सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF HOUSING AND URBAN AFFAIRS

18TH URBAN MOBILITY INDIA CONFERENCE & EXPO 2025

URBAN DEVELOPMENT & MOBILITY NEXUS

GURUGRAM, HARYANA | 7TH–9TH NOV 2025

Round Table 7

Emissions from Mobility other than the tailpipe

Co-organized by

Council on Energy, Environment and Water (CEEW)

Sunday, 9th November 2025 11:30 am -1:00 pm
Hyatt Regency, Sector 83, Gurgaon

Impacting sustainable development at scale with data, integrated analysis, and strategic outreach

TRANSFORMATIONS

- Low-carbon Economy
- Energy Transitions
- Power Markets
- Industrial Sustainability
- Sustainable Livelihoods

QUALITY OF LIFE

- Clean Air
- Sustainable Water
- Sustainable Food Systems
- Sustainable Cooling
- Sustainable Mobility

ENABLERS

- Sustainable Finance
- Technology Futures
- Circular Economy
- Climate Resilience
- International Cooperation

380+
Multidisciplinary team

510+
Peer-reviewed publications

650+
Convenings

400 million+
Lives impacted

11
Union ministries supported

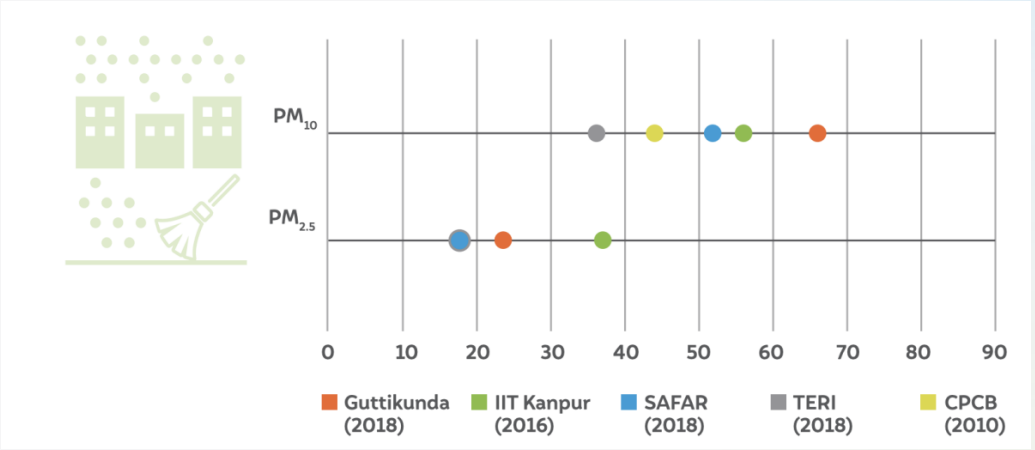
20+
State governments supported

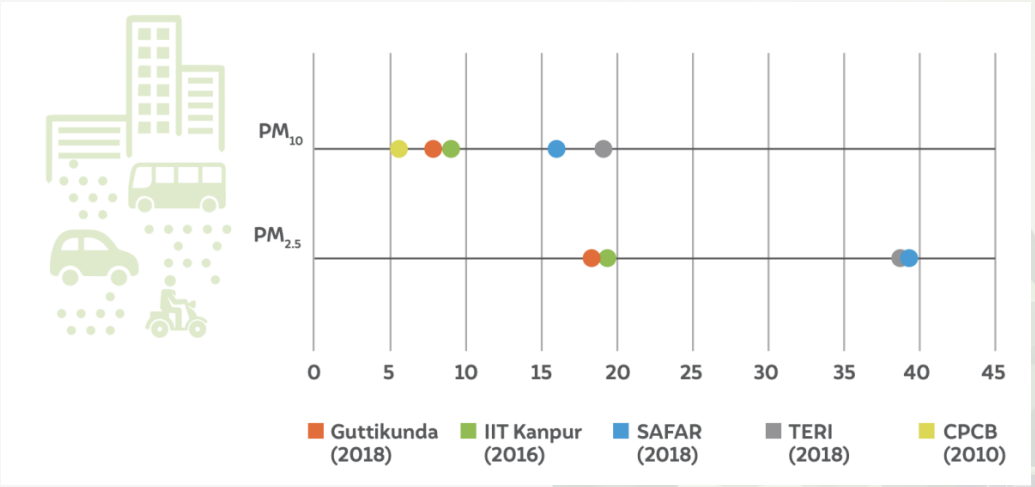
SPECIAL INITIATIVES

- CEEW Green Finance Centre
- Powering Livelihoods
- Emerging Economies
- UP State Office

Particulate matter pollution – of concern for India today

Sector	Variation	
	PM_{10} (%)	$PM_{2.5}$ (%)
Transport	5.5-19.0	17.9-39.2
Industries	1.3-18.3	2.3-28.9
Power plants	2.5-17.0	3.1-11.0
Road dust	35.6-65.9	18.1-37.8
Construction	3.6-21.0	2.2-8.4

