

**Air pollution challenge in  
Delhi: Where we are today?  
What has been done to  
reduce toxic pollution?  
What is the future agenda**

**Sunita Narain**

**Centre for Science and Environment, New Delhi**



## Delhi's pollution story

- Mid-1990s: air was black with smoke
- We were 15 years behind the world in terms of emission and vehicle technology standards
- We said lets **leapfrog**
- Move to CNG; don't just improve fuel but change fuel itself to reduce emissions. It happened. Delhi reduced its pollution drastically.
- **Now pollution is back with a vengeance – winter months are worse, because there is inversion; no wind to disperse the pollutants and moisture in the air**

# Sources of pollution: constant through the year; impact felt in winter most



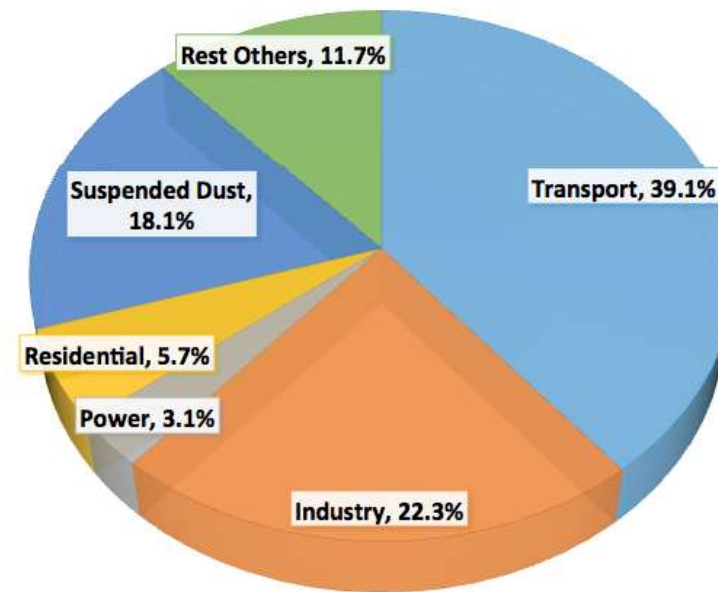
**Transport** – **trucks**, diesel vehicles, large number of 2-wheelers

**Industry** – poor quality fuel being used

**Dust**

**Others** – includes garbage burning and biomass burning

PM2.5 -EMISSION: SOURCE SHARES IN DELHI (2018)

