

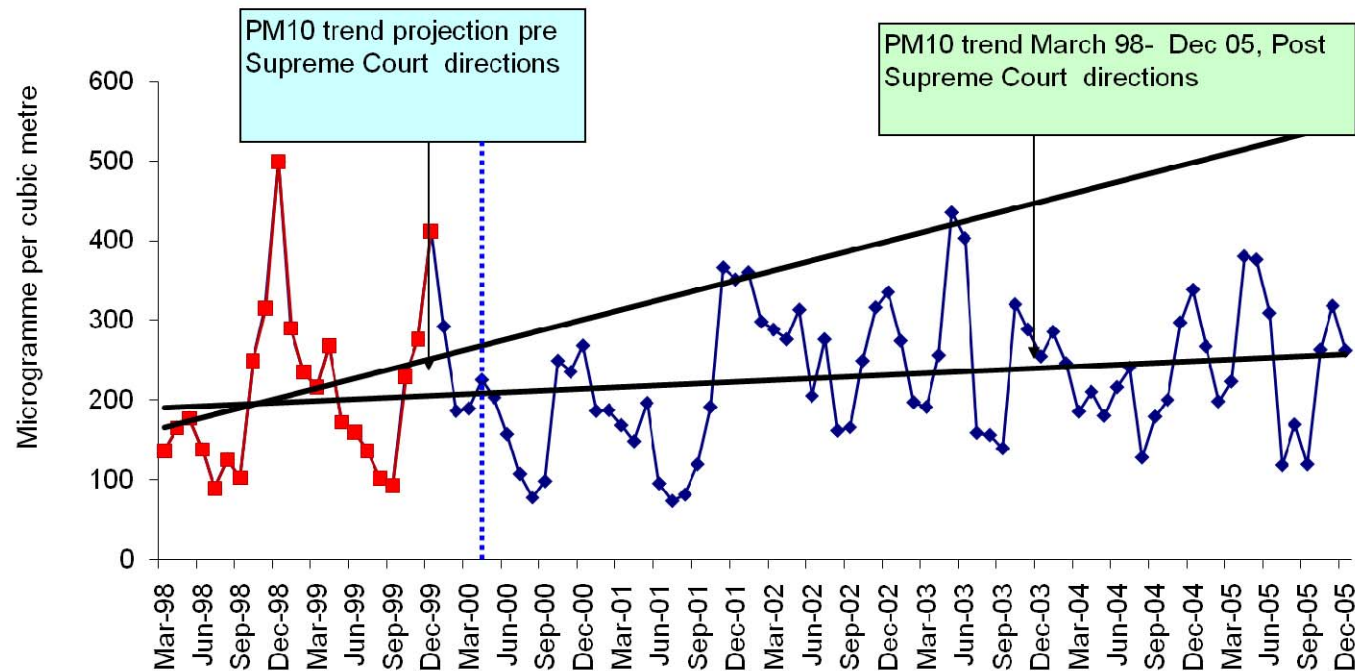


Decade of
action on
air
pollution:
The second
coming

Delhi got cleaner air: it avoided pollution. We saw the stars



PM10 at ITO Traffic Intersection



CPCB: 24% drop in PM10 levels in 2002 compared to 1996 levels

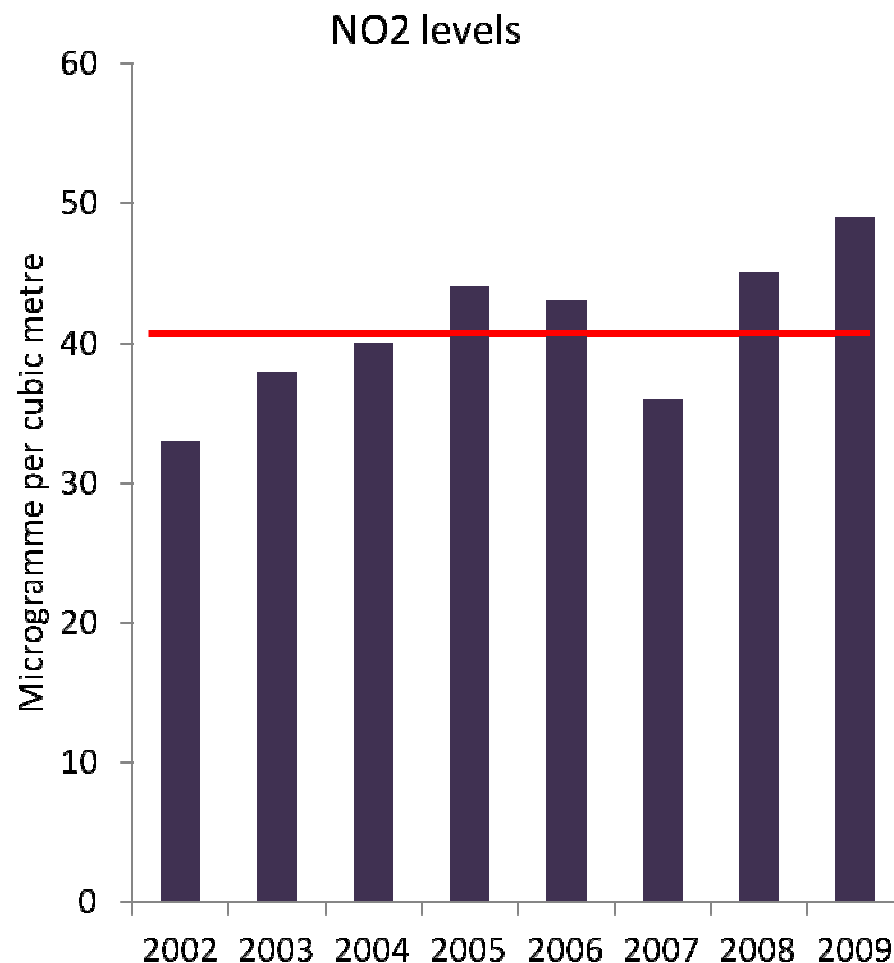
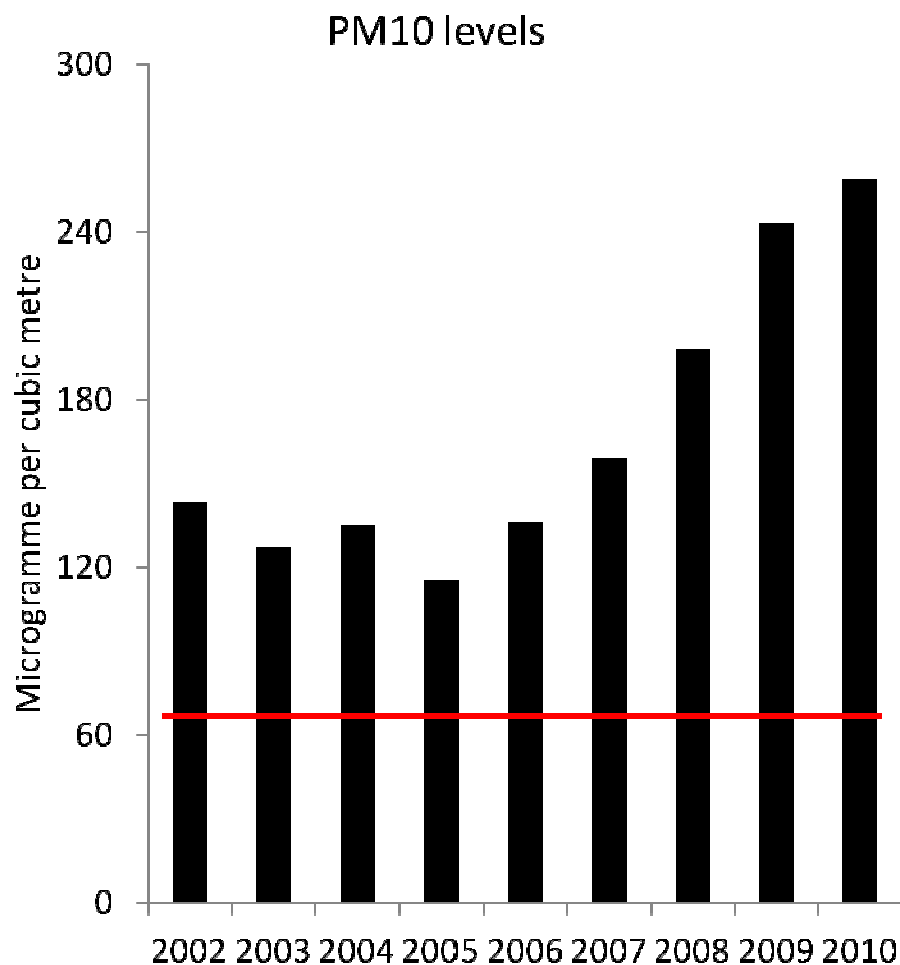
Resources for Future, US: CNG bus programme reduced RSPM, CO, SO₂

