

# **SAFAR:** AN EARLY WARNING SYSTEM FOR AIR QUALITY



**SAFAR-India**



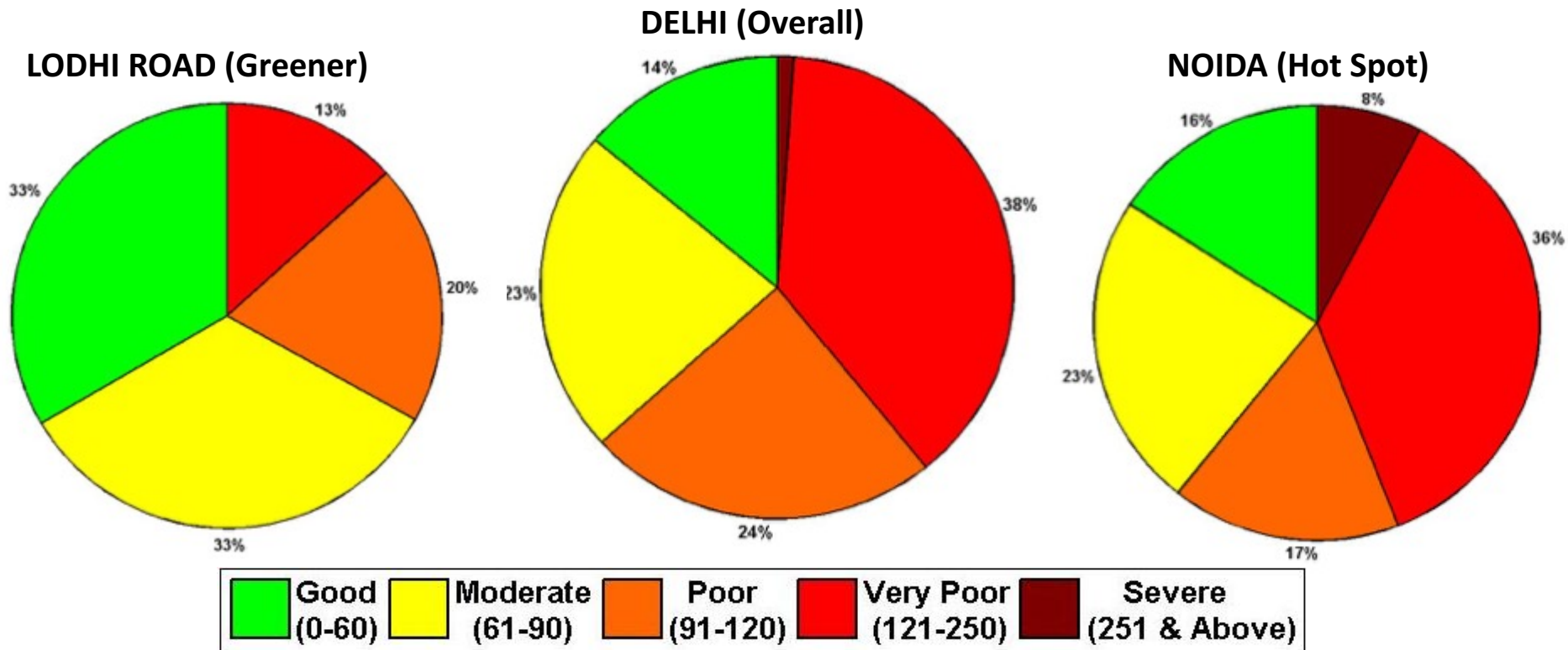
**ISO 9001:2008 Accredited** by Standard Certification Council-India  
**GURME, World Meteorological Organization** (United Nations) Pilot