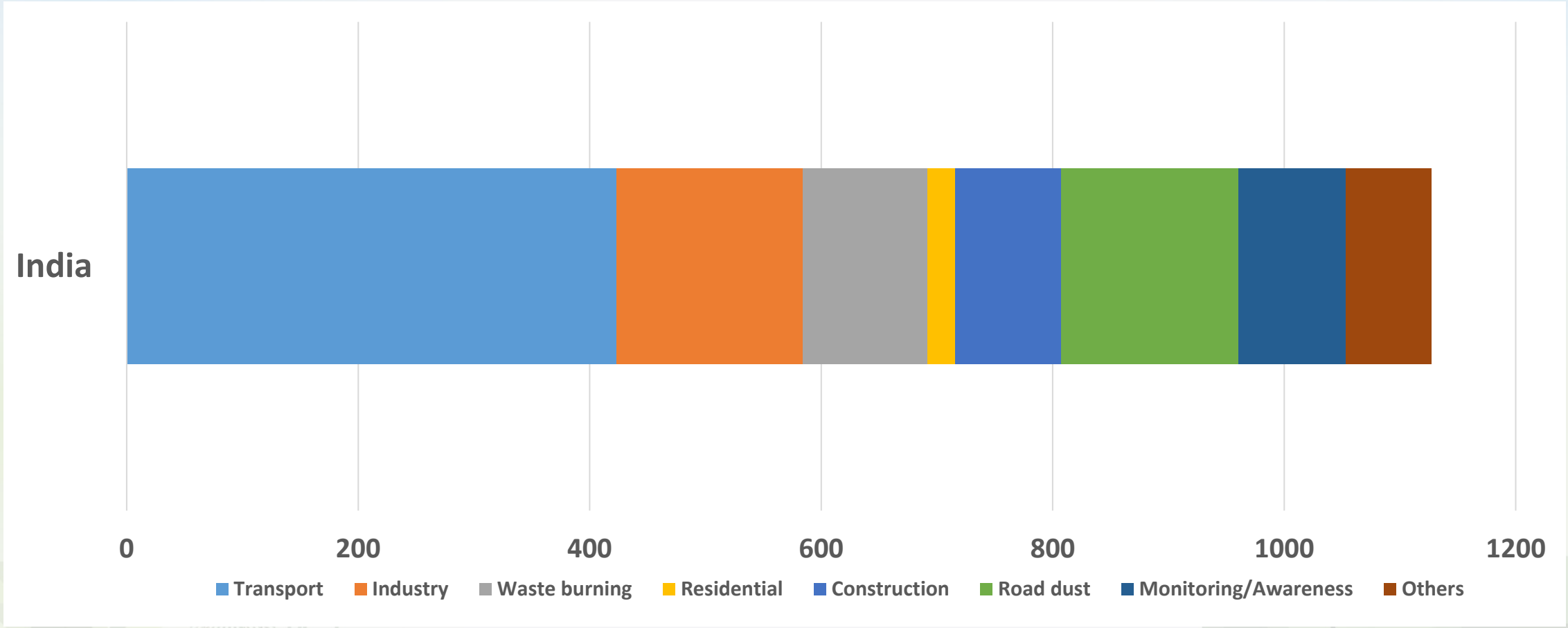




~80% of the non-attainment cities consider road dust as one of the major sources of PM emissions

Source: What's Polluting Delhi's Air, CEEW; 2019

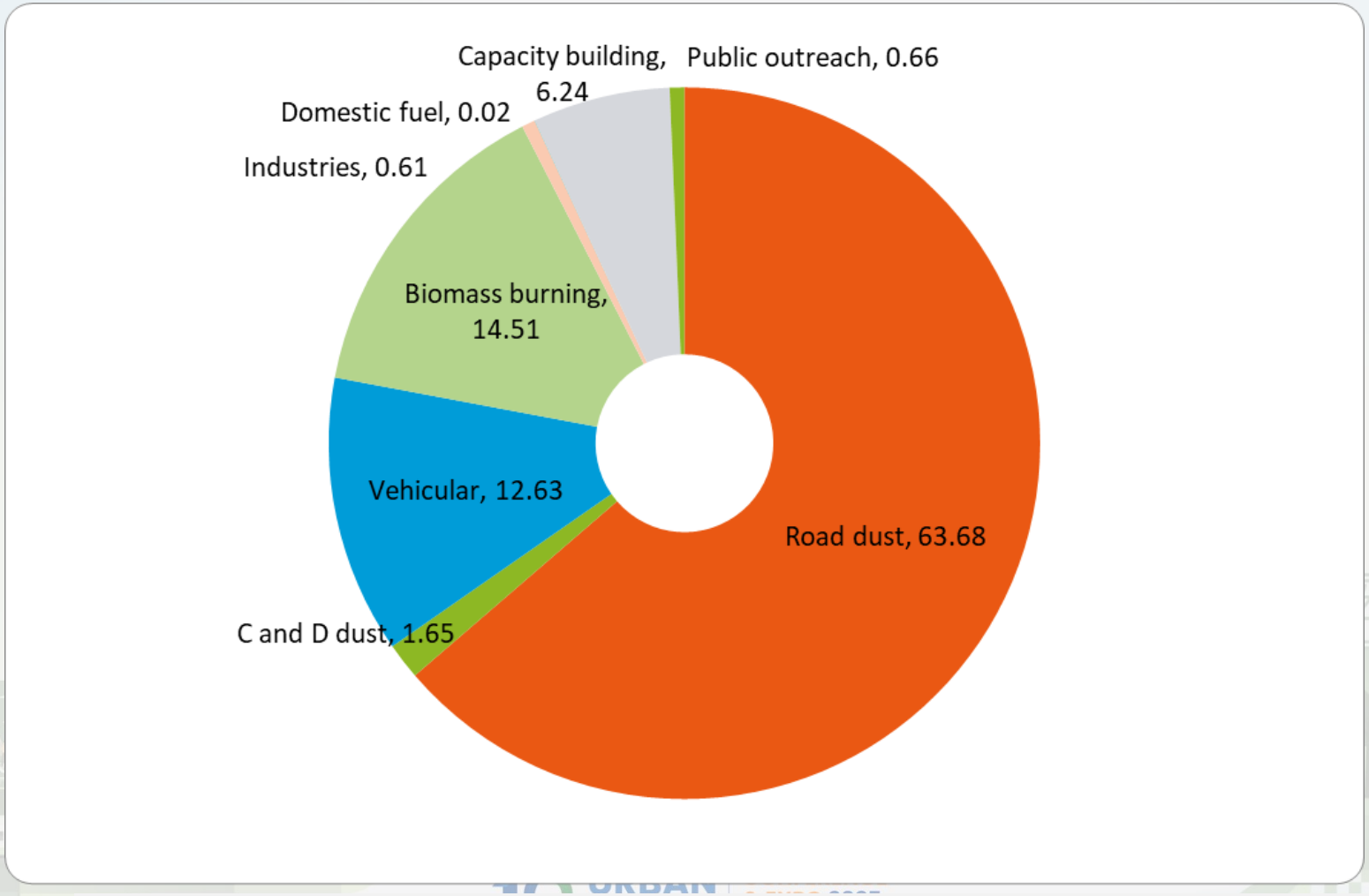
Road Dust consists of ~12-15% of interventions in Clean Air Plans (CAP)