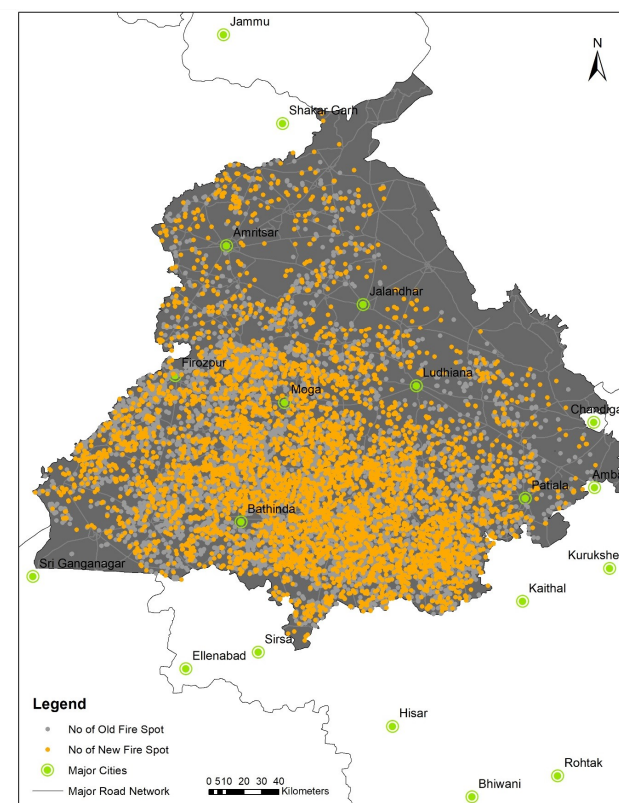
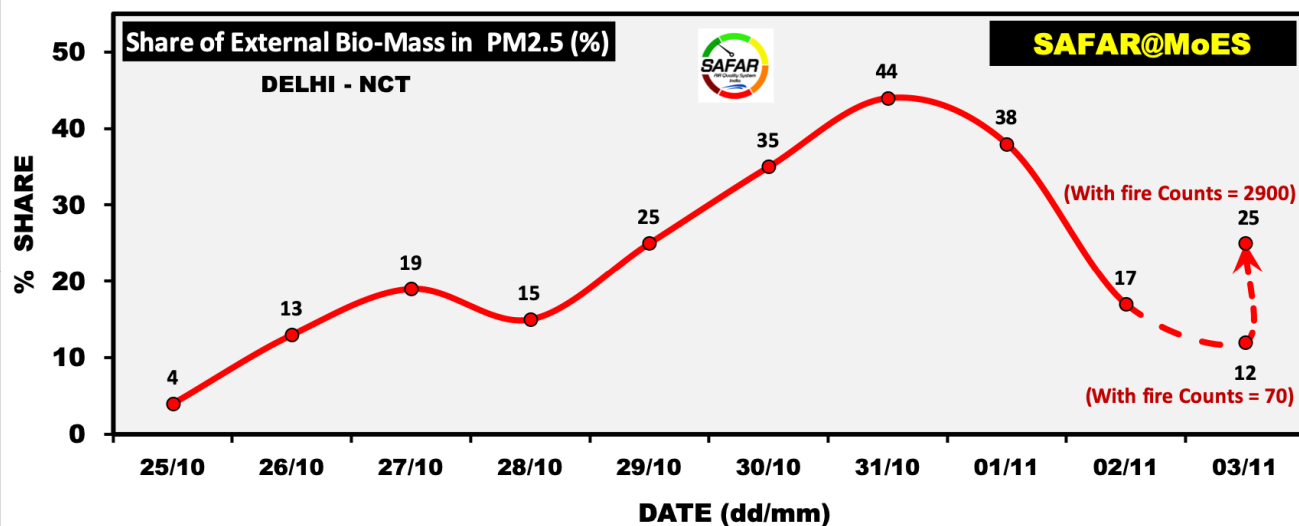


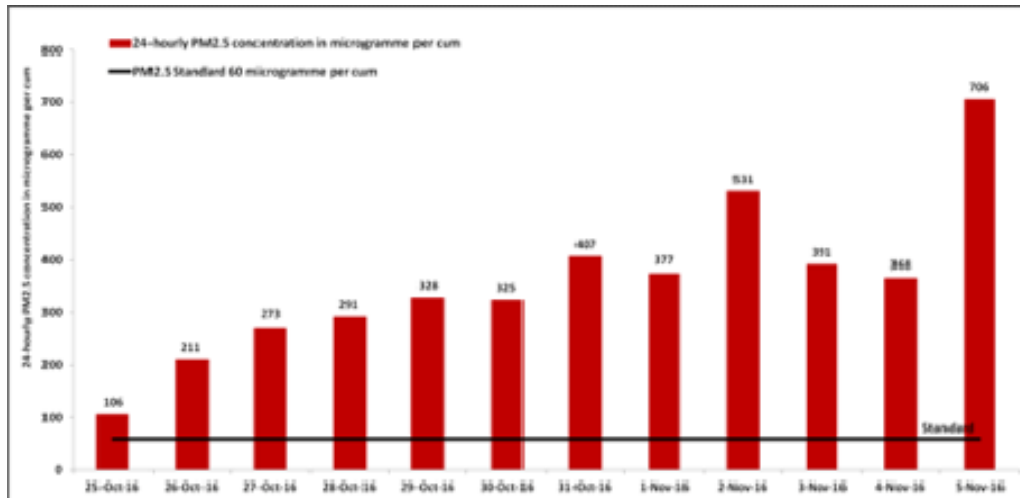
# Winter pollution: role of crop burning



