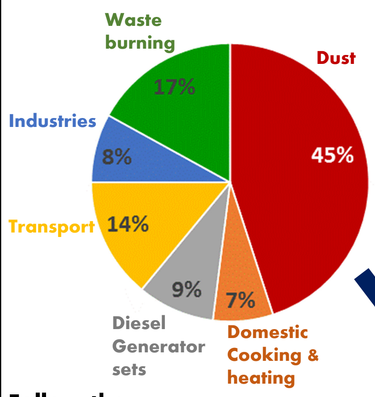
are we chasing the right vehicle in Delhi?

banning older vehicles in Delhi will provide some relief, depending on the level of enforcement. This is a start, however we should look for options across sectors for clean air.



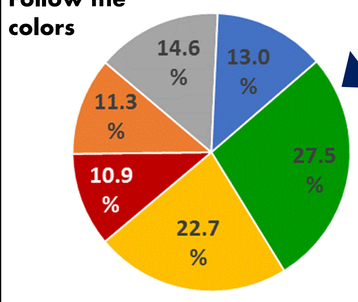
PM_{10}

Share of known sectors to measured PM_{10} pollution in Delhi. This is an average of all the samples analyzed samples by CPCB (the most recent official study)

This is an all-Delhi average

PM_{10} is the particulate matter (PM) with size < 10μm

Follow the colors



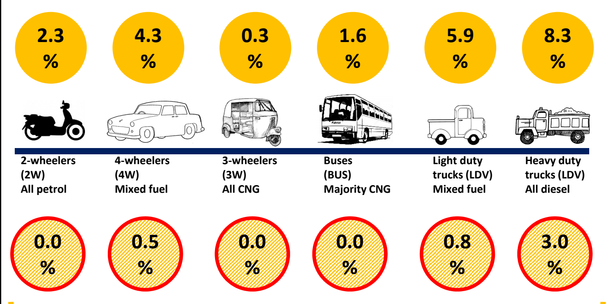
$PM_{2.5}$

Calculated share of known sectors to $PM_{2.5}$ pollution in Delhi

From the PM_{10} pie above, we assumed only 15% of the dust and 100% of the other combustion sources survive in the $PM_{2.5}$ fine fraction

$PM_{2.5}$ is the PM with size < 2.5μm

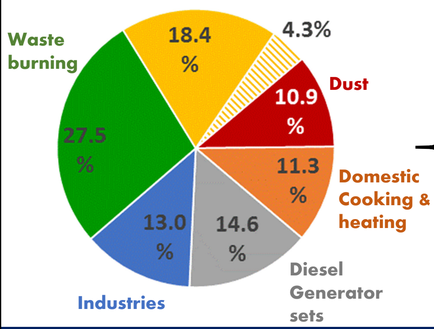
Yellow is all Transport
Contribution of vehicle types to the transport share (22.7%)



The % shares are calculated based on the transport emissions inventory for Delhi, for year 2014

Possible net % reductions in ambient $PM_{2.5}$ pollution by banning vehicles older than 10 years for diesel and 15 years for petrol

All Transport



4.3 %

Overall share of annual ambient $PM_{2.5}$ pollution likely to reduce in Delhi by banning vehicles older than 10 years for diesel and 15 years for petrol

options to control $PM_{2.5}$ pollution (in numbers)

10% Overall reduction possible from the transport sector, if we leapfrog fuel standards to Bharat-6, nationally; in addition to promoting public transport; safe walking and cycling infrastructure; and managing congestion

20% Overall reduction possible if no garbage is left behind to burn along roads or in residential areas; and avoid all burning at landfills

16% Overall reduction possible if 24/7 power supply is ensured in order to curb the usage of diesel generator sets (not accounting for pollution at the power plants)

10% Overall reduction possible if emissions from the brick kilns are controlled and stringent efficiency norms are enforced for all industries

7% Overall reduction possible if cleaner alternatives like LPG and electricity are available for domestic cooking and heating (especially during the winter months)

Ambient $PM_{2.5}$ concentrations in 2014 averaged 150 μg/m³ (Source : DPCC stations)

Banning vehicles older than 10 years for diesel and 15 years for petrol, will drop this average to 143 μg/m³

The five at large interventions (to the left) will drop this average to 55 μg/m³ (National Standard = 40 μg/m³)

This requires a coordinated effort between ministries, civic bodies, and public at the state and the national level.

Sources:
CPCB source apportionment studies (2010) @ http://cpcb.nic.in/Source_Apportionment_Studies.php;
Evolution of on-road vehicle exhaust emissions in Delhi (2015) @ http://www.sciencedirect.com/science/article/pii/S1352231015000680;

Send your questions and comments to simair@urbanemissions.info

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