**GUFRAN BEIG, PROJECT DIRECTOR, SAFAR**

**INDIAN INSTITUTE OF TROPICAL METEOROLOGY, PUNE**  
**Ministry of Earth Sciences, Govt. of India**

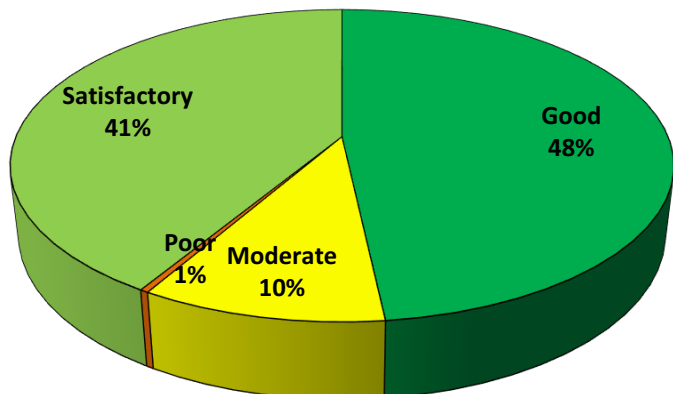
# DELHI –OVERALL (Annual) STATUS

## PM2.5: DAYS (%) IN DIFFERENT HEALTH INDEX (2015)

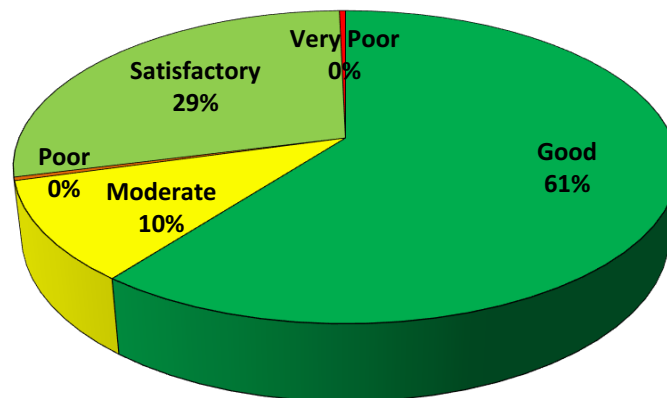


# SOUTH INDIA

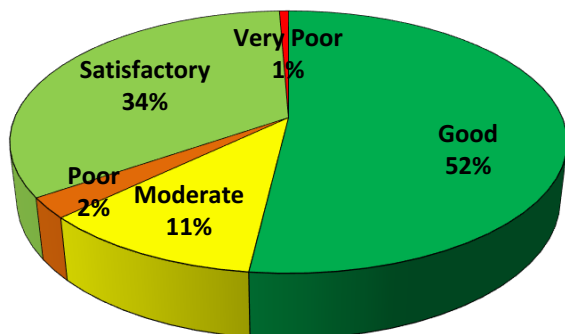
MAPAN- Bangalore Station 2016 - PM2.5



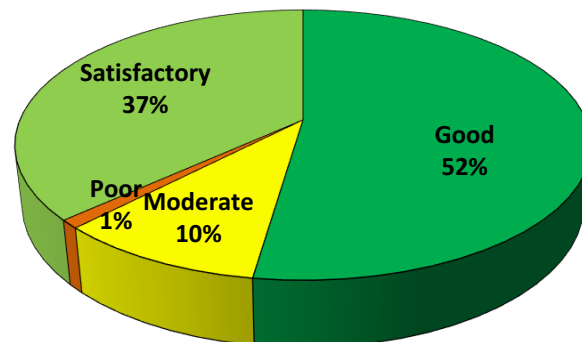
MAPAN- Chennai Station 2016 - PM2.5



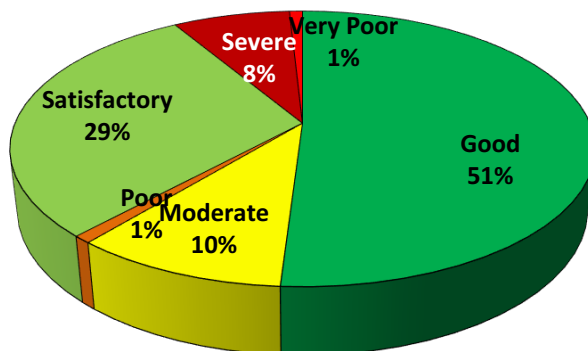
MAPAN-Vishakapatnam Station 2016 - PM2.5