Jawaharlal Nehru University study: Drop in polycyclic aromatic hydrocarbons levels in Delhi's air immediately after the introduction of the CNG programme

World Bank: Delhi has avoided more than 3500 premature deaths a year

Pollution levels up: Delhi will lose its gains

Both PM10 and NO2 levels show an increasing trend and exceed the safe levels. PM10 exceed the standard by nearly 4 times and NO2 by 1.3 times



Note:

-- Annual averages of residential areas, Charts are based on CPCB, MOEF data

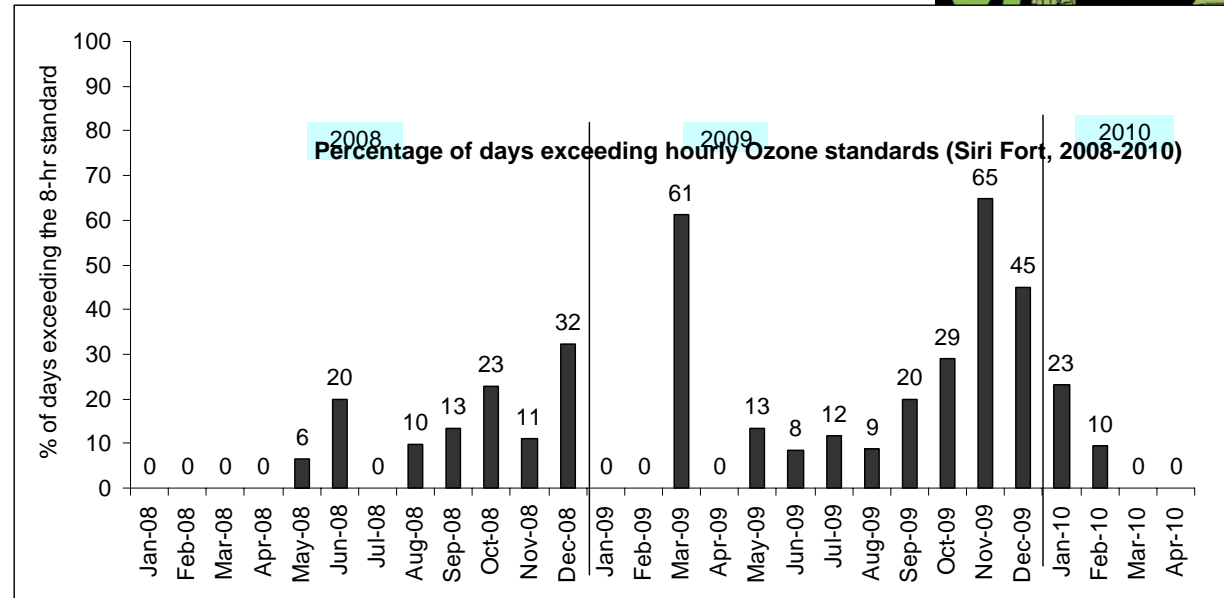
-- Red lines denote National ambient air quality standards; PM10 at 60 microgramme per cubic metre; NO2 at 40 microgramme per cubic metre

Ozone: emerging threat

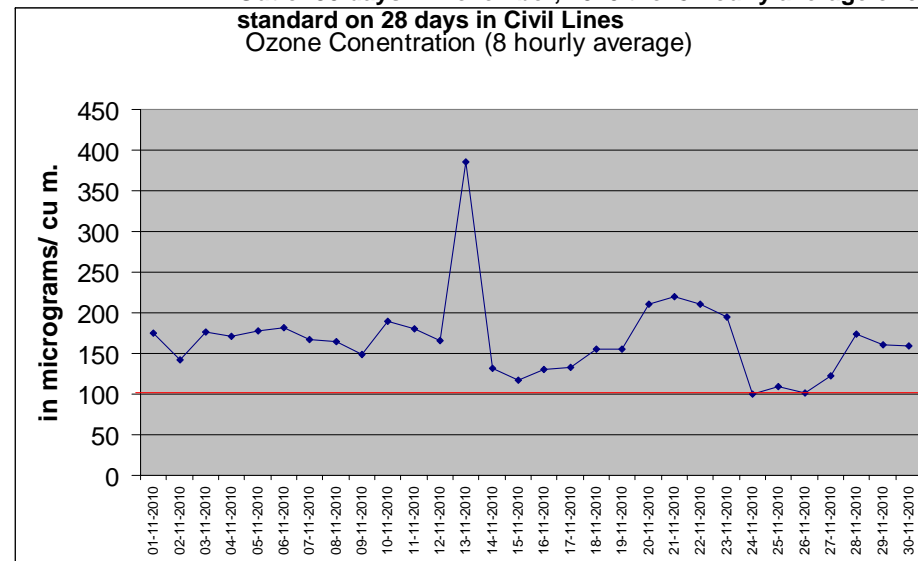


Harmful for those suffering from respiratory and asthmatic problems, and those involved in outdoor activities

Even short duration exposure bad



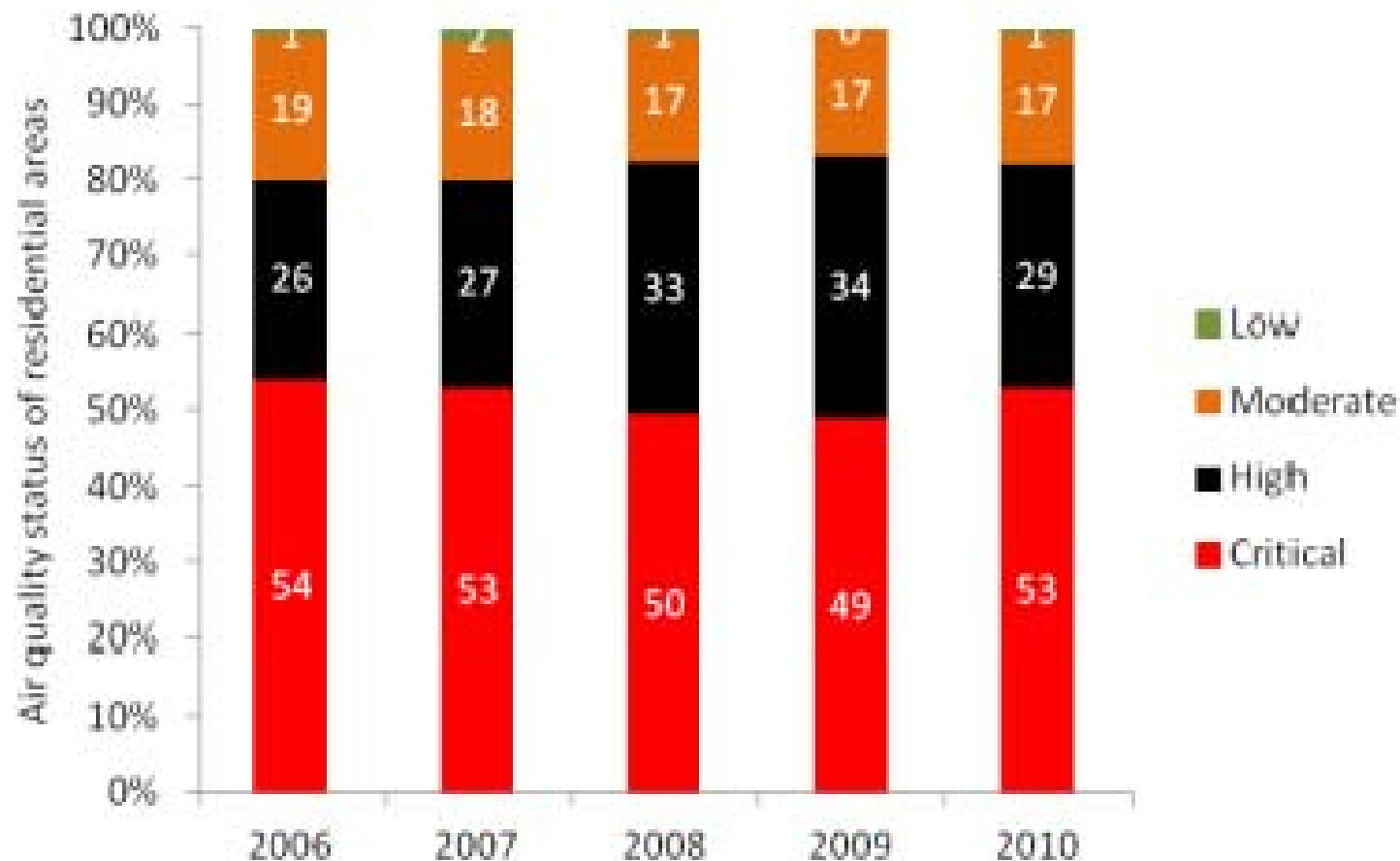
Out of 30 days in November, 2010 the 8-hourly average of ozone exceeded standard on 28 days in Civil Lines
Ozone Concentration (8 hourly average)



