



# NATIONAL CLEAN AIR PROGRAM (NCAP)

Sundeep  
Director

Control of Pollution Division  
Ministry of Environment, Forest & Climate Change  
Government of India  
Email: [sundeep.cpcb@nic.in](mailto:sundeep.cpcb@nic.in)



- Air Pollution is a matter of national and International concern
- Background air quality, geographical & seasonal variation
- Urban agglomerates in Indo-Gangetic Plain are more affected
- Multi-Sectoral Contributions is major Challenge
- Transboundary and air shed contributions

# Regulatory & Management System

- Air (Prevention and Control of Pollution ) Act, 1981
- Environmental (Protection) Act, 1986 & various Rules made therein
- Authorities/ Commissions for sensitive/problematic area
- Standard for National Ambient Air Quality / Emission Sources
- Prior environmental clearance mandatory for sources of concern
- National Air Quality Monitoring Program (Real time & Manual) & OCEMS
- Close monitoring of Industrial Area and Corrective measures
- State and National Level authorities (CPCB and SPCBS) mandate for management of Pollution
- Involvement of Urban Administrations, Industrial Associations & Academia

# National Ambient Air Quality Standards

S. No.	Pollutants	Time Weighted Average	Concentration in Ambient Air	
			Other Area	Eco-sensitive Area
1	Particulate Matter (Size <10µm) PM <sub>10</sub> (µg/m <sup>3</sup> )	Annual	60	60
		24 – Hours	100	100
2	Particulate Matter (Size <2.5 µm) PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Annual	40	40
		24 - Hours	60	60
3	Sulphur Dioxide (SO <sub>2</sub> ), µg/m <sup>3</sup>	Annual	50	20
		24 – Hours	80	80
4	Nitrogen Dioxide, (NO <sub>2</sub> ), µg/m <sup>3</sup>	Annual	40	30
		24 – Hours	80	80
5	Ozone (O <sub>3</sub> ), µg/m <sup>3</sup>	8 – Hours	100	100
		1 - Hour	180	180
6	Lead (Pb) (µg/m <sup>3</sup> )	Annual	0.5	0.5
		24 Hours	1.0	1.0

# National Ambient Air Quality Standards

S. No.	Pollutants	Time Weighted Average	Concentration in Ambient Air	
			Other Area	Eco-sensitive Area
7	Carbon Monoxide (CO), (mg/m <sup>3</sup> )	8 – Hours	2	2
		1 – Hour	4	4
8	Ammonia (NH <sub>3</sub> ), (µg/m <sup>3</sup> )	Annual	100	100
		24 - Hours	400	400
9	Benzene (C <sub>6</sub> H <sub>6</sub> ), (µg/m <sup>3</sup> )	Annual	5	5
10	Benzo (alpha) Pyrene (BaP) PM (ng/m <sup>3</sup> )	Annual	1	1
11	Arsenic (As), (ng/m <sup>3</sup> )	Annual	6	6
12	Nickel (Ni), (ng/m <sup>3</sup> )	Annual	20	20

Note –

- Method of measurement defined for each parameters
- All metals to be analysed for PM collected on EPM 2000 filter or equivalent
- Annual arithmetic mean of minimum 104 measurements in year at particular site (Twice week – 24 hours @ uniform)
- 24 hourly or 8 hourly or 1 hourly values shall comply with 98% of time in a year
- 2% of time may exceed the limit but not on two consecutive days of monitoring