MAPAN-Trivendrum Station 2016 - PM2.5

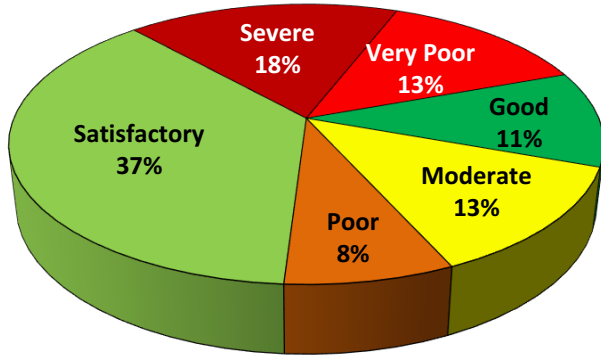


MAPAN- Hyderabad Station 2016 - PM2.5

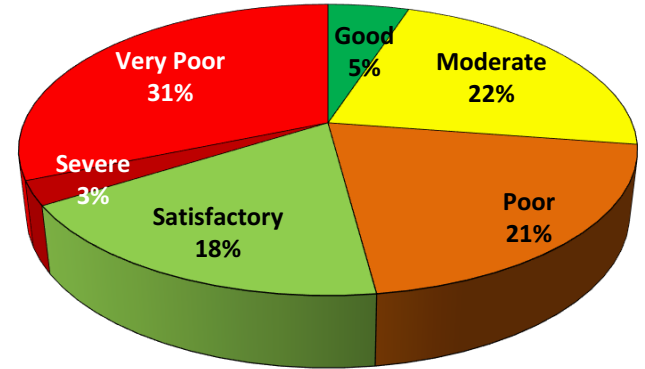


# NORTH INDIA

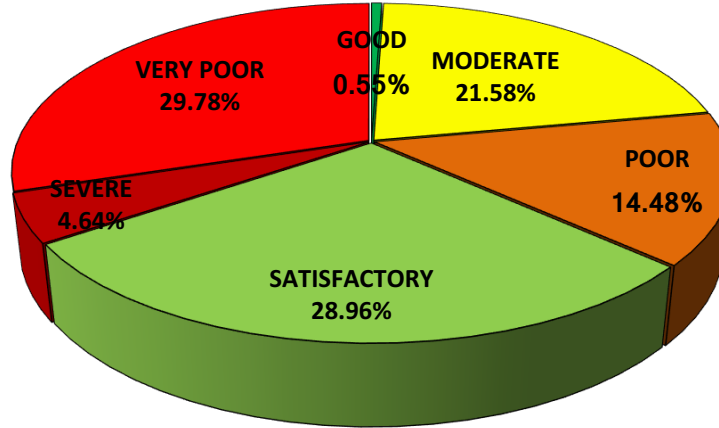
MAPAN- Srinagar Station 2016 - PM2.5



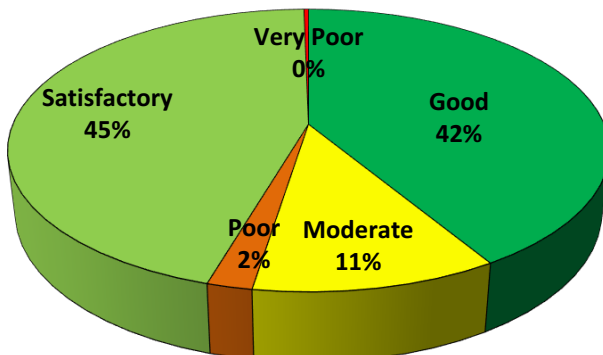
MAPAN-Patiala Station 2016 - PM2.5



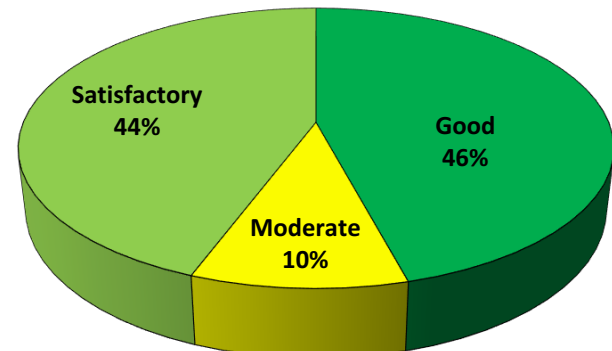
DELHI-SAFAR –PM2.5



MAPAN-Udaipur Station 2016 - PM2.5