Broad interventions that all the cities want to implement under NCAP are to **augment public transport, eradicate road and construction dust and abolish open waste burning**

Source: Ganguly et al., 2020

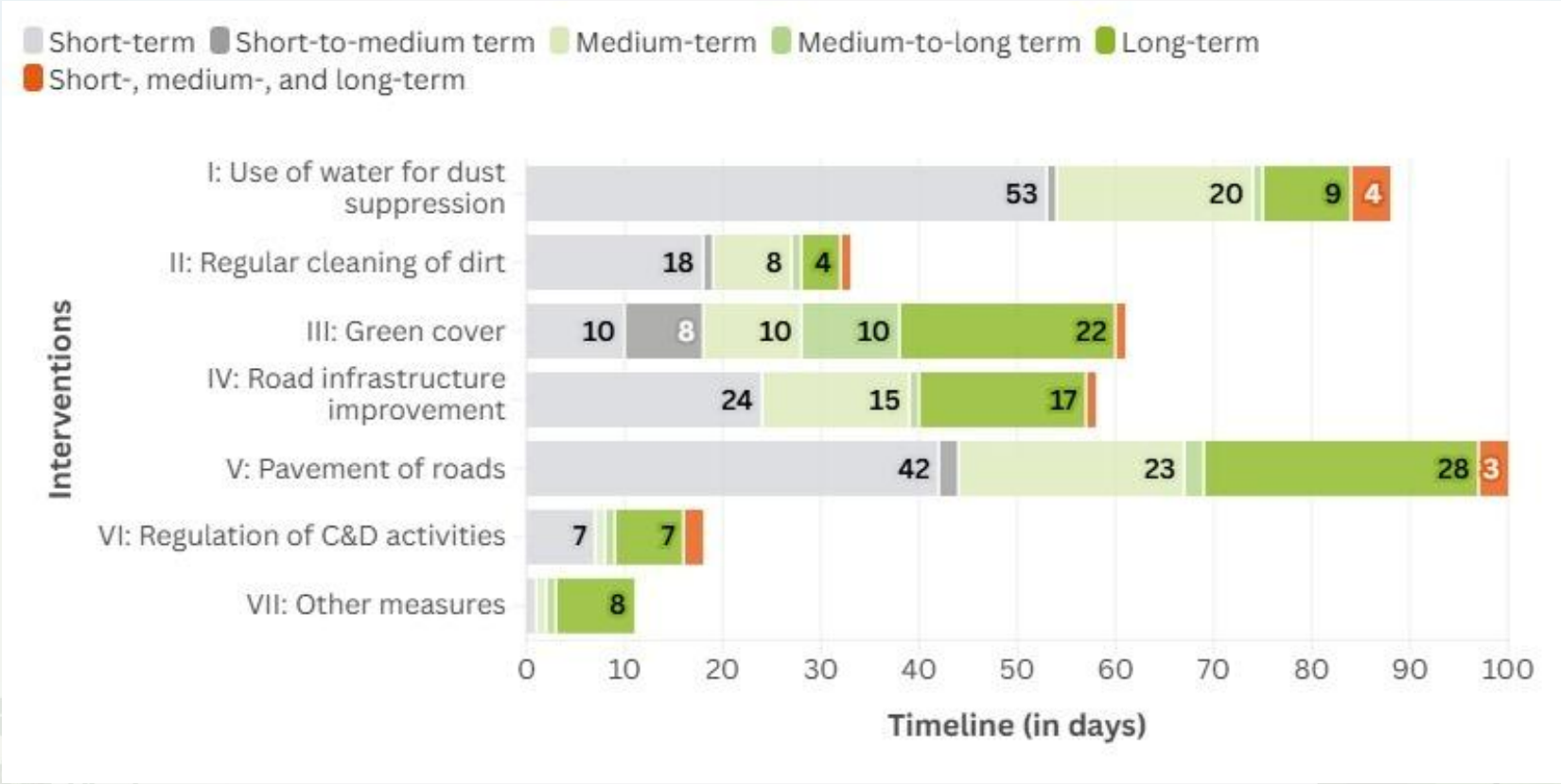
~64% of the allocated funds at national level are under interventions to manage road dust