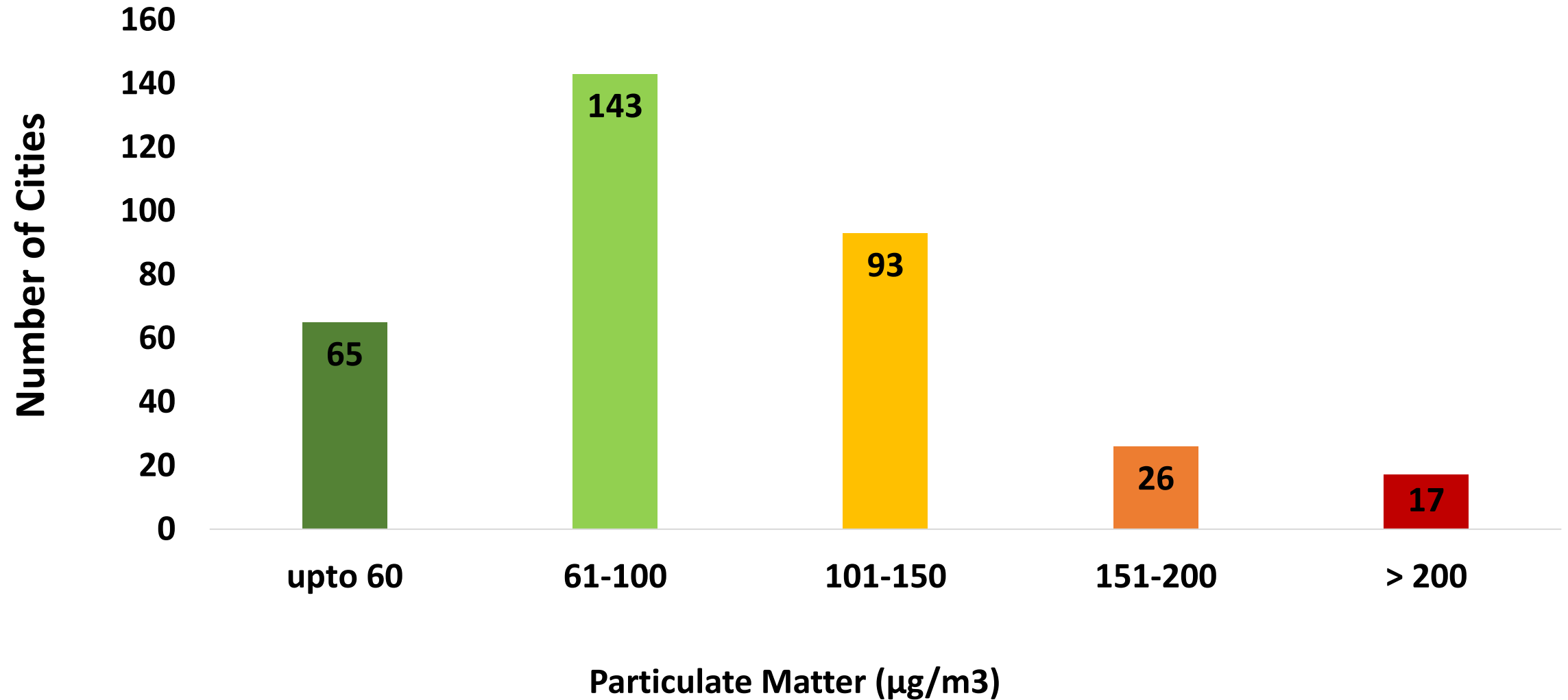
# Air Quality Index (AQI)

**Air quality index (AQI)** - tool that transforms weighted values of individual air pollution parameters ( $PM_{10}$ ,  $PM_{2.5}$ ,  $NO_2$ ,  $SO_2$ ,  $CO$ ,  $O_3$ ,  $NH_3$ , and  $Pb$ ) into single number