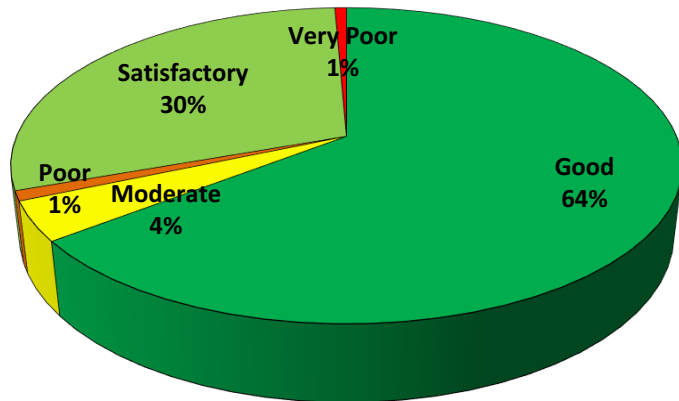


MAPAN- Jabalpur Station 2016 - PM2.5

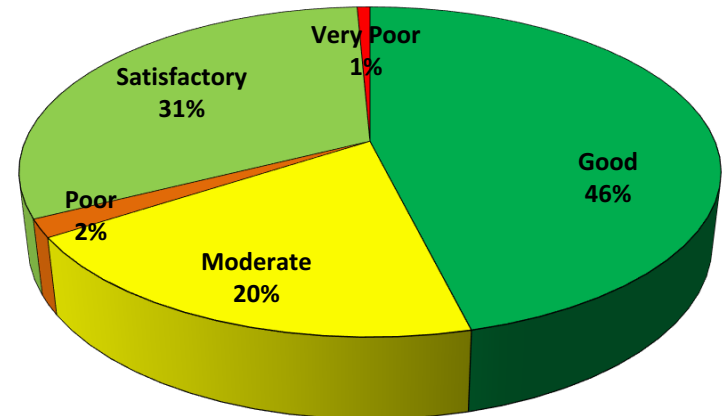


# NORTH-EAST

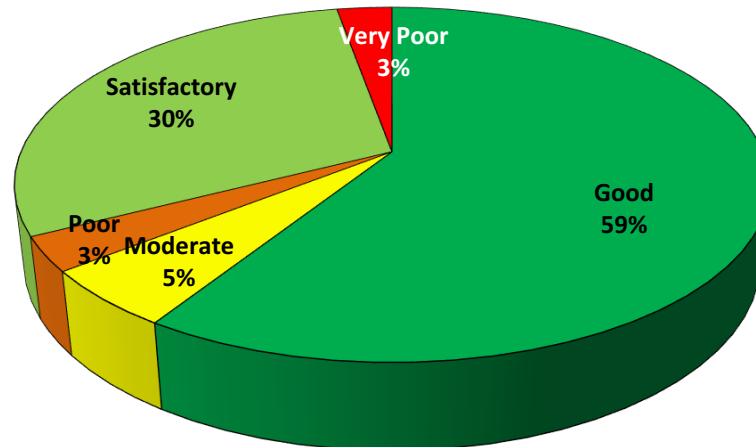
MAPAN- Aizwal  
Station 2016 - PM2.5



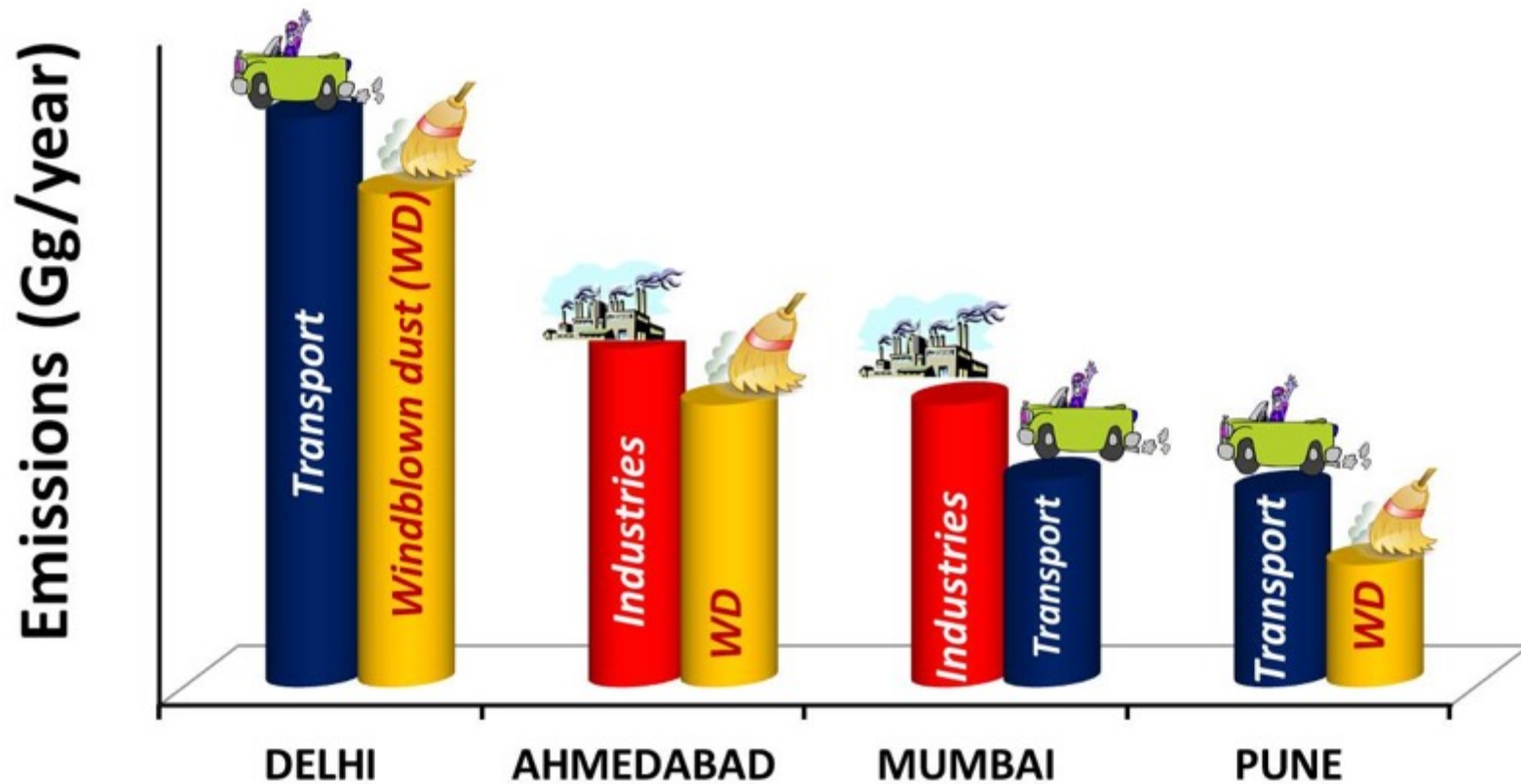
MAPAN- Gwahati Station 2016 - PM2.5



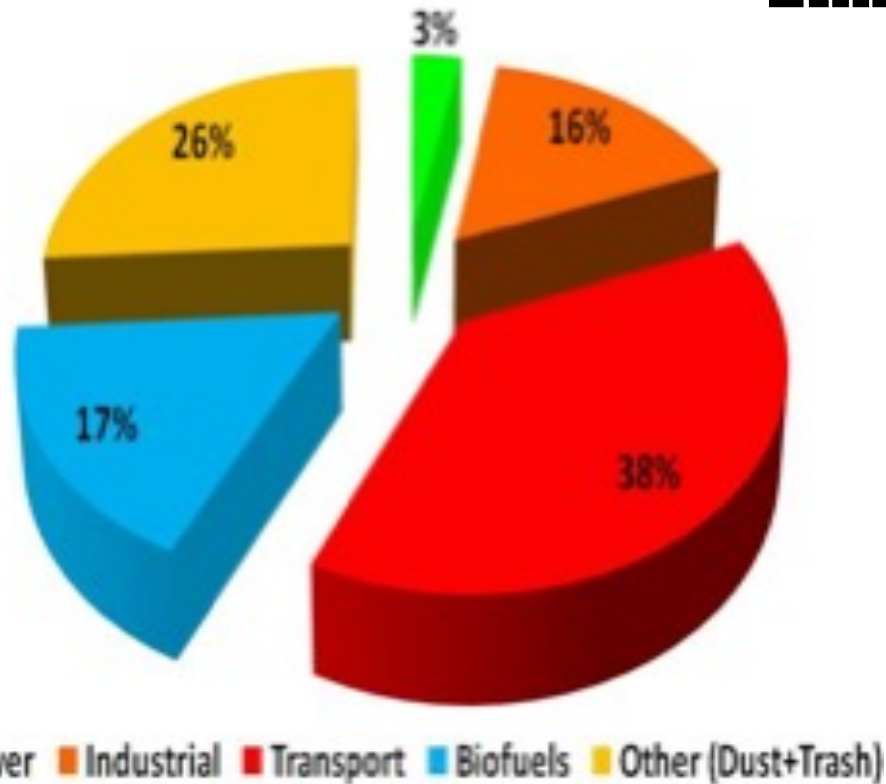
MAPAN-Tezpur Station 2016 - PM2.5



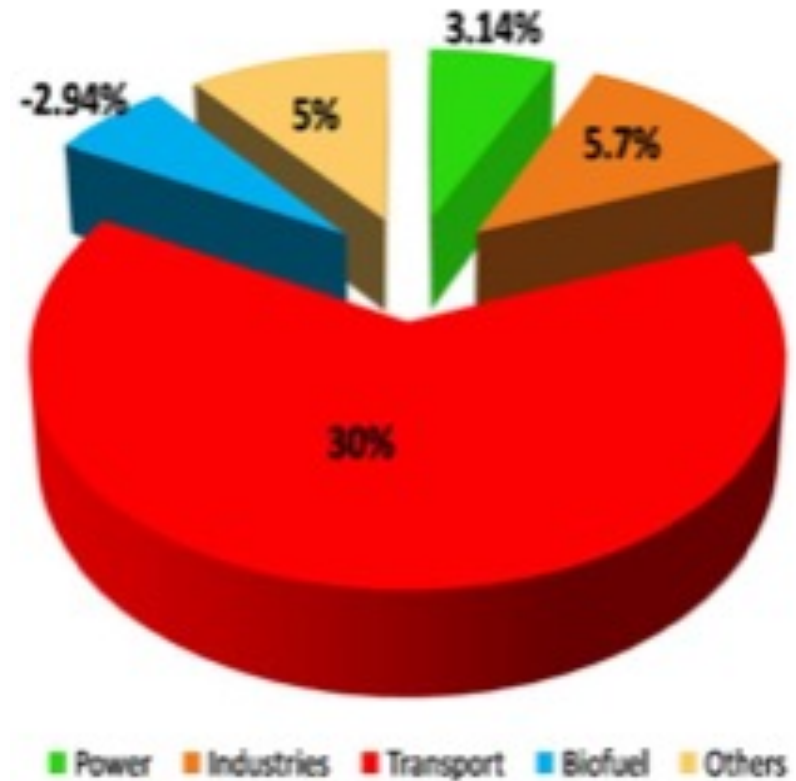