~5 times the funds used for transport interventions is to reduce road dust

Source: CSE, 2024

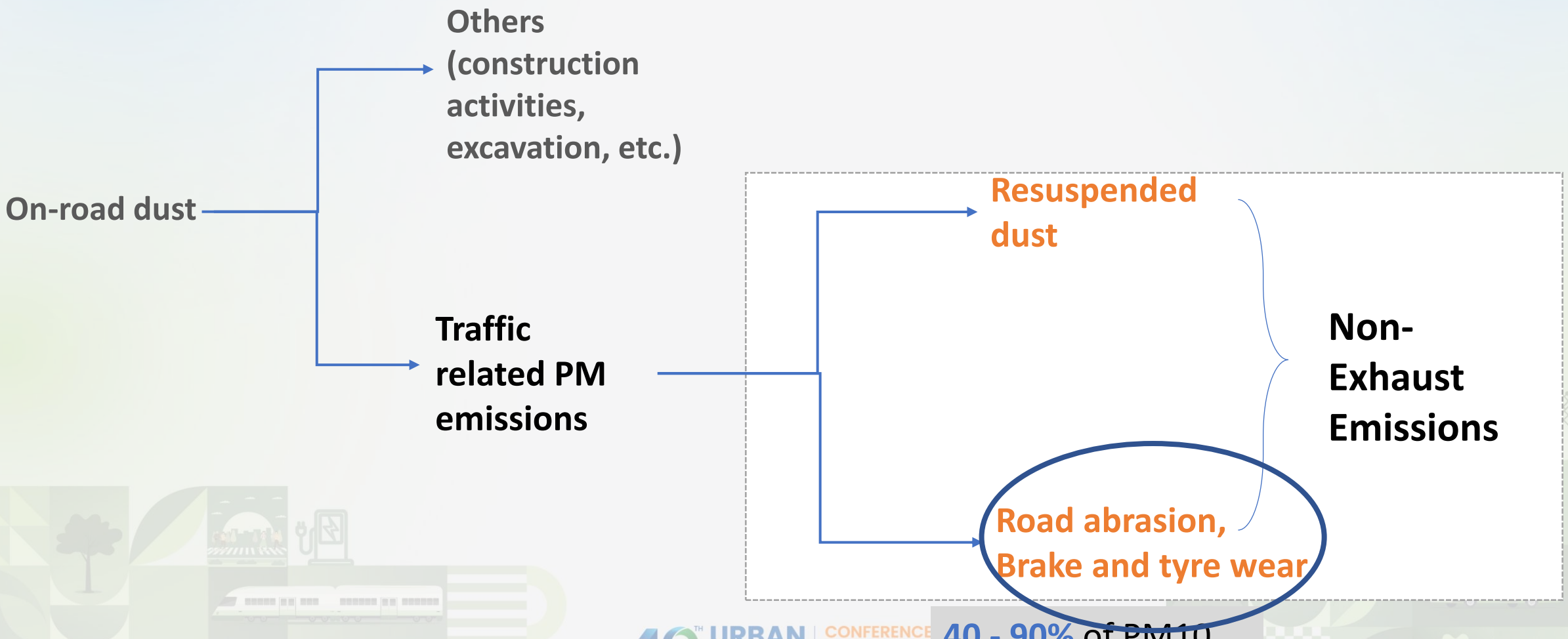
Popular strategies adopted and funded only focus on road dust cleaning and rarely manage the root cause of traffic movement, vehicle quantum



The most common perceived measure for dust mitigation is deploying mechanical sweepers, which are implemented in only 22 per cent of NCAP cities as short-term to long-term measures

Source: CEEW Compilation

Monitoring of non-exhaust emissions is amiss in the Indian context

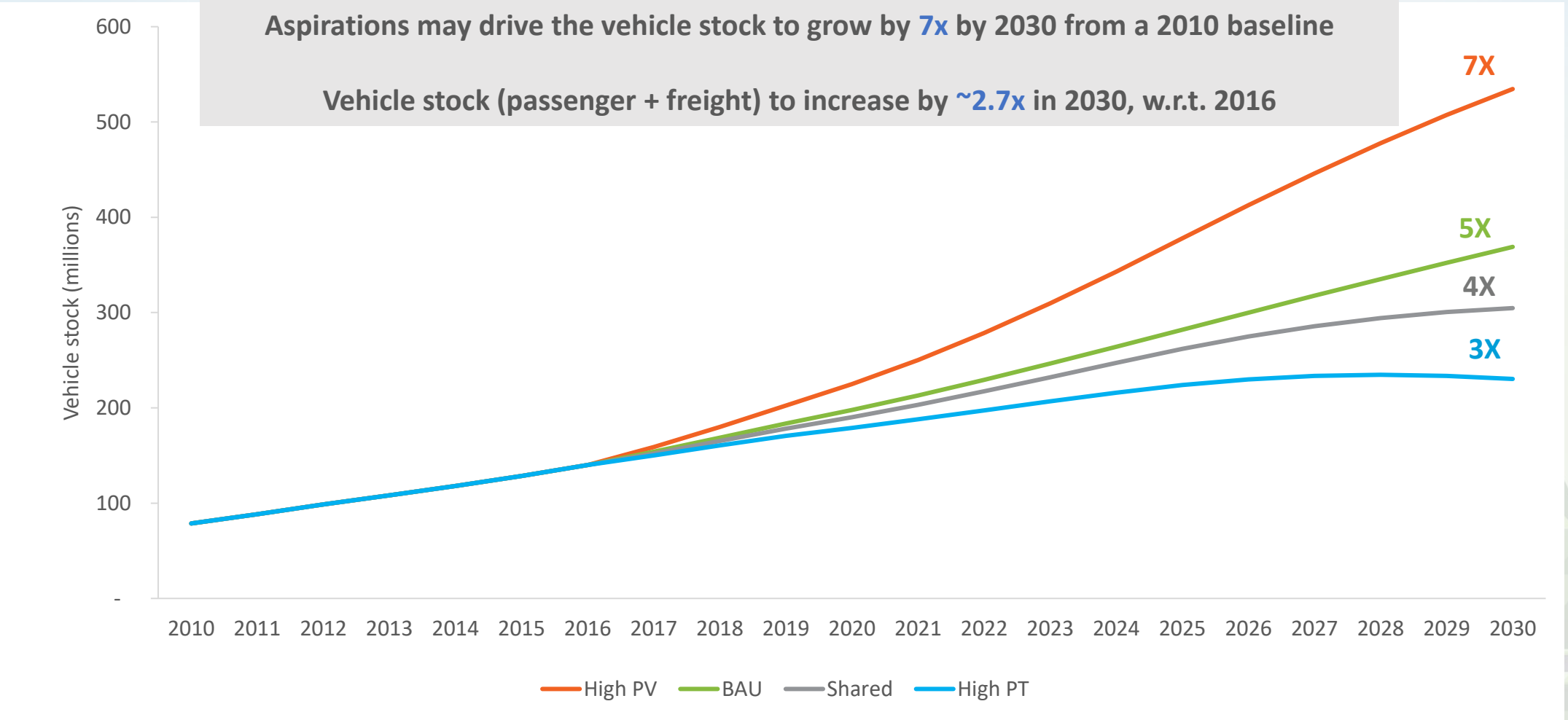


40 - 90% of PM10

40% - 80% of PM2.5

Source: Piscitello et al, 2021

Travel demand management strategies are paramount to reduce the vehicles on road and constant wear-tear related dusts and its resuspension