Source: CSE analysis based on CPCB/DPCC air quality data

Air pollution: national crisis

Close to half of total urban population breath the air which exceeds the standard of PM10



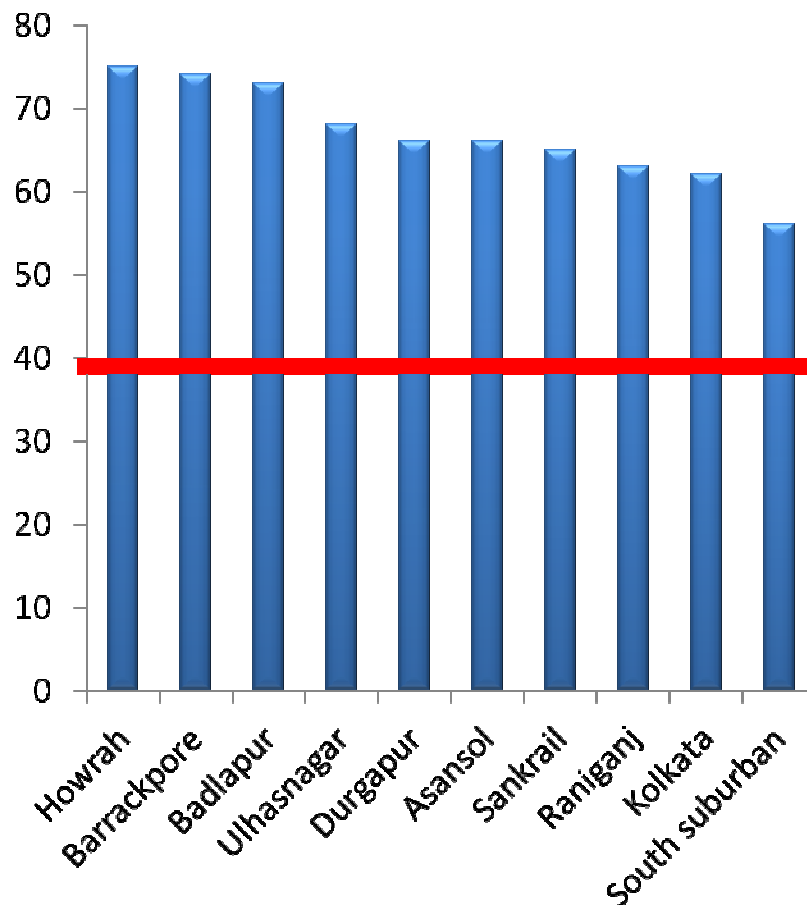
Source: Based on CPCB air quality data

Pollution hot spots

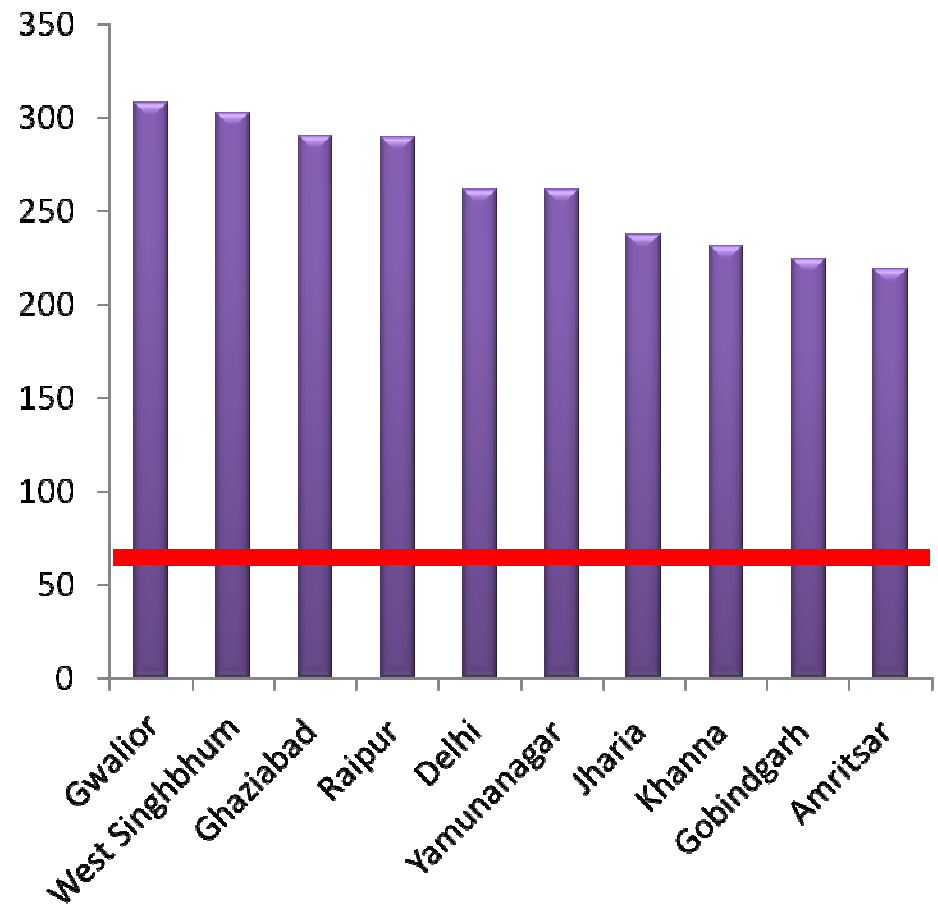
Smaller towns are getting more polluted than the metros



NO2 Hotspots



PM10 Hotspots



Health impacts deadly



Global Burden of Disease 2013

Globally air pollution among the top 10 killers

South Asia most vulnerable

In India 620,000 premature deaths a year

More than 18 million healthy life years lost a year

Air pollution triggers stroke, cardiovascular and respiratory diseases, cancer

1st generation reforms: seem easy **now**

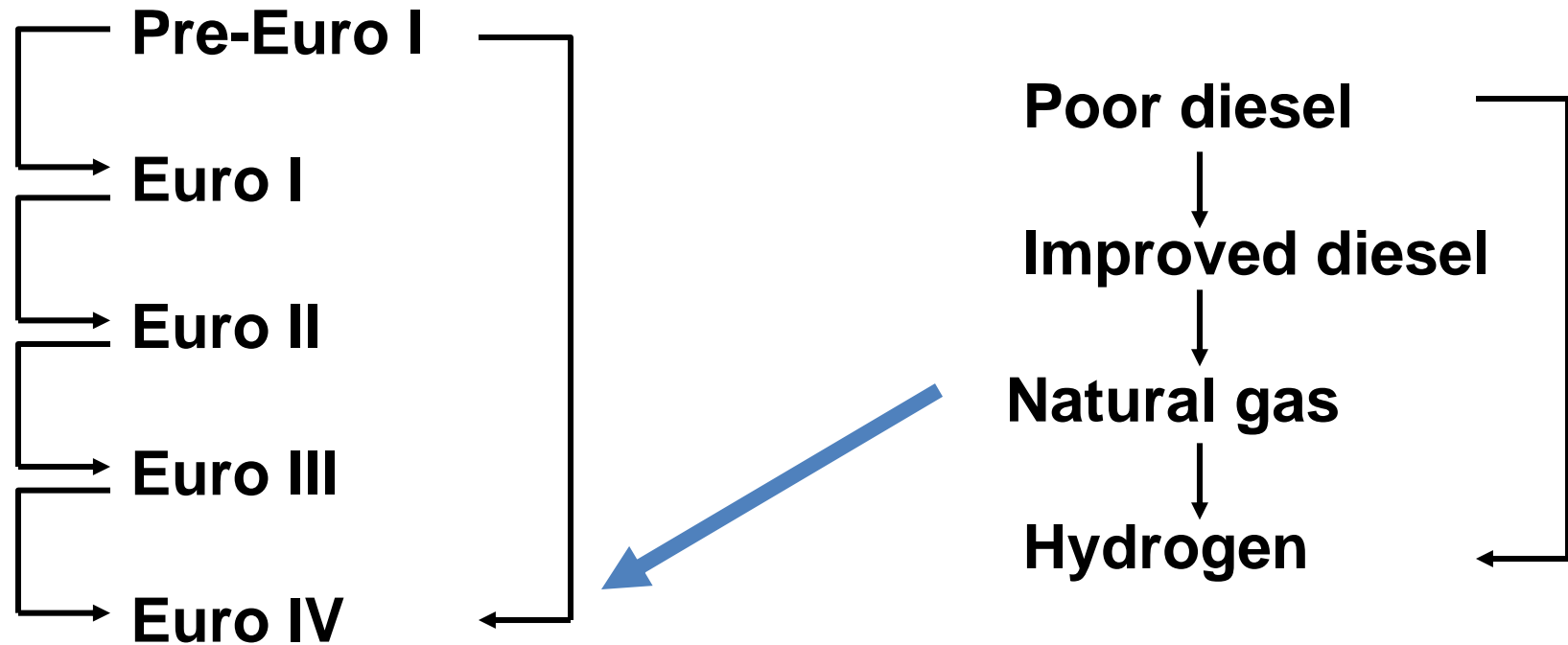


1. Switched to CNG for buses and autos
2. Tightened and advanced emission standards – moved from Euro-0 to Euro-2 and Bharat Stage-4
3. Check on heavy vehicles not destined for Delhi
4. Upgraded PUC and set up Burari inspection for commercial vehicles
5. Cess on diesel and ambient air fund for promotion of battery vehicles
6. Mandated only-CNG vehicles for light duty commercial



Need 2nd generation reform

CNG leapfrog jumped us beyond Europe. Big solution; not incremental. What can we do now?