## Two most dominant source of PM<sub>2.5</sub> in SAFAR cities



# PM2.5 Emissions



**Sectorial Emissions Share**



**Growth (2010-2015)**

**Growth = 11.5%**

# WORKING TOWARDS TRUE HEALTH INDICATOR FOR SOCIETY



**AQ-HEALTH INDEX**  
**F (SIZE, VOLUME, TOXIN)**  
**=**  
**LEVEL OF POLLUTION**  
**+ CHEMICAL CHARACTERIZATION**



# Composition of particle plays a critical role in Adverse Health Effect

**PM<sub>2.5</sub>=110 $\mu$ g/m<sup>3</sup>**



Domain- 4 (1.67km)

**=**

**PM<sub>2.5</sub>=150 $\mu$ g/m<sup>3</sup>**



Domain- 4 (1.67 km)

**Mumbai, at times, more toxic than Delhi**

**Mumbai: BC composition is more in PM<sub>2.5</sub> as compared to Delhi**

# CHALLENGES

- **RECONCILING HIGH RESOLUTION CITY BASED EMISSION INVENTORY AND LARGER COUNTRY LEVEL EMISSION INVENTORY**
- **PM2.5: NOT ONLY CONCENTRATION BUT CHEMICAL CHARACTER (TOXICITY) IS EQUALLY IMPORTANT. THEN COMES EXPOSURE. ARE WE CONSIDERING IT ?**

# The END