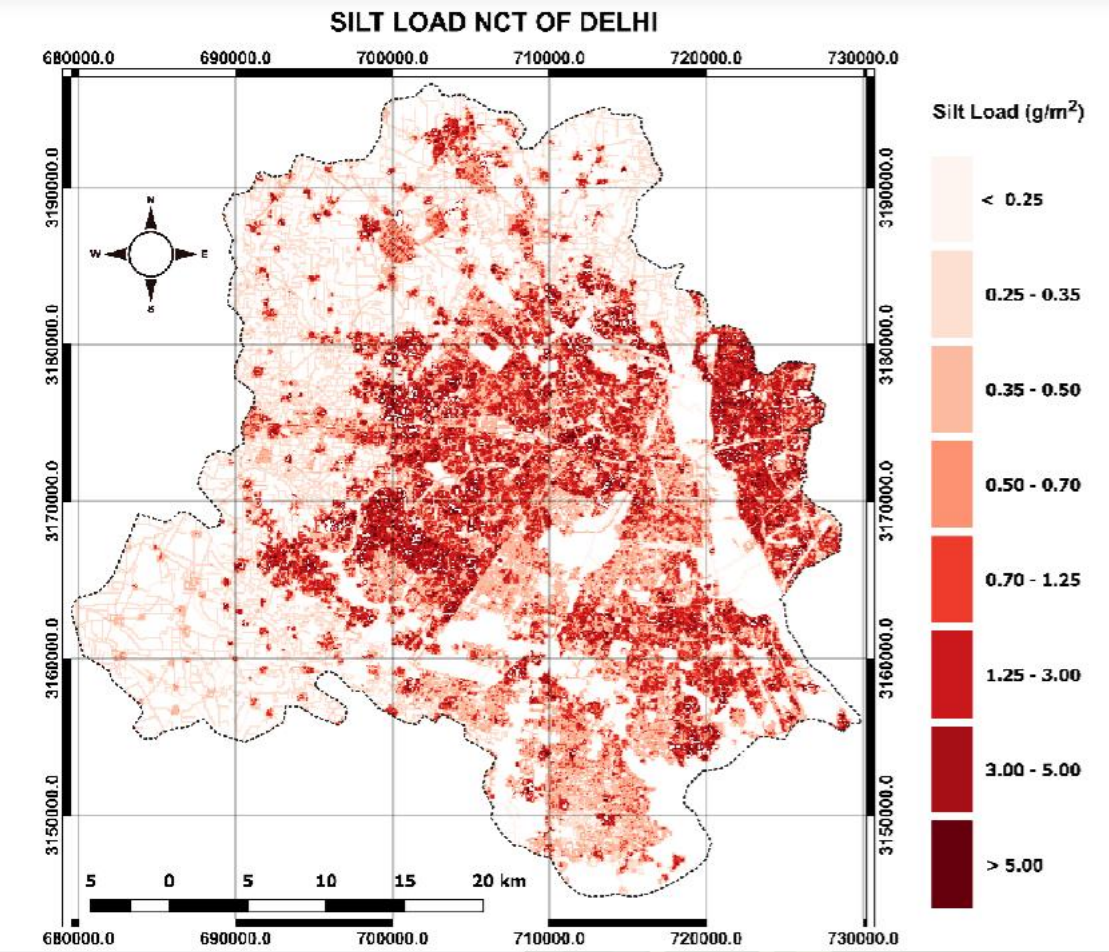
Source: Soman et al., 2020..