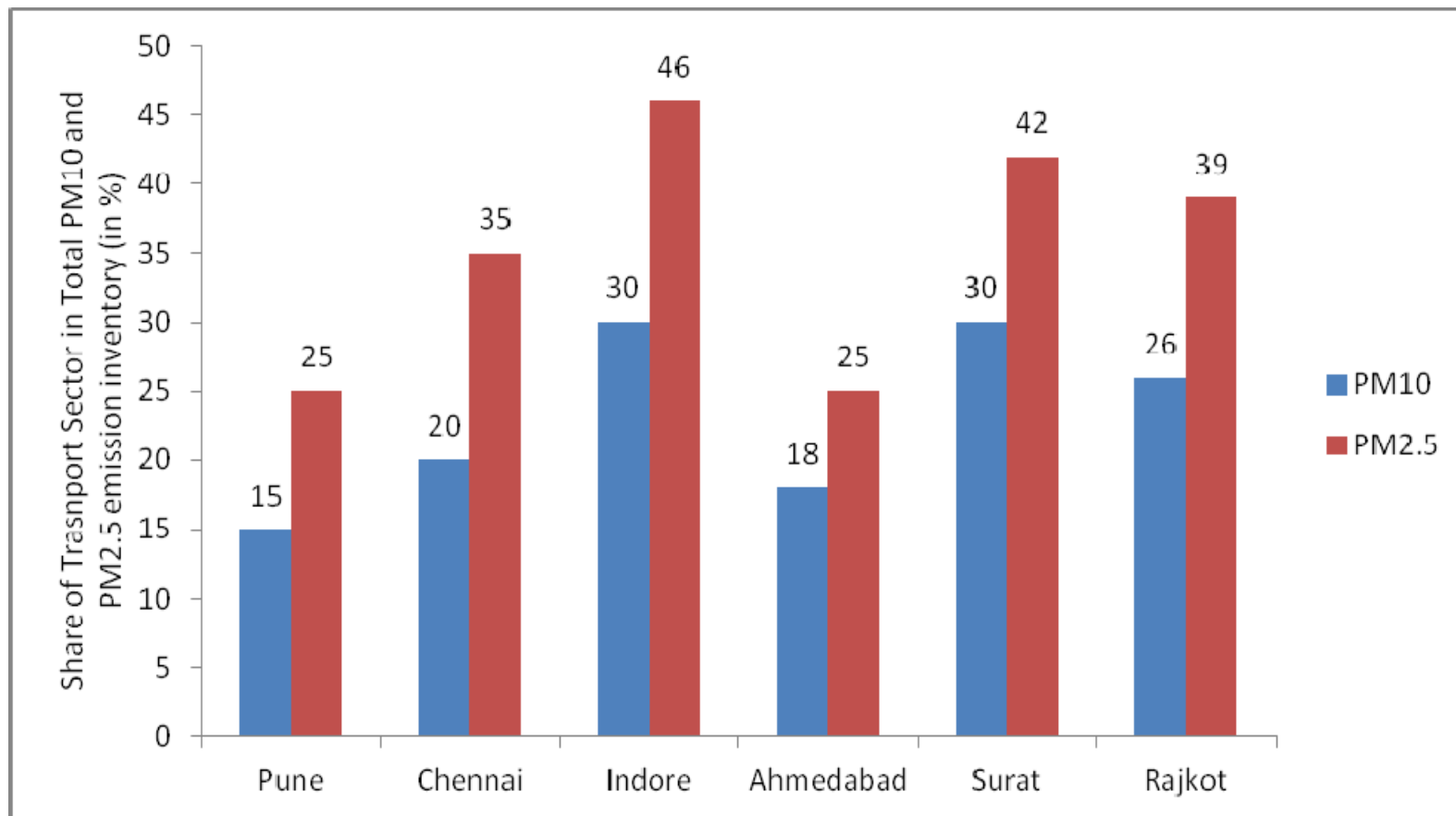


Why air pollution?



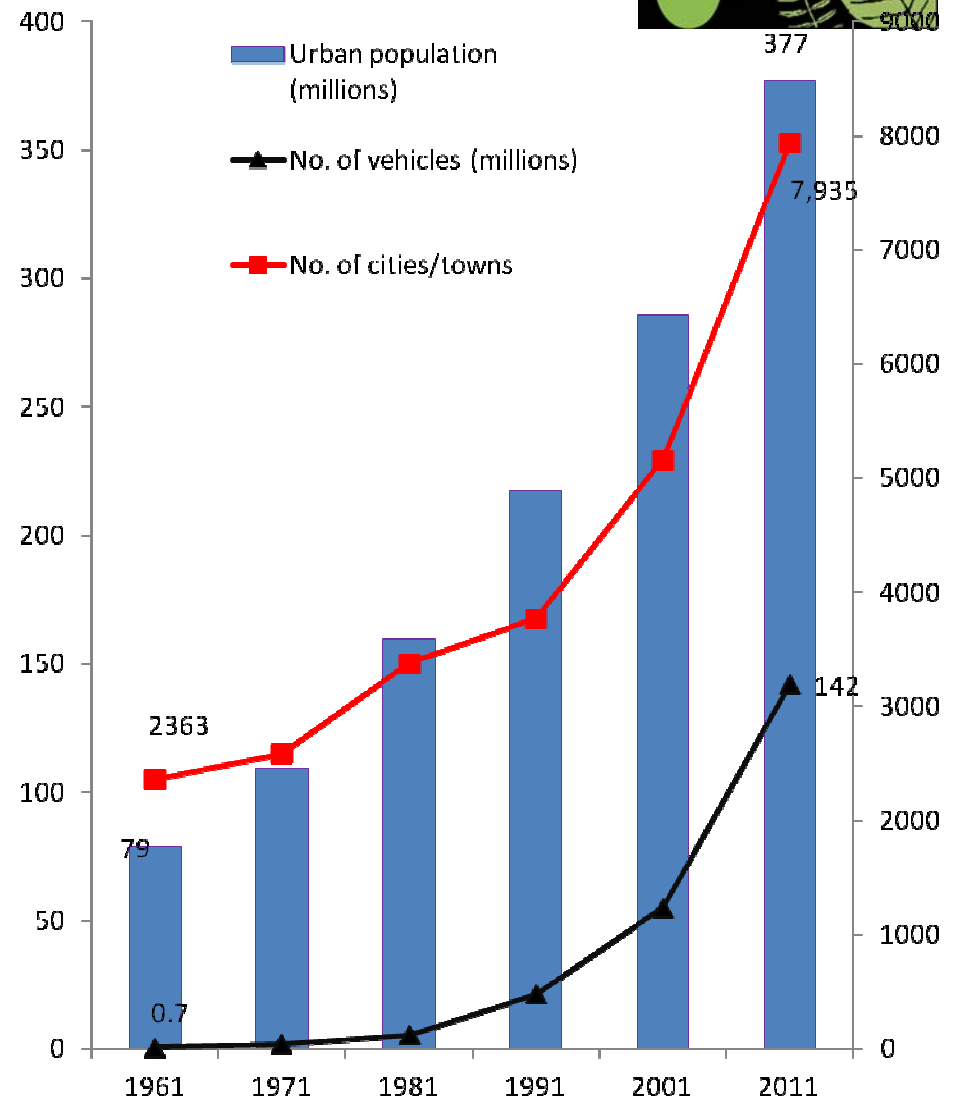
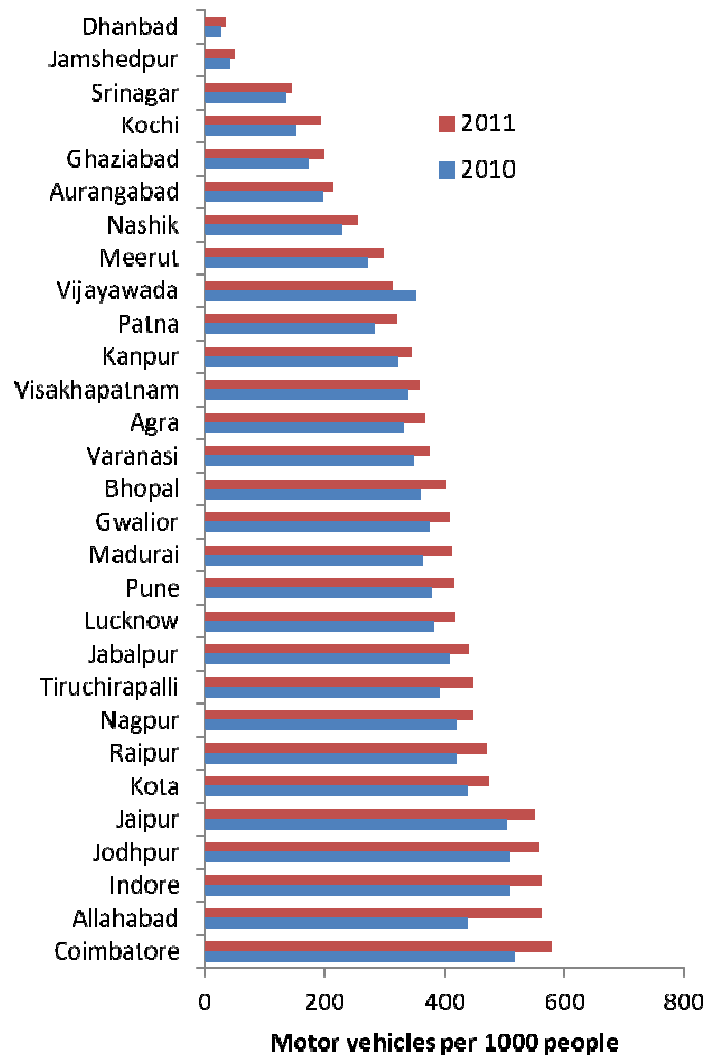
- Inventory of sources find **vehicles**, particularly **diesel vehicles** (mobile sources) biggest source
- Controls on stationary sources – power plants and factories possible through standards and better fuels
- But vehicles grow in number; we lose benefit of cleaner fuel and cleaner technology
- Keep cleaning vehicles; but adding more; we stay behind the problem
- **End result = Pollution**