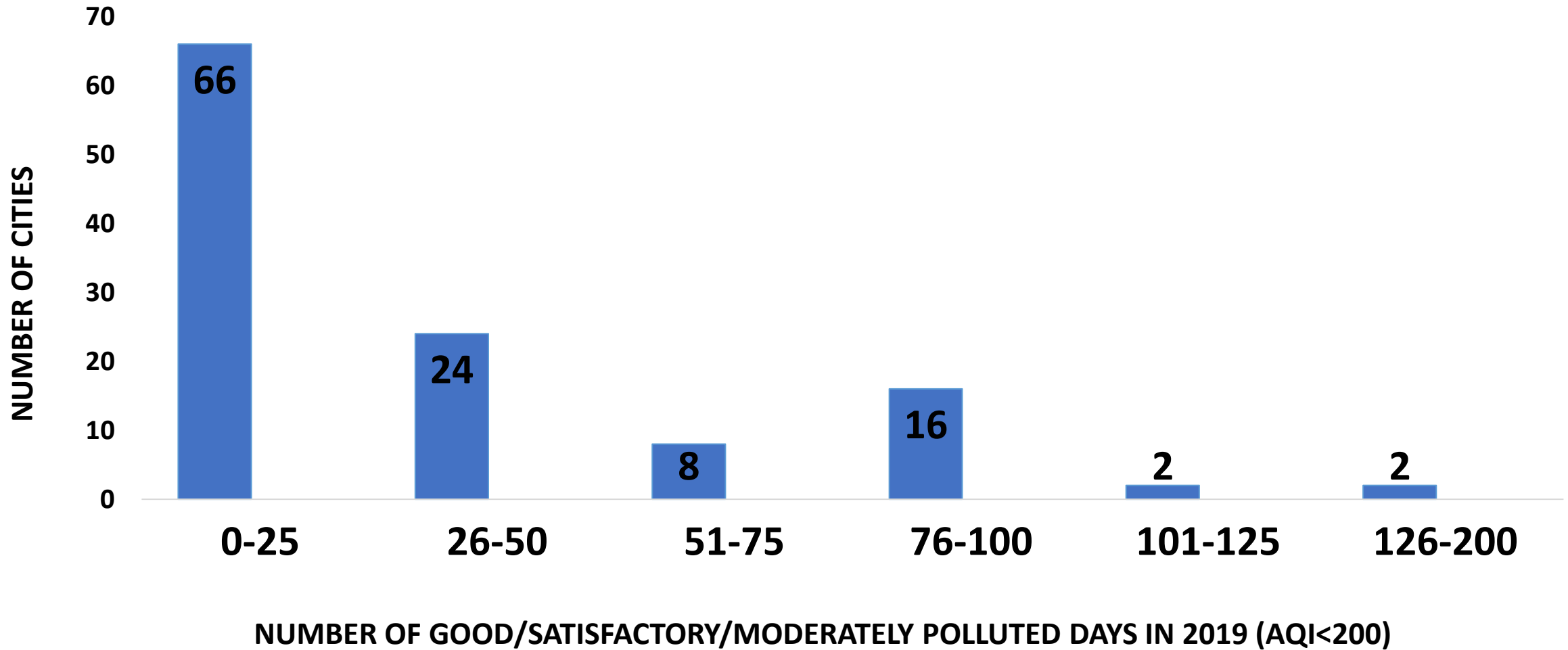
- Based on daily observations from CAAQMS
- Exceedance factor on 24-hours standard

	Category	Air Quality Index (AQI)
GOOD DAYS	Good	0-50
	Satisfactory	51-100
	Moderately polluted	101-200
	Poor	201-300
	Very Poor	301-400
	Severe	401-500