On-road silt - is the biggest contributor to non-exhaust emissions

$$Ef_{resuspension} = K \times (sL)^{0.91} \times (W)^{1.02} \times (1-P/4*N)$$

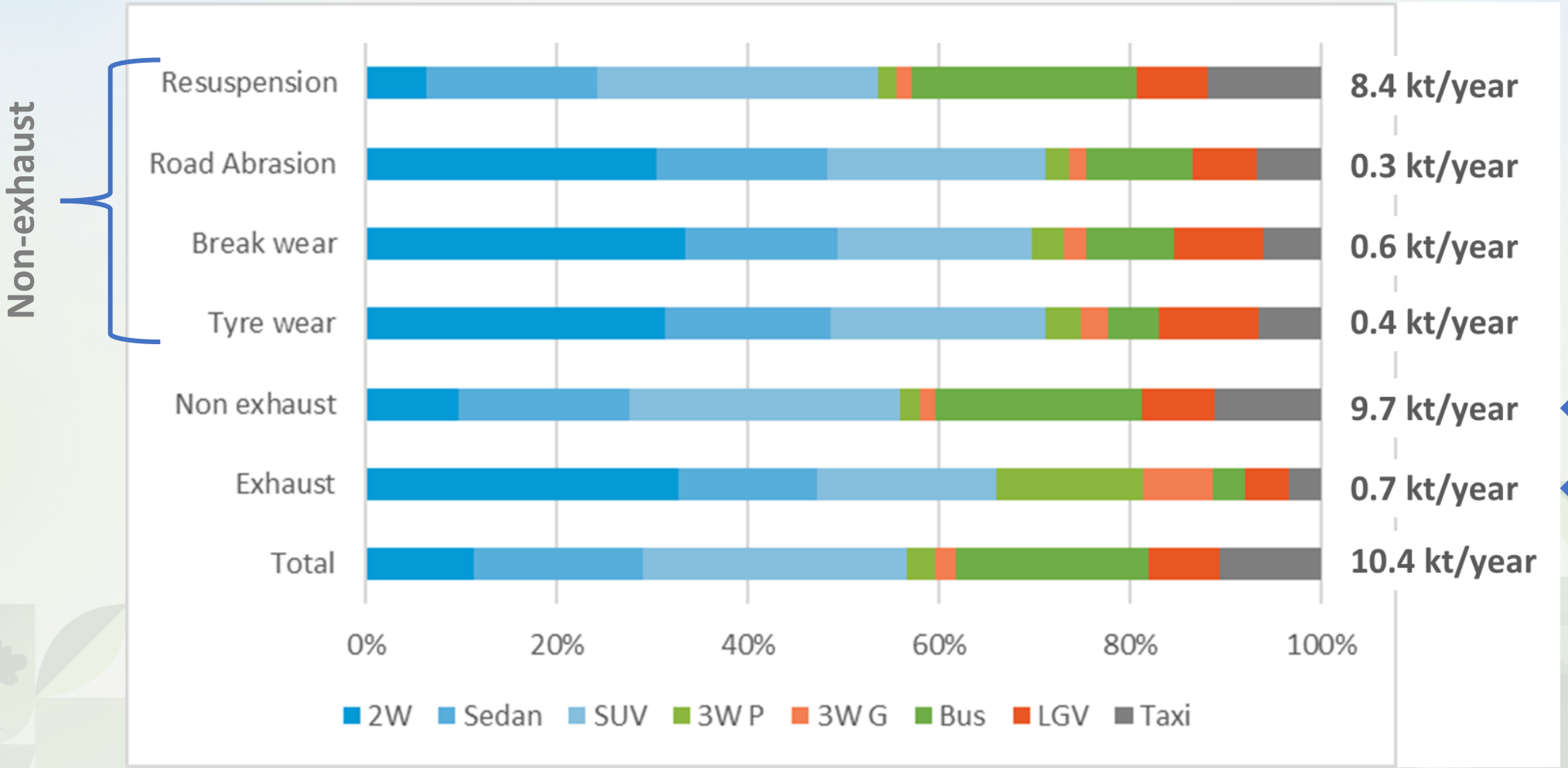
Ef = particulate emission factor (g/VKT)
K = particle size multiplier for particle size range(g/VKT)
sL = road surface silt loading (grams per square meter) (g/m^2)
W = average weight (ton) of the vehicles travelling the road
P = Number of wet days
N = Number of days in the average period

End-to-end paving might improve conditions by 10-15% with impacts staying for 4-5 years