Big particles other sources; small particles – deadly for bodies – vehicles dominate



Source: Based on-- Sarath Guttikunda and Puja Jawahar 2012, Urban Air Pollution & Co Benefits Analysis for Indian Cities, SIM air Working Paper Series: 39 2012

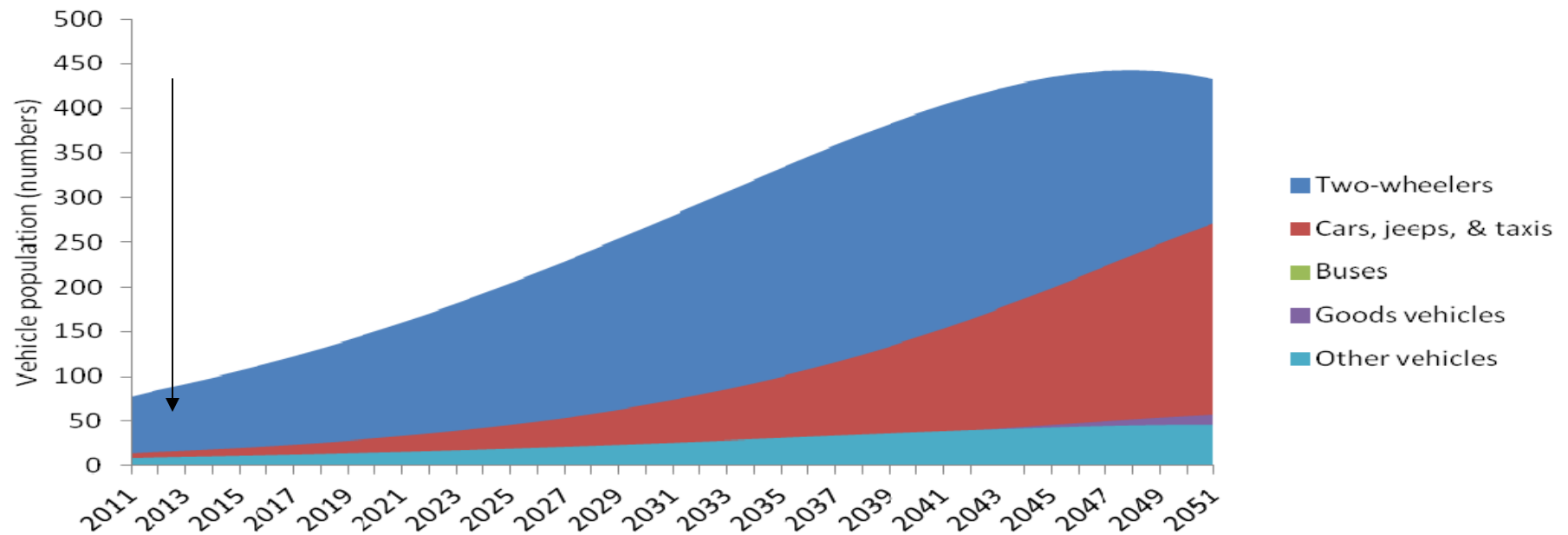
Vehicles growing fast in small cities; all faster than rate of urbanization



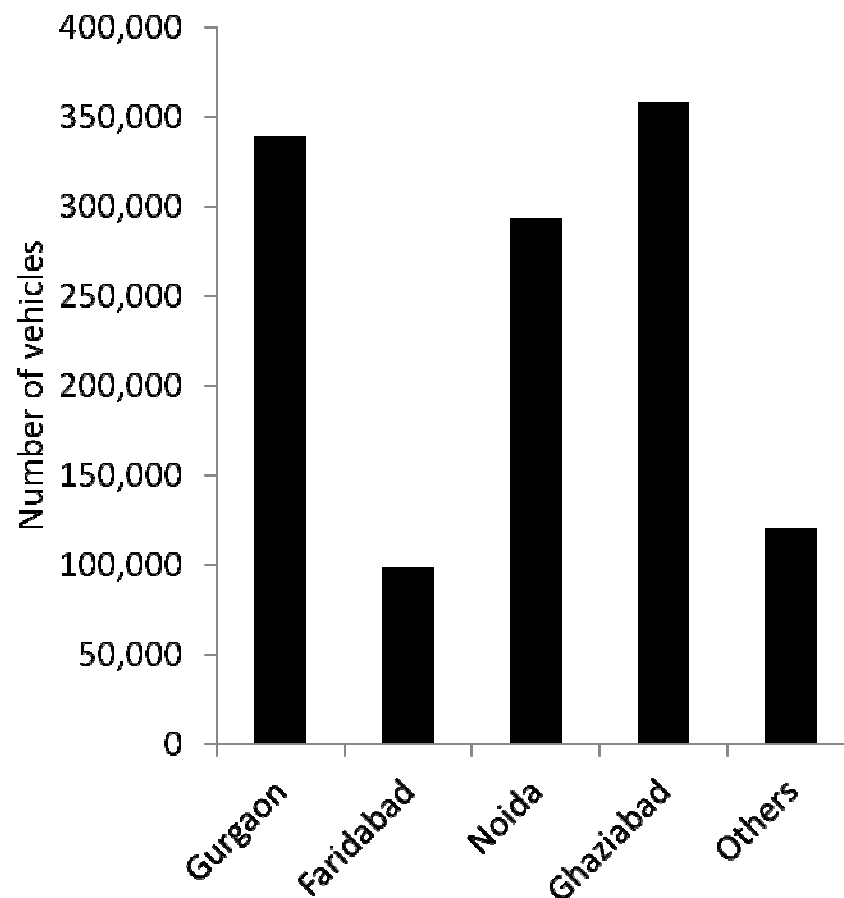
Vehicle numbers: Explosive already and more coming



Need stringent and preventive action and decision here to influence the future stock -- several times higher than the legacy stock



Over **2 million** vehicles enter or leave Delhi **every day**: Have to plan for air-shed of NCR; plan mobility for region



**Daily vehicles entering or leaving
Delhi: massive growth**

Source: Based on RITES survey in Delhi, mimeo

Source: Based on RITES survey data n Delhi, mimeo

Need second leapfrog



- Need big answer:
- Need to make transition to public transport
- **We must;** We CAN
- In our cities car has **not replaced** the bus
- In our cities car **has marginalised** the bus