## 5 year Annual Average (PM10) (2015-19)



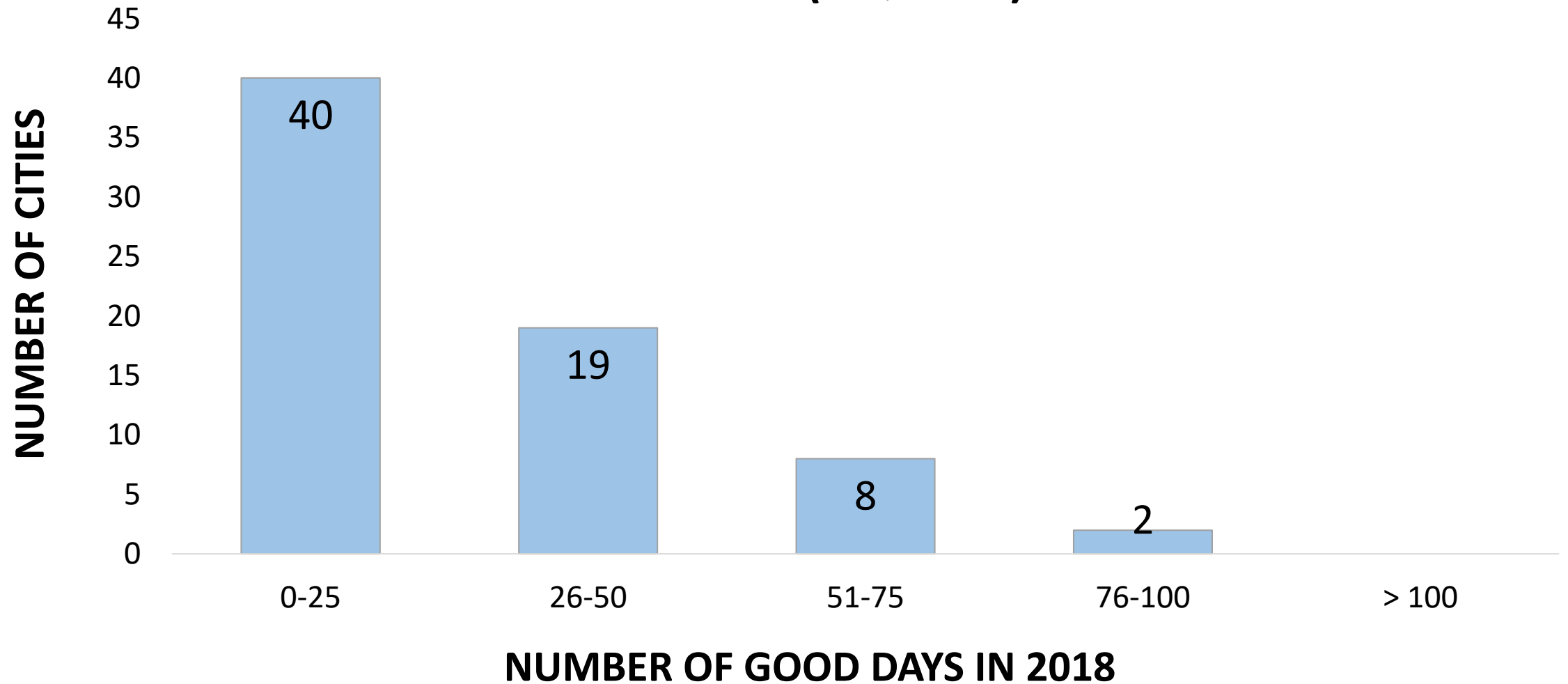
# City Profile - Air Quality Index



\*Highest - Eluru (AP) -193 Tirupati- 159



## GOOD DAYS (AQI<200)



- National Clean Air Programme (NCAP) – Launched in January 2019
- Envisages Air Quality improvement in 124 Non-Attainment Cities (NACs)  
*(Not conforming to National Ambient Air Quality Standards (NAAQS) for 5 consecutive years)*
- Target - reduce 20-30 % in Particulate Matter (PM) by 2024 (Base 2017)
- Inter-department co-ordination for convergence of actions
- Partners to address the limitation of Knowledge at implementation level  
(Institutes of National repute and multi-lateral Agencies)