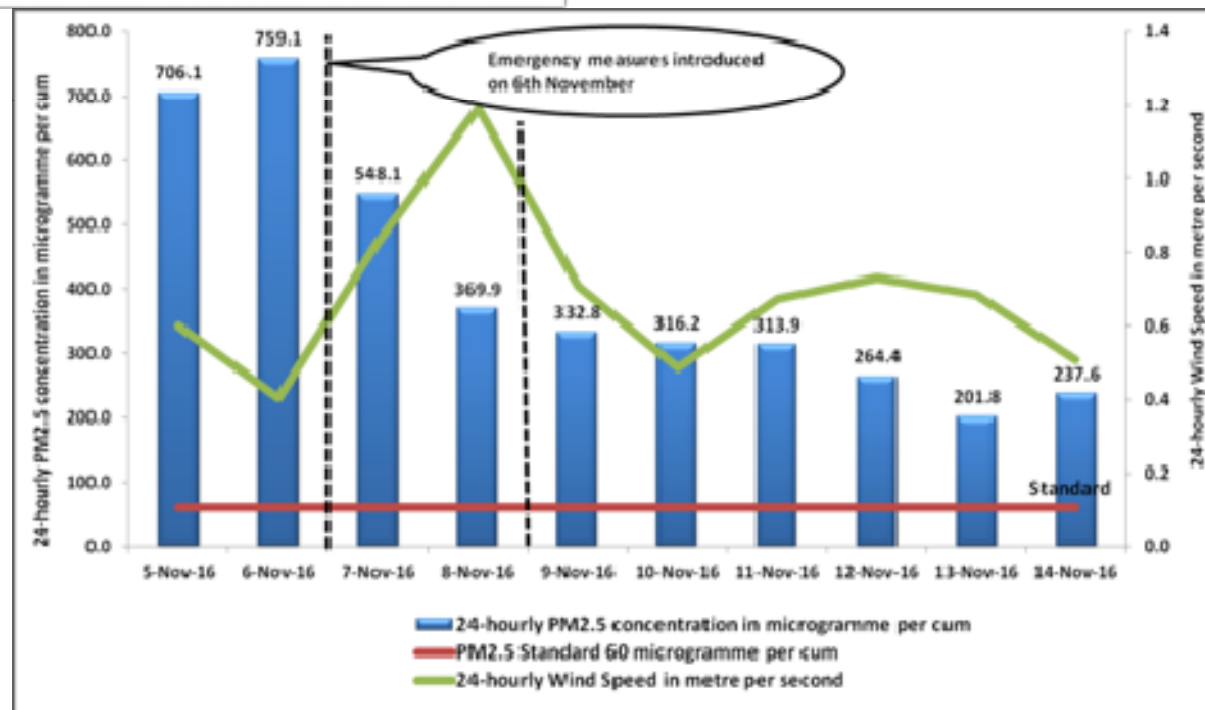
- During winter – between October 15-November 15 – farmers in adjoining states also burn stubble post the harvesting of paddy/rice
- Stubble burning contributes to pollution in Delhi – varies between 5-35% -- depending on wind direction
- **But it tips us over** – we have local pollution sources, aggravated by adverse weather and then we get additional pollution from stubble burning. This takes Delhi over to the severe or severe+ category.
- Therefore, all sources need to be controlled; **the good news is that there is public concern and governments are taking action**

# Fires from adjoining states contribute to Delhi's pollution (October 15-November 15)





This October-November:  
massive build up post  
Diwali and impact of  
emergency measures  
under GRAP





# Framework for action

- 1. Health based air quality index – **AQI**
- 2. Dense **network** on monitoring systems set up – over 50 stations in the regions; 3 agencies (DPCC/SAFAR/CPCB) so quality control is done
- 3. Information is available widely – from phone to newspaper; on our fingertips – has built awareness and outrage
- 4. Post 2017 smog – we suggested **GRAP** – **emergency action**. What will be done as pollution increases; steps to control pollution quickly.
- 5. **CAP** – comprehensive Action Plan – has all steps that governments must take to control air pollution – short and long-term. This is the precursor to NCAP

We know sources; we know actions that need to be taken. In different regions; priorities will differ based on the source.