THE
IMPERATIVE:
Re-invent
mobility

No space for all



Today **10-15%** of India commutes by cars

Private cars take up **90% of road space**

All the flyovers are not enough: build and fill

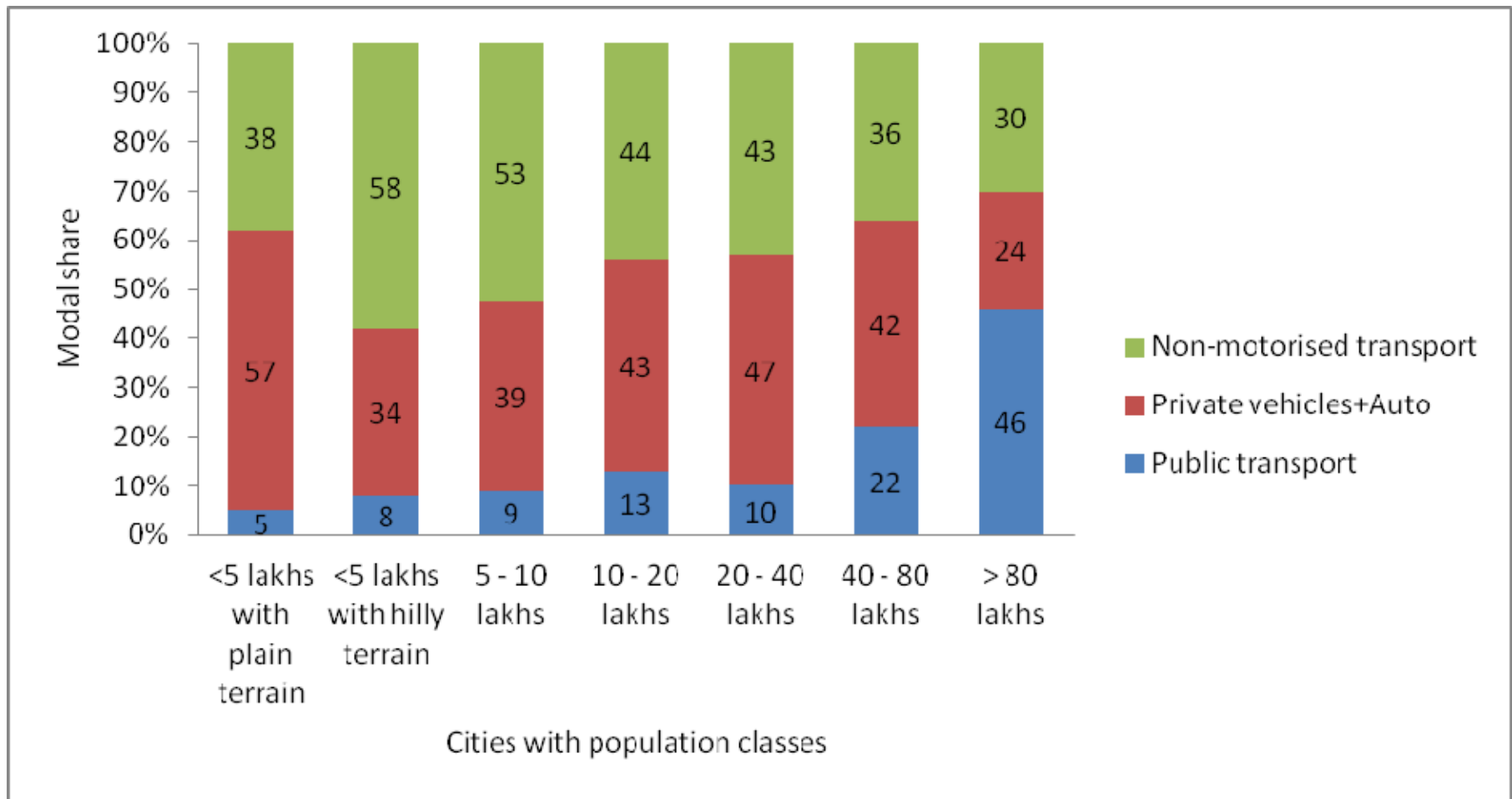
Delhi has 26% under road; 66 flyovers; pollution is up; road speeds are down

Where is the space for the rest 80-90% to drive

No choice but to plan differently today

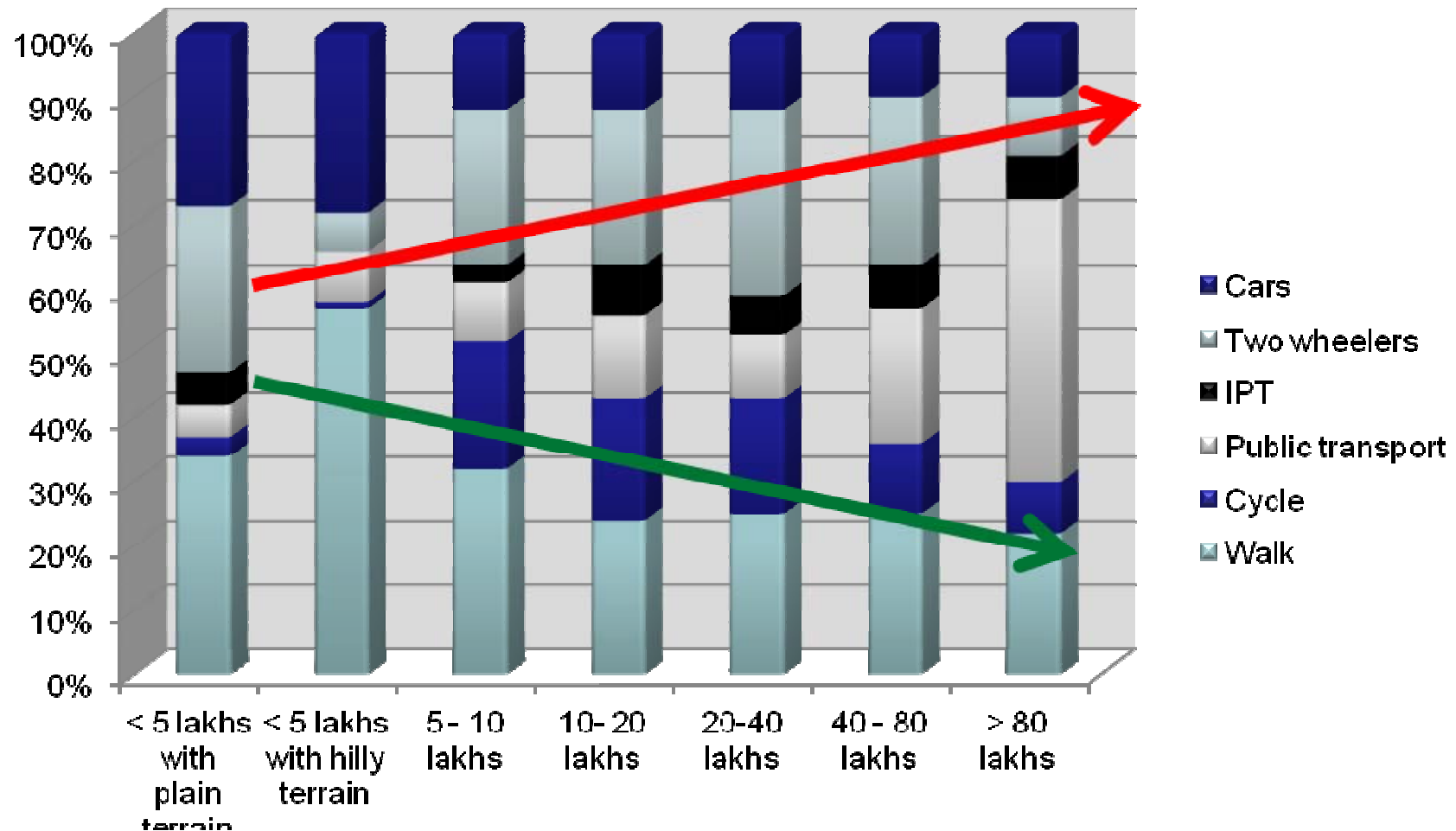
The opportunity

We walk and cycle because we are poor



Source: Based on: MOUD 2008, Study on traffic and transportation policies and strategies in urban areas in India, Wilbur Smith Associates, Ministry of Urban Development, May

How can we walk, cycle, bus when and because we are rich?