# Progress Made - NCAP

Particulars	Status
City Action Plans (CAP)	<ul style="list-style-type: none"> <li>• 112 Completed &amp; 10 under process</li> <li>• 42 Cities prepared Micro-level Action plan</li> </ul>
Source Apportionment & Emission Inventory Studies	<ul style="list-style-type: none"> <li>• Completed – 14 cities</li> <li>• Work in progress – 68 cities</li> <li>• At proposal stage – 50 cities</li> </ul>
Emergency Response System (ERS)	<ul style="list-style-type: none"> <li>• Developed – 110 cities</li> <li>• In progress – 16 cities</li> <li>• Work yet to commence – 7 cities</li> </ul>
Air quality Management Cell	<ul style="list-style-type: none"> <li>• 42 Cities</li> </ul>
MoU with Knowledge Partners	<ul style="list-style-type: none"> <li>• 122 Cities</li> </ul>
Monitoring Stations (Adequate as per norms)	<ul style="list-style-type: none"> <li>• 265- CAAQMS</li> <li>• 805 – Manual</li> <li>• 1070 stations in 344 cities in 28 states</li> </ul>

## **Stage 1: Identification and recognize the Problem**

- Monitoring & Assessment
- Existing data/ Documents
- Coalition / Consultation with Stake holders

## **Stage 2: Reduce Emission levels at Source**

- Sector level interventions
- Emission inventory

## **Stage 3: Reduce air pollution Levels**

- Regional Level Interventions
- Source apportionment

## **Stage 4: Reduce Impact**

- Cost Effectiveness / Benefit Analysis

A large fraction of the air pollution that people are exposed to are not emitted in the location in which people are being exposed. Interventions are therefore required at all scales

- Committees structured at various levels will be responsible for execution and implementation of city action plans
- Objective based financial support to SPCBs and ULBs
- Strengthening of National Ambient Air Quality Monitoring Network
- Preparation of micro level city action plans
- Data Collation & dissemination to public
- Identification of hotspots in ULBs through scientific study
- Engagement of IoRs in implementation of identified studies/monitoring

- Community/Edu. Institutes participation for local & national level implementation
- Guidelines preparation to have uniformity across the cities
- State Government Policy interventions
- New technology implementation through demonstrative / pilot scale
- Third party evaluation of the achievements with incentive to better performers
- Use of social and other media for public awareness and behavior changes

- Detailed Source Apportionment (SA) & Emission Inventory (EI)
- City action plans/activities to be re-aligned and prioritized accordingly
- Sectoral Areas (Primary)
  - Control of Industrial emissions
  - Vehicular emissions
  - Household Emissions including Open burning
  - Construction & Demolition waste management
  - Municipal Solid waste management
  - Agricultural stubble burning
  - Road dust management

- Gradual shift to CNG/PNG/electricity and discouraging polluting fuels (Pet Coke)
- Uninterrupted electric supply – no use of DG sets
- **Thermal Power Plants** – Better emission norms
- Development of Regional/ City specific emission standards for all industries
- **Emission Trading Scheme** – use of markets to reduce pollution
- Brick Kiln – Bull Trench to Zig-Zag (Reduction –  $PM_{2.5}$  ~20% & BC ~ 30%)



- Increase share of public transport
- Expediting completion of metro rail projects
- Fleet Modernization- CNG/ Electric buses
- **Gradual shift to CNG / Electric Vehicles**
- Implementation of **BS-VI standards Vehicles & Fuel on Pan India basis**
- Conversion of Goods Carrier Vehicles (LCVs) to CNG/ LNG
- IT enabled **Automatic 'PUC'** monitoring and certification system

- Timeline based shift to LPG/ PNG / Ethanol for cooking fuels
- Uninterrupted electrical power supply – no use of DG sets
- Banning of open burning of coal/ biomass/ plastic/ rubber and miscellaneous waste
- Efficient Municipal Waste Management (Promote circular economy)
  - Segregation
  - Collection
  - Disposal practices
  - Resource Recovery

Air Pollution and Climate Change are closely linked because many of the sources of greenhouse gases responsible for Climate Change are also major source of air pollution

- Strict enforcement of C&D Waste Management rules
- Road dust management
  - Mechanized road sweeping
  - Dust suppressants
  - Water sprinkling system
- Resource efficiency – Use of C&D waste
  - Road laying & construction
  - Paver blocks and other construction materials