**Need to act – inconvenient because everyone says they are 1%**



# What has been done (key actions)

- **Vehicles (30-40%)**
  - Leapfrog from BS IV fuel and vehicle emission standards directly to BS VI by April 1, 2020.
  - Diesel fueled vehicles have been disincentivized – price differential between petrol and diesel reduced/age limit set on vehicles
  - Truck traffic entry to the city – most polluting vehicles – has been disincentivized using a pollution tax and by building expressways to bypass traffic. All trucks now are cashless for the payment of ECC and this has reduced truck traffic into Delhi from 40,000 per night to 5,000 per night.
- **Thermal power plants (3-5%)**
  - All coal based power plants in Delhi have been shut permanently
  - All coal based power plants in the surrounding region have been asked to move to cleaner emission technology by 2020
- **Industry (30%)**
  - Pet coke and furnace oil use in the region has been banned
  - Pet coke imports have been banned
  - All coal use in Delhi has been banned, including for industrial operations
  - Nox and Sox standards set for all industries

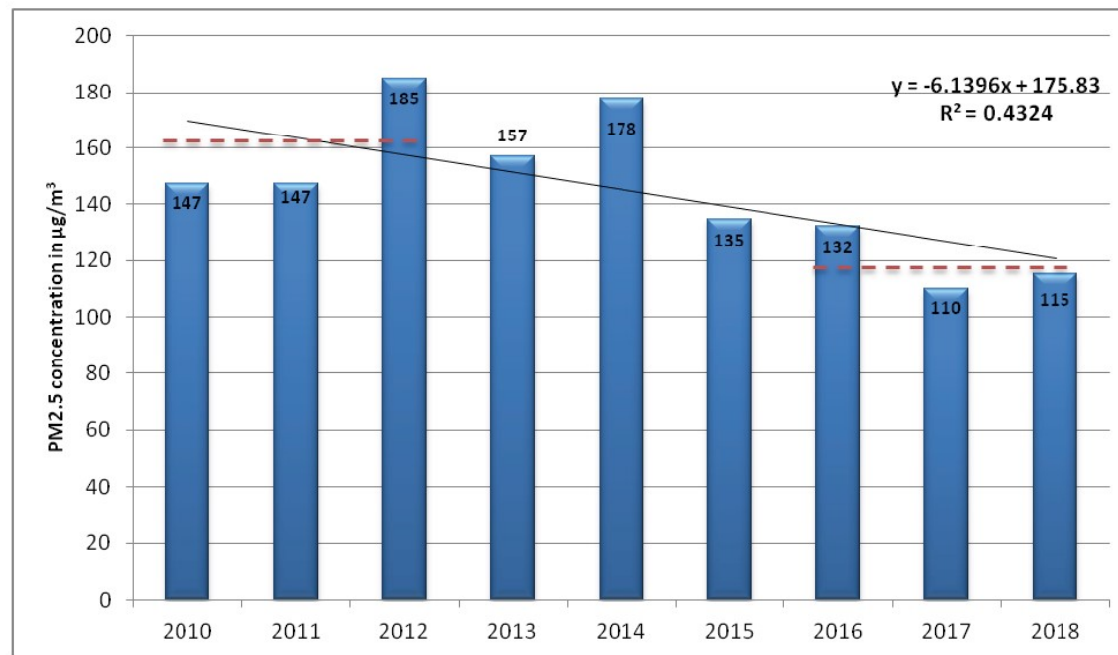


## Good news

# Evidence of stabilization/bending the pollution curve



- Decadal analysis shows that there is impact of actions being taken



*Source: CSE analysis based on real-time data from CPCB on-line portal*

# Bad news

## But we need to do more/**much more**



- We need to reduce air pollution drastically – by another 65% or more. Therefore, we need to do more and at scale and speed
- Everything we have done – and it is substantial – in what we call 2<sup>nd</sup> generation reform has meant that reduce the number of severe or severe+ days to very poor days. This is not enough. We need our right to blue skies; clear lungs
- The agenda for future action is:
  - **A. Mobility transformation**
  - **B. Fuel use transition/transformation**
  - **C. Handling local sources – dust and garbage burning and farm stubble burning**

# Speed and scale is important



- When Delhi moved to CNG it was drastic change