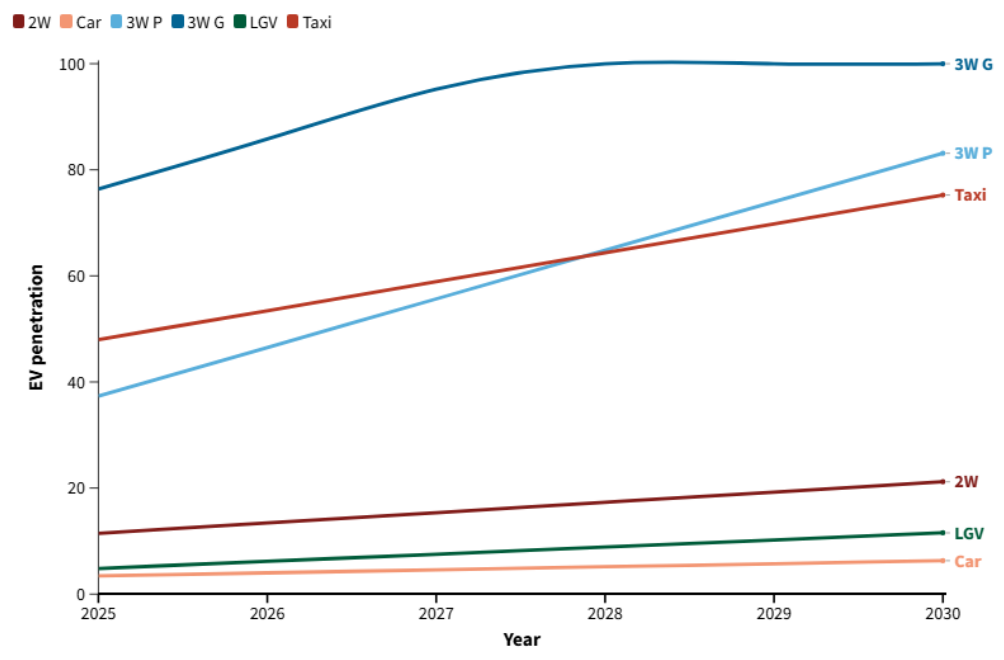
Source: Singh et al., 2020

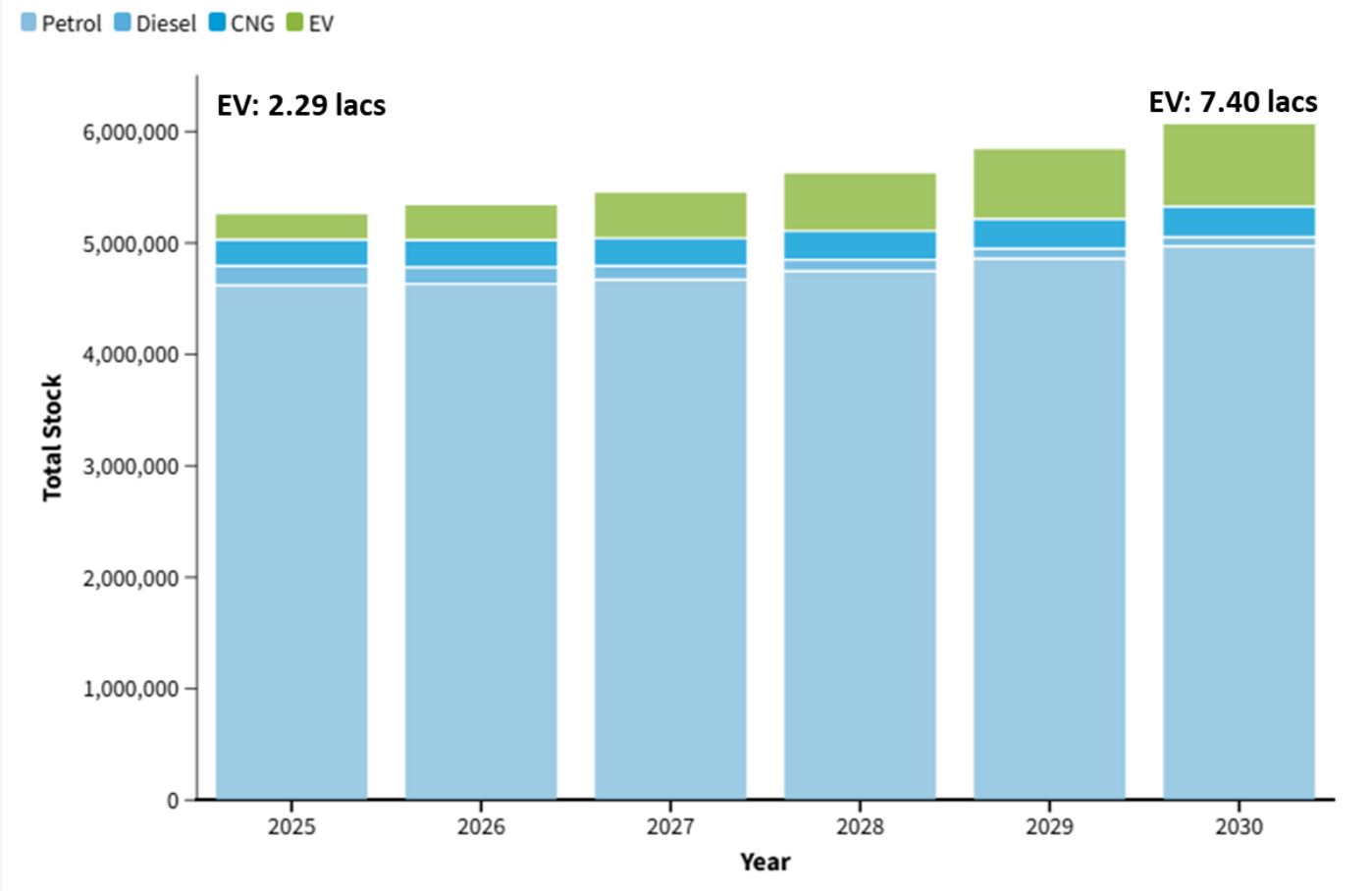
Non-exhaust emissions contribute 10x (as compared to exhaust emissions)



Source: CEEW Analysis

For Delhi, and several leading states - EV investments and policies are yielding results. EV penetration rate across segments are noteworthy





EV cars are **18-24 per cent heavier** than their ICE vehicle counterparts, increasing their non-exhaust emission factor by **~2 times**

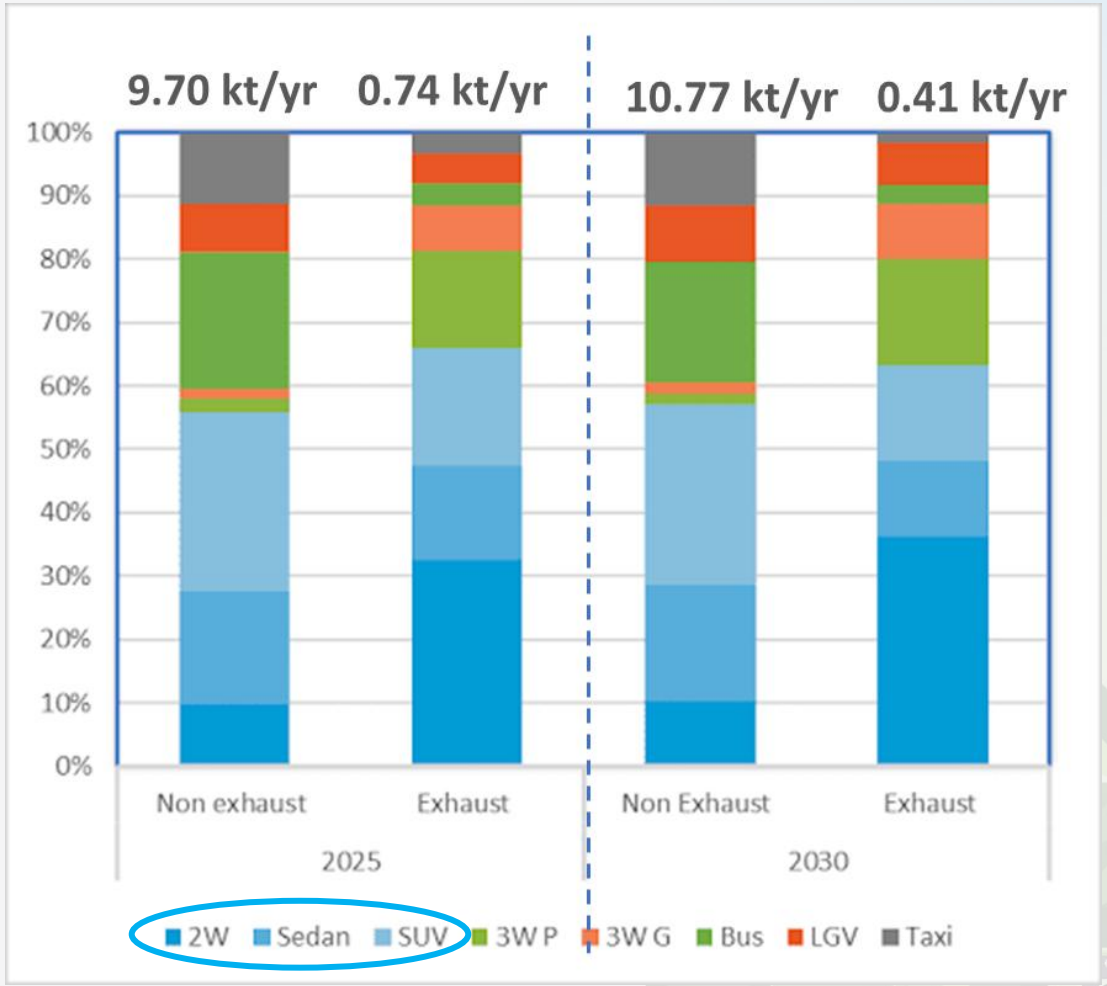
EVs are a win or loss in pollution story – especially from a non-exhaust emissions perspective

Source: CEEW Analysis

Till 2030, in BAU, total transport non exhaust emissions will increase by 11%. NEE will continue to increase in personal private vehicles.