Mr Moily try taking this bus

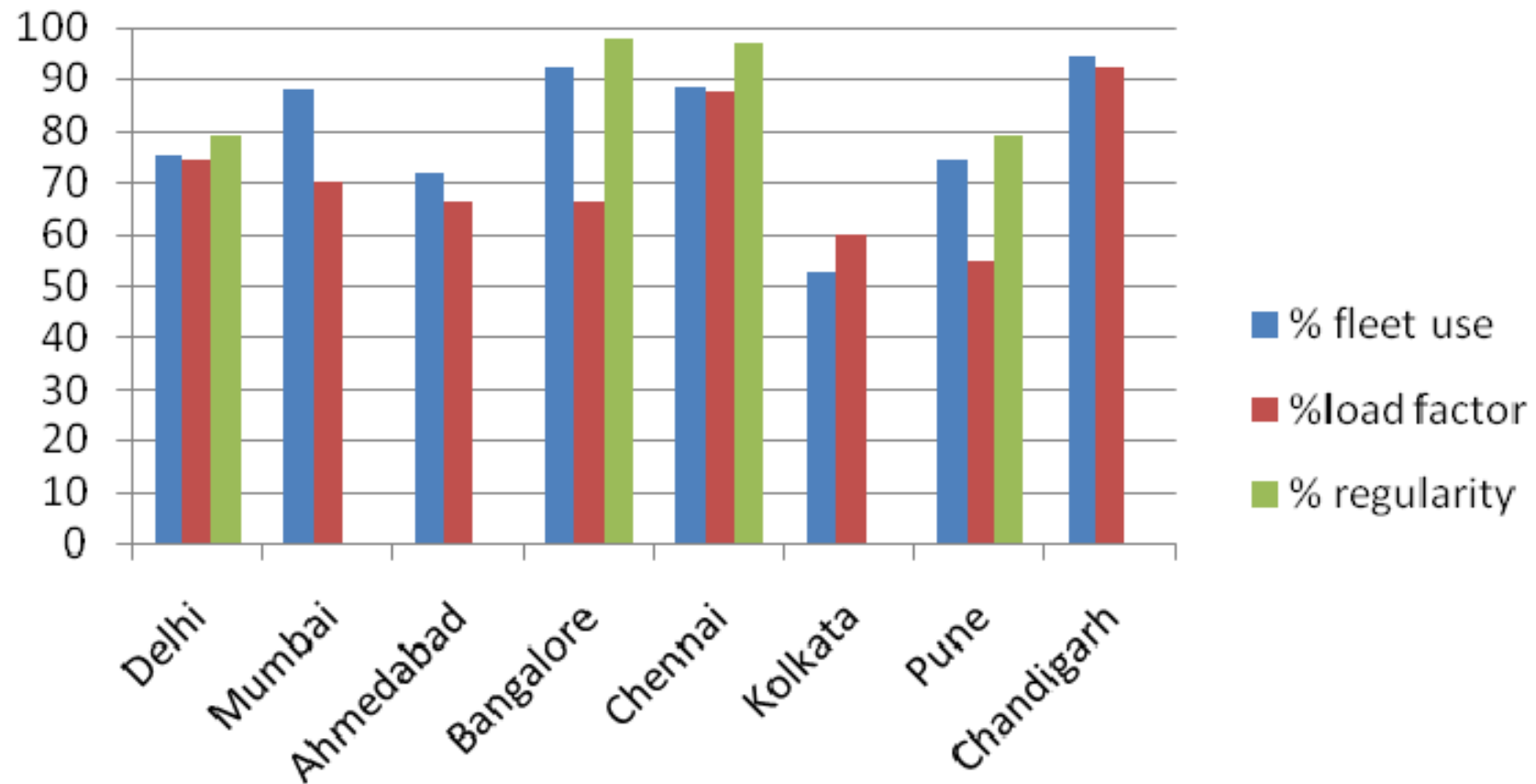


Buses vs cars



- Over 1 million cars are sold each year
- Over 30,000 buses are sold each year
- Crisis of management of bus service
- Crisis because of neglect
- Crisis because we don't plan for buses, only cars

Travel demand is growing; but bus passenger
down; fleet utilization down; bus service more
unreliable





**Without right to
walk we cannot
take a bus**



**We cannot
cross the road**

Think of **mobility** not **cars**



- Trajectory of growth has to be re-invented and reversed
- Western world had money to invest and keep investing in cleaning up air
- Moved from **SPM** to **RSPM** and now to **Nox** and to **Ozone** and **black carbon**
- We cannot do the same. Do not have money; have huge needs to meet



Our study:
our future

Stand behind change



- Recognise the actions – small as they may seem – which change this trajectory
- Cities that recognise that they must grow differently
- No big answer yet: **but this is the second coming**

Change maker cities: bus



- **Delhi:** bus ridership is up;
- **Bengaluru:** celebrates a bus day
- **Chennai:** combines efficiency with affordability
- **Tumkur:** has modern bus service; reports 20% modal shift
- **Need more such leaders**

Change-makers: walk/cycle



- Delhi: **issues street guidelines making walk mandatory**
- Bhubaneswar: **builds roads for pedestrians**
- Chennai: **71 roads planned for walk improvement**
- Nanded; Chandigarh, Nainital, Puducherry
- Shimla: **passes a law to make walking city**
- Matheran: **is India's only no car city**
- Colombo **is way ahead of all**

How do we make sure that we can grow and get modern but differently

Think and do differently

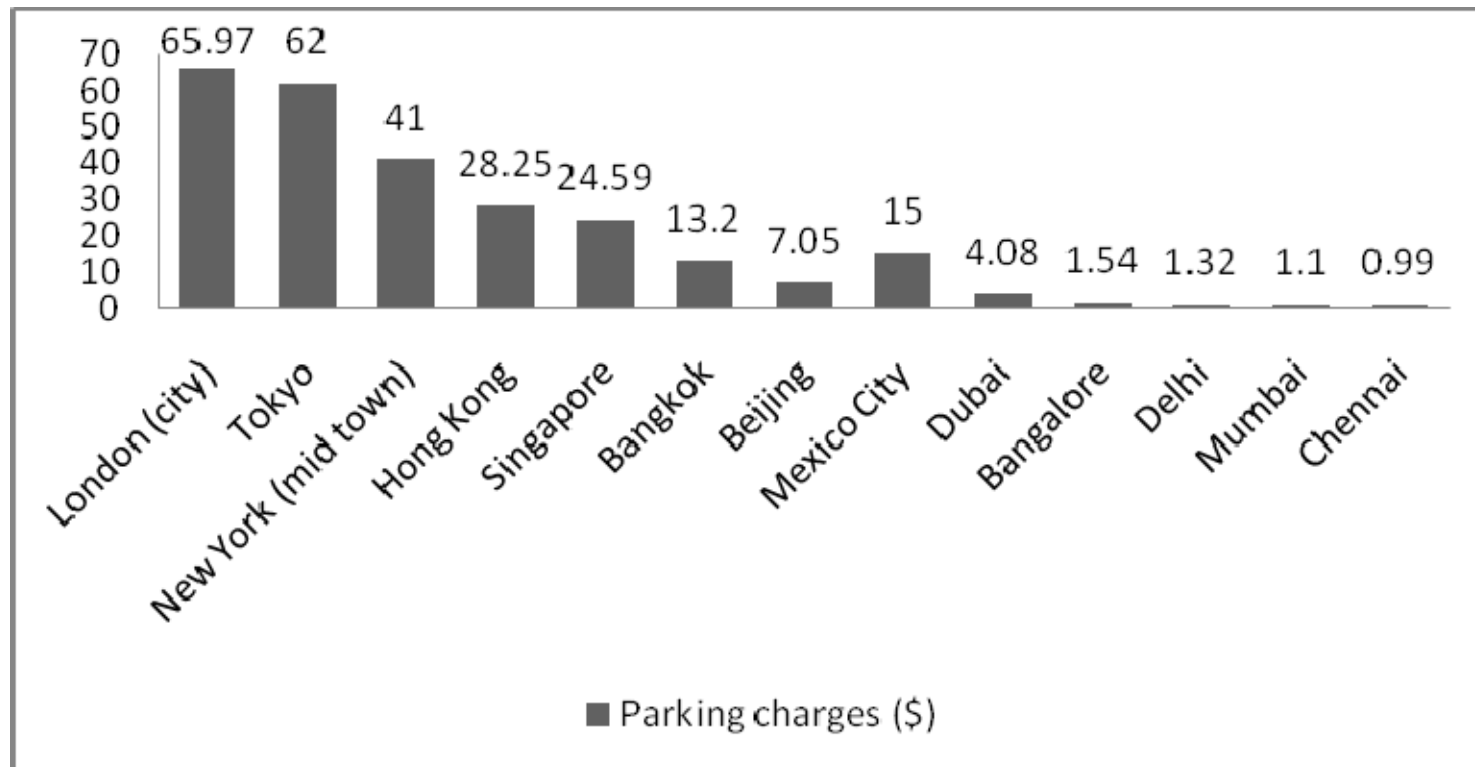


- Correct what we are doing so wrong:
- Tax car more than bus
- Charge for parking
- Charge/tax diesel use in private cars
- Use all this to create facilities for all;
convenient modern and accessible **to take the
bus or cycle or walk**

Free or for pittance: Indian cities have lowest parking charges in the world



Comparison of daily rates in commercial business Districts in different cities



Source: Colliers International (2011) - CBD daily parking charges (in US \$)

If hidden subsidies are removed parking rates in multi level car parks will increase six times

Countries are learning to control parking demand and cap supply



Portland, Oregon Overall cap of 40,000 parking spaces downtown. This increased public transport usage from 20-25 per cent in the 1970s to 48 per cent in mid 1990s.