- Over 1,00,000 vehicles converted to clean fuel in 2 years. All public transport vehicles – high mileage and so high pollution – were shifted to clean fuel.
- This is why we had impact
- We cannot handle pollution with small steps –100-200 buses will not do; shutting 1-2 power plant will not do. Need to move quickly and at scale

What needs to be done: the agenda for clean air

## A. Mobility transformation



- We believe that technology-fuel quality improvement not enough
- We cannot afford the growth model to **first pollute and then clean up**
- Only 15%-20% of people in cities (including Delhi) drive cars today. But cars take up 90% of the road space; roads take up 26% of city land area. We do not have road-space or airshed for remaining 80% of our people
- Our opportunity is a **mobility transformation**, not transition
- Not to first get cars and then get people into cycles – but from cycles to metro and cycles and walk
- We need to think big/integrated and build public transport system which is **affordable for poor and modern, safe and convenient for rich**

# CAP on public transport: what needs to be done



- 1. Augment the bus fleet – 10,000 buses needed in short time (still not there)
- 2. Plan for augmenting metro so that there is increased ridership (EPCA report to SC led to clearance of phase IV of metro)
- 3. Plan deliberately for last mile connectivity (EPCA report in SC asking for this in metro stations but much more needs to be done for right to walk/cycle and improved safety)
- 4. Plan for inter-NCR connectivity (not enough is being done)
- 5. Restrain vehicles through parking policy (EPCA report to SC and led to notification of parking policy but rates for residential parking not agreed upon).

What needs to be done: the agenda for clean air

## B. Clean fuel transition



- Industries in adjoining areas to Delhi still use dirty fuel because it is cheaper – coal.
- It is also difficult to monitor and ensure enforcement with emission standards in small industries
- Industries have move to cleaner fuel for combustion – from natural gas to electricity – but these fuels are more expensive and make industry uncompetitive.
- **Need 2<sup>nd</sup> GAS TRANSITION – CNG for vehicles; now for industry**