- **In-Situ Management of Crops Residue**
  - Straw Management System using mechanised means
  - Multilingual mobile app-based aggregator platform 'CHC Farm Machinery' (for renting the instruments/ machines)
  - Information, Education and Communication at 'Farmers' level
- **Ex-Situ Management of Crops Residue**
  - Bio pellets & Bales for extracting Bio-Fuels

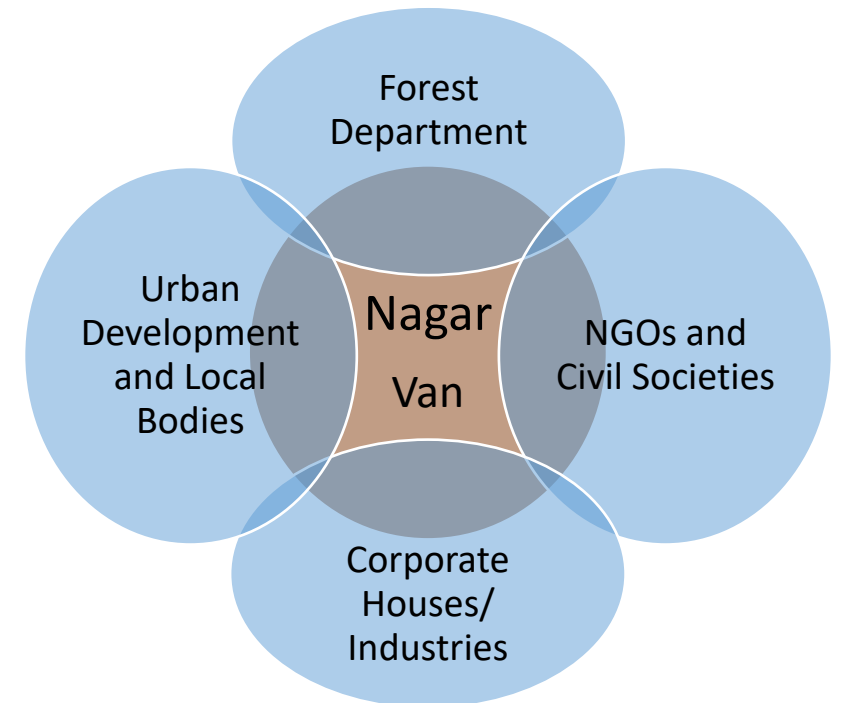
**One research study estimates – 1 MT of rice residue burning releases**

**PM - 10-12 Kg, CO - 50 - 60 kg, CO<sub>2</sub> - 1400 – 1500 kg, NO<sub>x</sub> - 5 kg SO<sub>2</sub> – 2 Kg**

**Loss to soil – 90% of N and S and 15-20% of P and K )**

## Urban forestry through Peoples' participation - “Greening Heat Sinks”

- **Nagar Van Scheme** launched on World Environment Day (5<sup>th</sup> June 2020)
- 200 urban forests planned – under the scheme
- Promotion of Green CSR projects.



- Create National Knowledge network with Institutions of Repute –Partners with cities/ states (**IITs, NITs, PGI, NEERI etc.**)
- Role:
  - Mentor & guide cities in various studies such as Emission Inventory, Source identification etc.
  - Monitoring and Evaluation
- Engage with International agencies (**World Bank, UNDP, UNEP etc.**)
  - For International expertise and experiences sharing
  - Funding to pilot / demonstrative programs
  - Partner with City level implementation agencies

- Many Air Pollutants are interdependent and needs to be dealt together
- Local Authorities must work together as the problem crosses boundaries
- Coherent approach is needed between different stakeholders
- Reduce the source of pollutants (qualitative and quantitatively)
- Economical consideration shall be criteria for all decision, risk appetite of the society
- Some action may disproportionately affect different groups of society – need to provide some financial incentives

Thank you