- In Delhi, More than **90% of the personal** vehicles are 2W, and passenger cars and personal cars are increasing at a rate of 4 per cent per year
- NEE - **60-65%** is contributed by private-use vehicles
- **Heavier and speedier vehicles** contribute more to resuspension proportions – buses, trucks, followed by SUVs and Sedans

From the 2025 baseline, till 2030, exhaust emissions will decrease by **44 per cent**, while non-exhaust emissions will increase by **11 per cent**



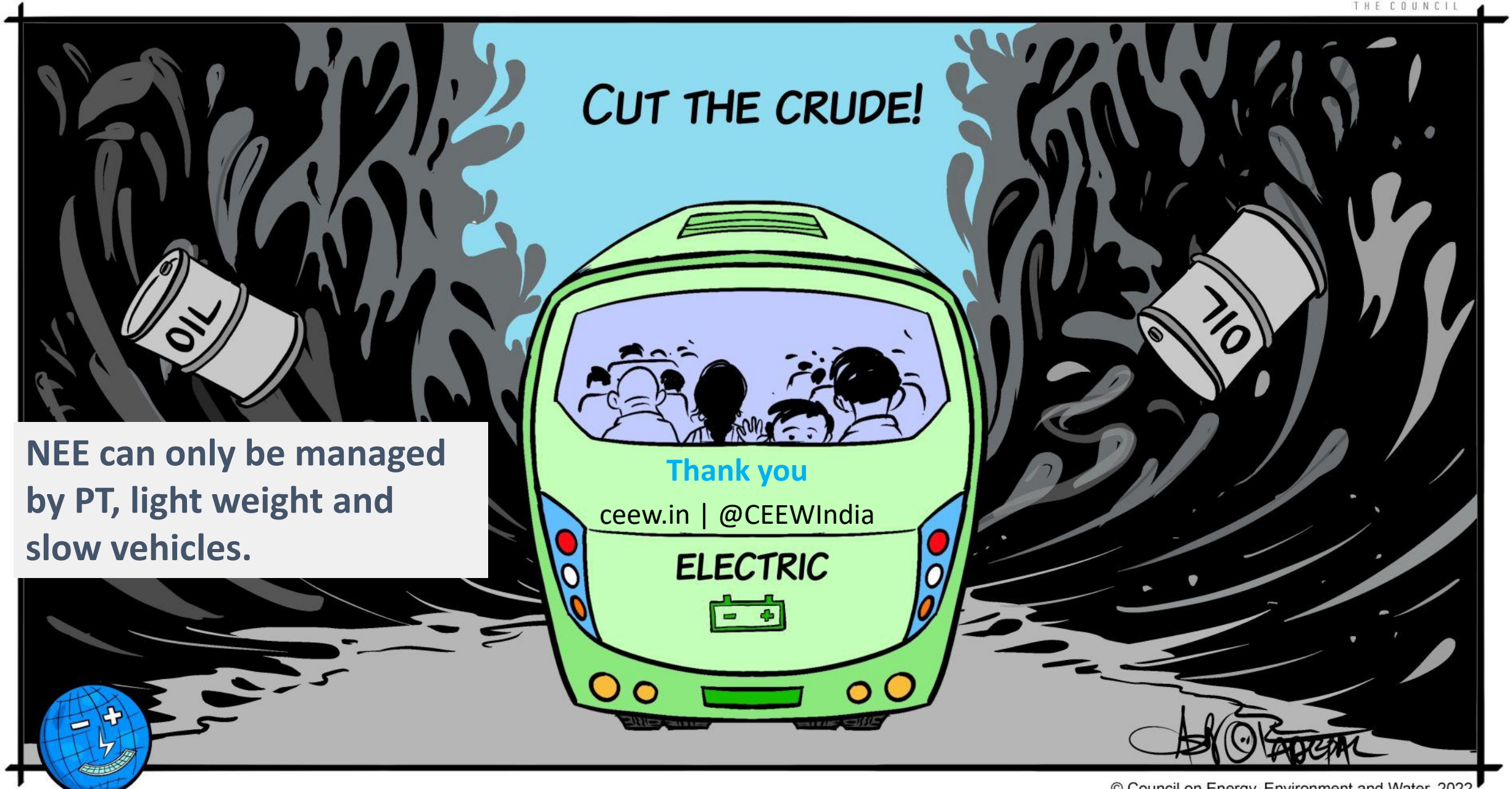
Existing gaps in the estimate…

Gaps	Why It Matters
Do we have enough real-world data?	Leads to high uncertainty and poor local representation in emission inventories.
Is there any standard method available?	Results from different studies cannot be compared or used reliably in models.
Are the non-exhaust emission factors up to date?	Produces misleading estimates, especially for future scenarios with EV growth.
Is resuspension well-modelled?	Road dust is a major PM10 source in many cities; inaccurate modelling skews health and policy assessments.
Can we distinguish sources from resuspension dust separately?	Ambient monitoring cannot separate non-exhaust emissions

Source: CEEW Analysis

What On Earth!™

CEEW
THE COUNCIL



NEE can only be managed by PT, light weight and slow vehicles.