# Clean power and reliable

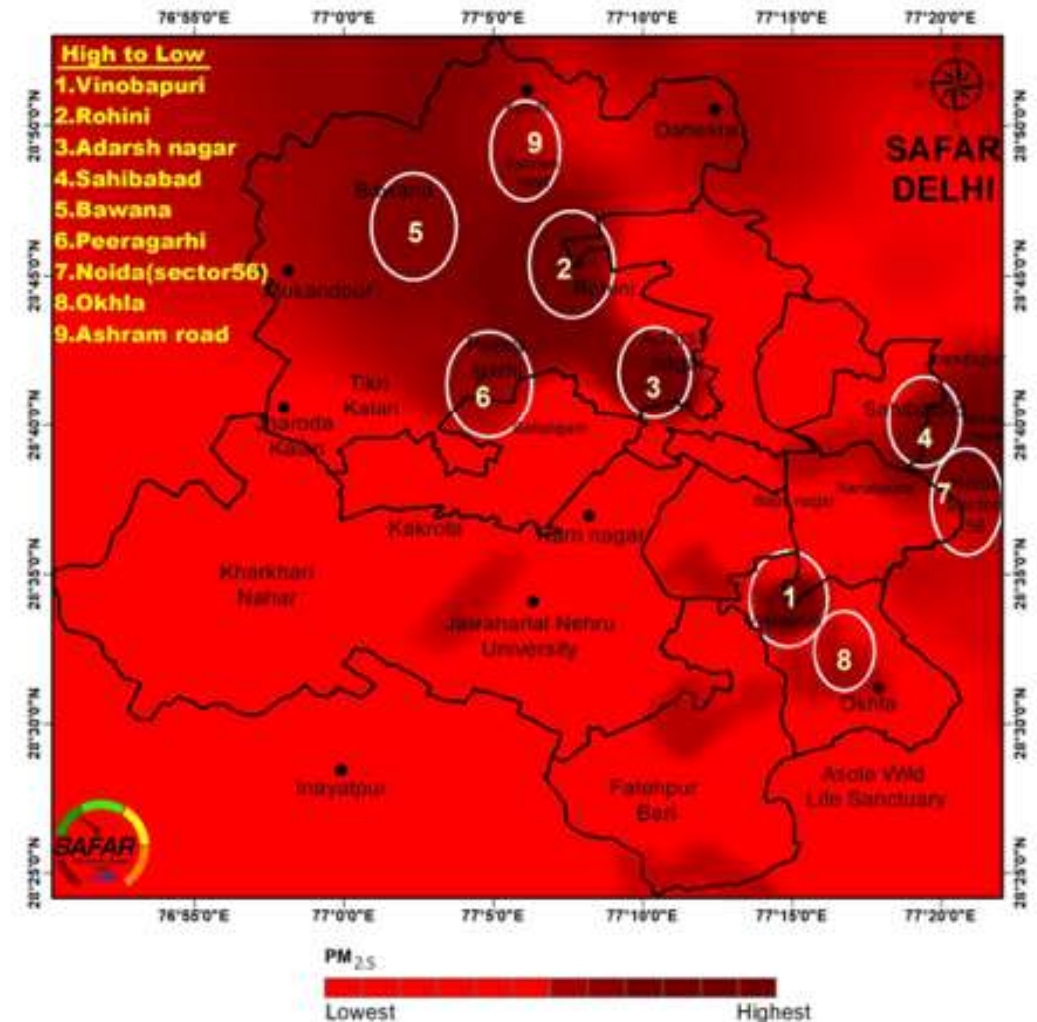


- We need to move towards electrification of combustion – vehicles to factories and for this we need cleaner electricity generation
- Coal power plants have to move to cleaner emission technology or move to natural gas (standards set/deadlines have been given)
- Generators must be shut and reliable and affordable electricity must be provided to homes/industries/malls/offices

