswalas, tandoors etc. to electricity based options, to be done through first, listing of all such units, followed by exchange, involving RWAs and market associations. Some economic incentive and liability required.	**Point specific monitoring and display** 1. SG - Real-time public display of data from each of the pollutant made available on the cloud. 2. SG+CG - Use airborne infrared monitoring to detect pollution in hard to get areas such as slum interiors.	**X** 1. Stopping or banning economic activity without access to an economically viable substitute. 2. Government functionaries implement with little day to day answerability or overseeing - instituting liability on the government and its functionaries is critical even if it's minor. 3. Retaining current system of challans without a simple small fee-based punishment regime is avoidable.

CG = Central Government, SG = State Government, MG = Municipal Government