What needs to be done: the agenda for clean air

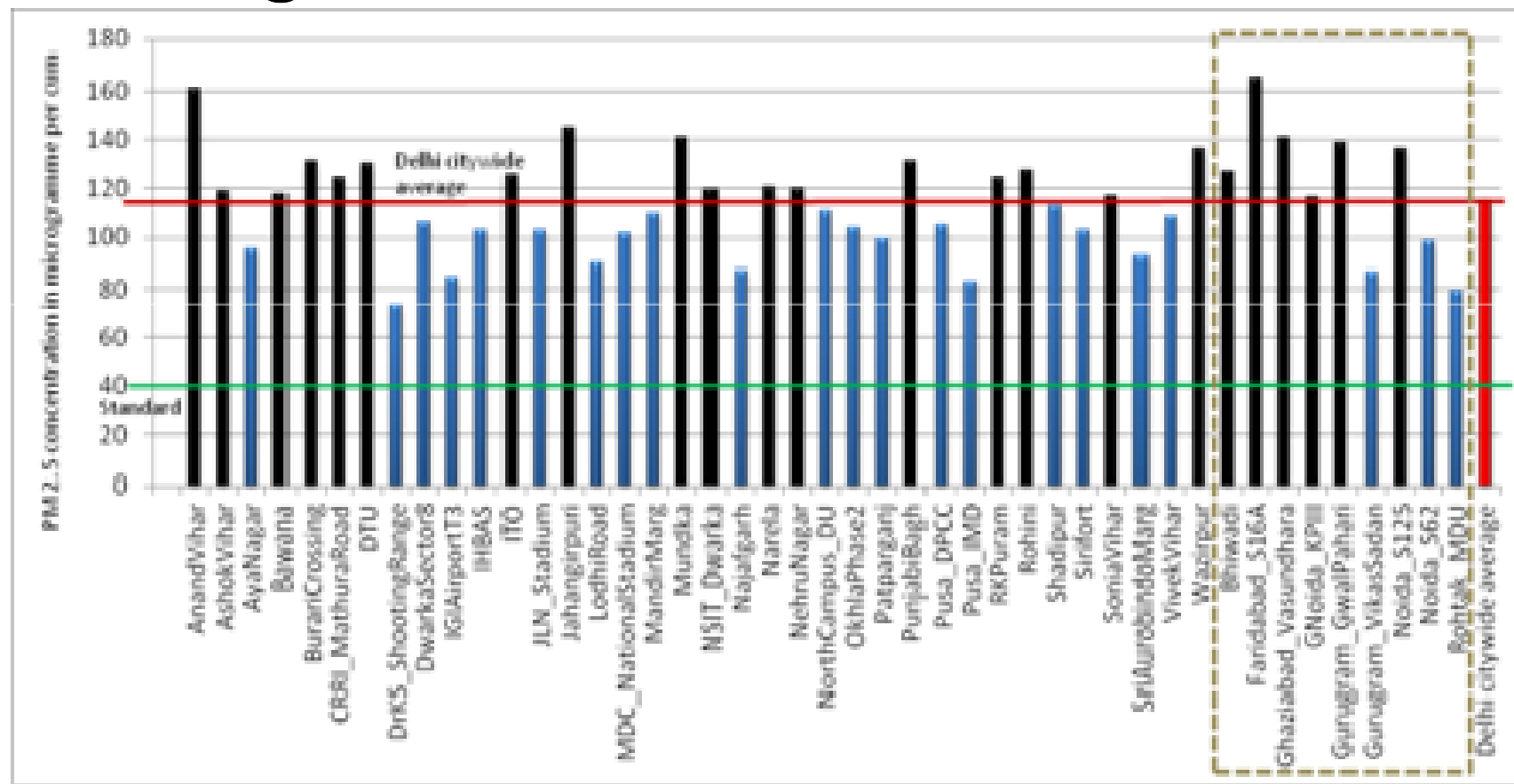
## C. Enforcement and deterrence and incentives for farmers

- **Hot spots:** Governments have identified hot spots for improved enforcement to reduce local pollution sources, from construction dust to garbage burning. There are action plans to combat pollution and governments are monitoring action daily





# Hot spots: industrial pollution/garbage burning/road dust/construction





# Farmers: need incentives

- **Farmers** need incentives so that they do not burn stubble.
- One reason why stubble burning impacts the region is because of the timing – winter onset. This is also because farmers have been asked to shift date of sowing of paddy to conserve groundwater. So date of harvest has shifted. They have smaller window between when they harvest and when they sow wheat. So, they have no option but to burn. Also too poor to invest in machines.
- Government has provided subsidy to machines to plough back stubble. **Will improve soil nutrients.** Now Supreme Court has instructed that farmers can be paid for their stubble. **Will improve agrarian economy**

# Air pollution: great equalizer



- Air pollution is a great equalizer: rich cannot buy their way out of the air pollution crisis – air purifiers will not work
- Airshed is one and has no boundaries – poor will add to toxins if they have no access to clean energy. Rich will pollute with diesel SUVs. Luxury vs survival emissions. **Inclusive growth=sustainability**
- **I believe therefore, we are taking action. Governments are responding to control air pollution; much has been done. But much more needs to be done and this needs us to think differently. Act with scale, speed and with difference in strategy**