Seattle allows a maximum of one parking space per 100 square metres at downtown office

San Francisco limits parking to seven per cent of a downtown building's floor area

New York has very high parking fees and limited parking supply which lowers car ownership far below the US average

Bogota Removed limit on the fees charged by private parking companies. The revenue goes to road maintenance and public transit improvement.

Shenzhen: Hike in parking fees during peak hours leads to 30% drop in the parking

Bremen: No free parking in city centre. Parking charges higher than public transport cost.

Barcelona— Parking revenue directed to a special fund for mobility purposes.

London: parking income channeled to transportation projects.

Tokyo: Enforcement against parking violations cuts congestion drastically. Private firms allowed to issue tickets for parking violations. This makes on-street parking expensive.

Antwerp: parking fines are invested into mobility projects

Paris: Street space freed for bike sharing and trams

Copenhagen: Streets freed up for bike lanes

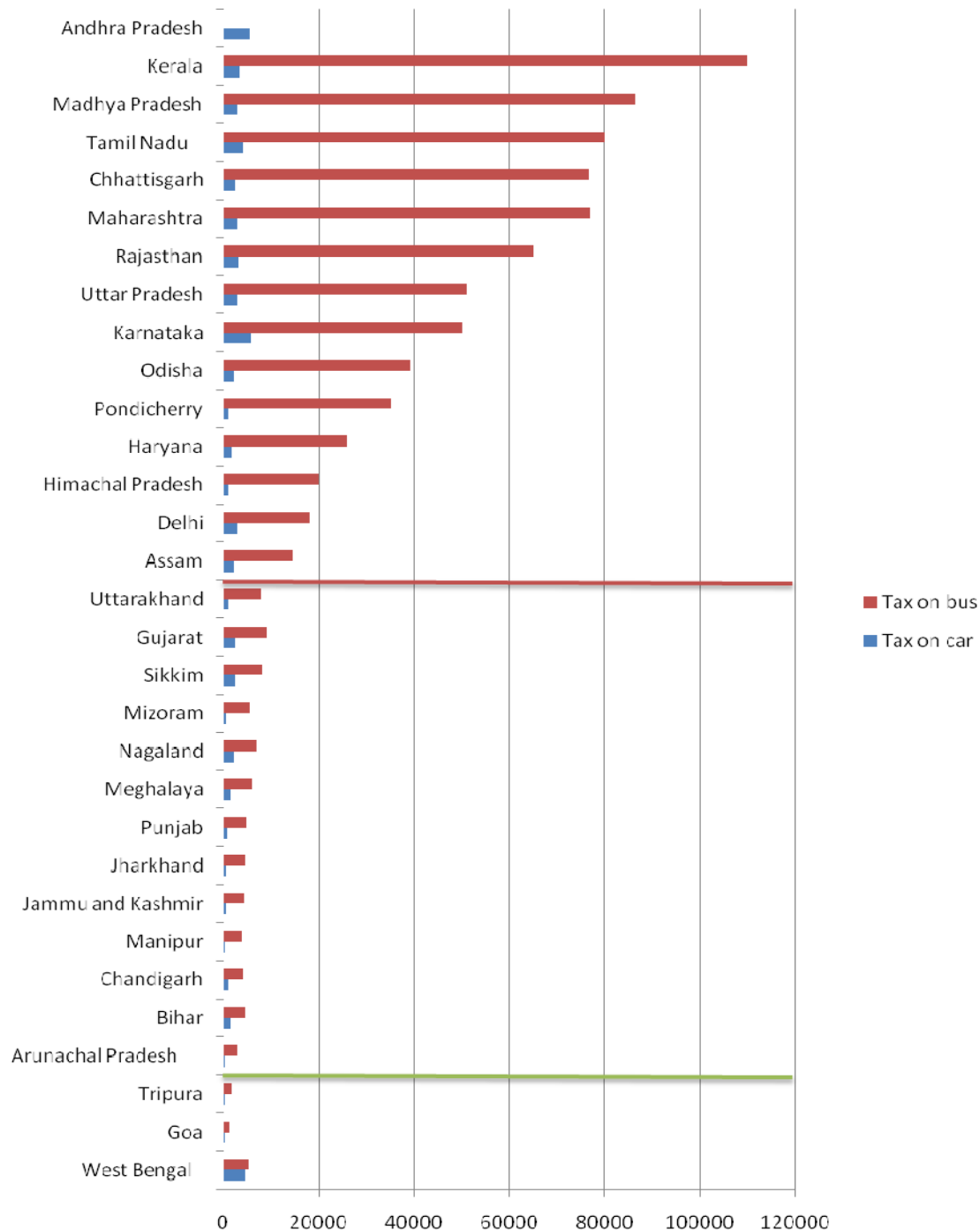


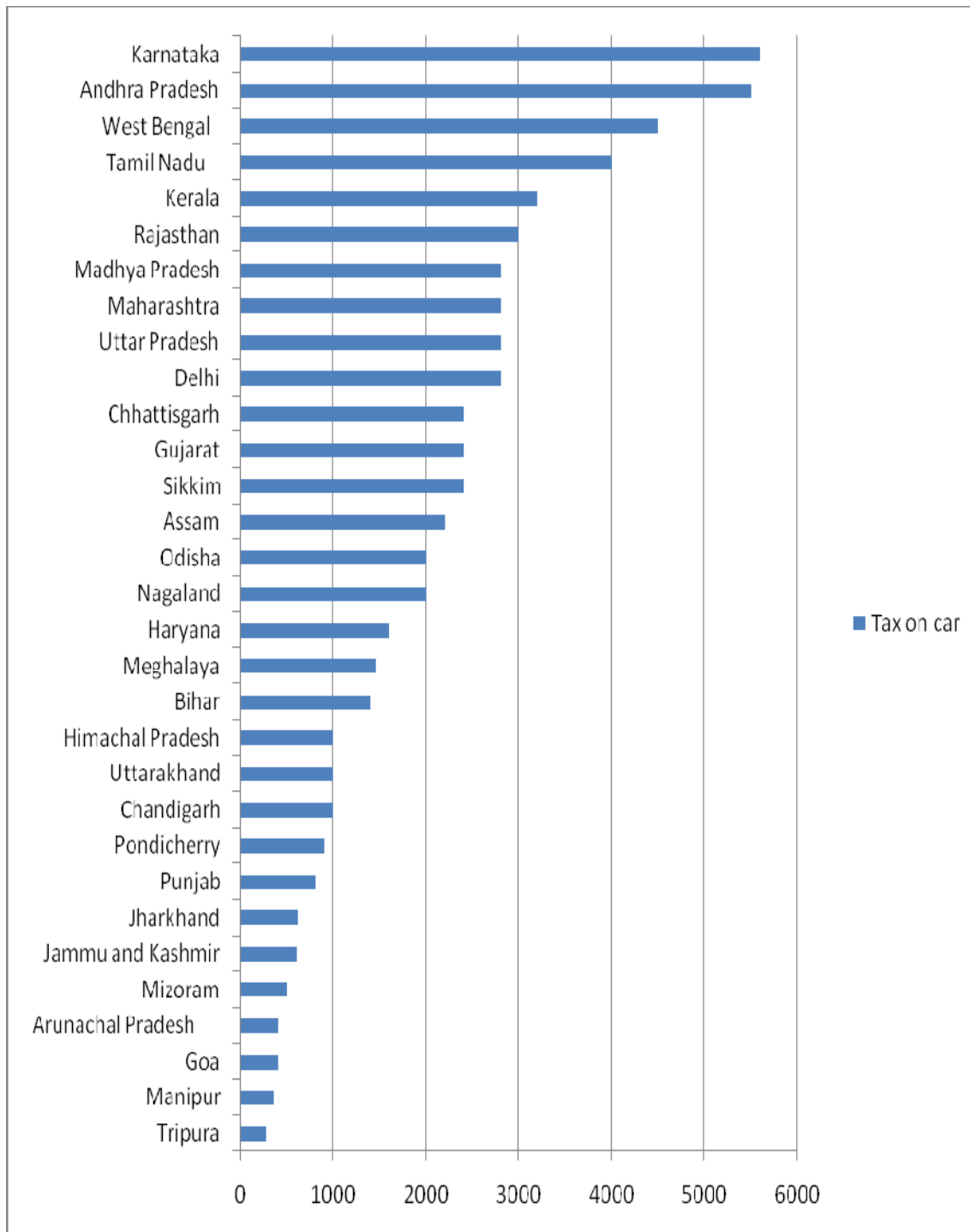
In India all
states tax
buses more
than cars

**Comparison of motor vehicle tax cars
and buses**

**Only Tripura, Goa and West Bengal
have lowest differential**

Source: CSE computation based on Road Transport Year Book, 2009-10
and 2010-11, Transport Research Wing, Ministry of Road Transport and
Highways, Government of India, New Delhi

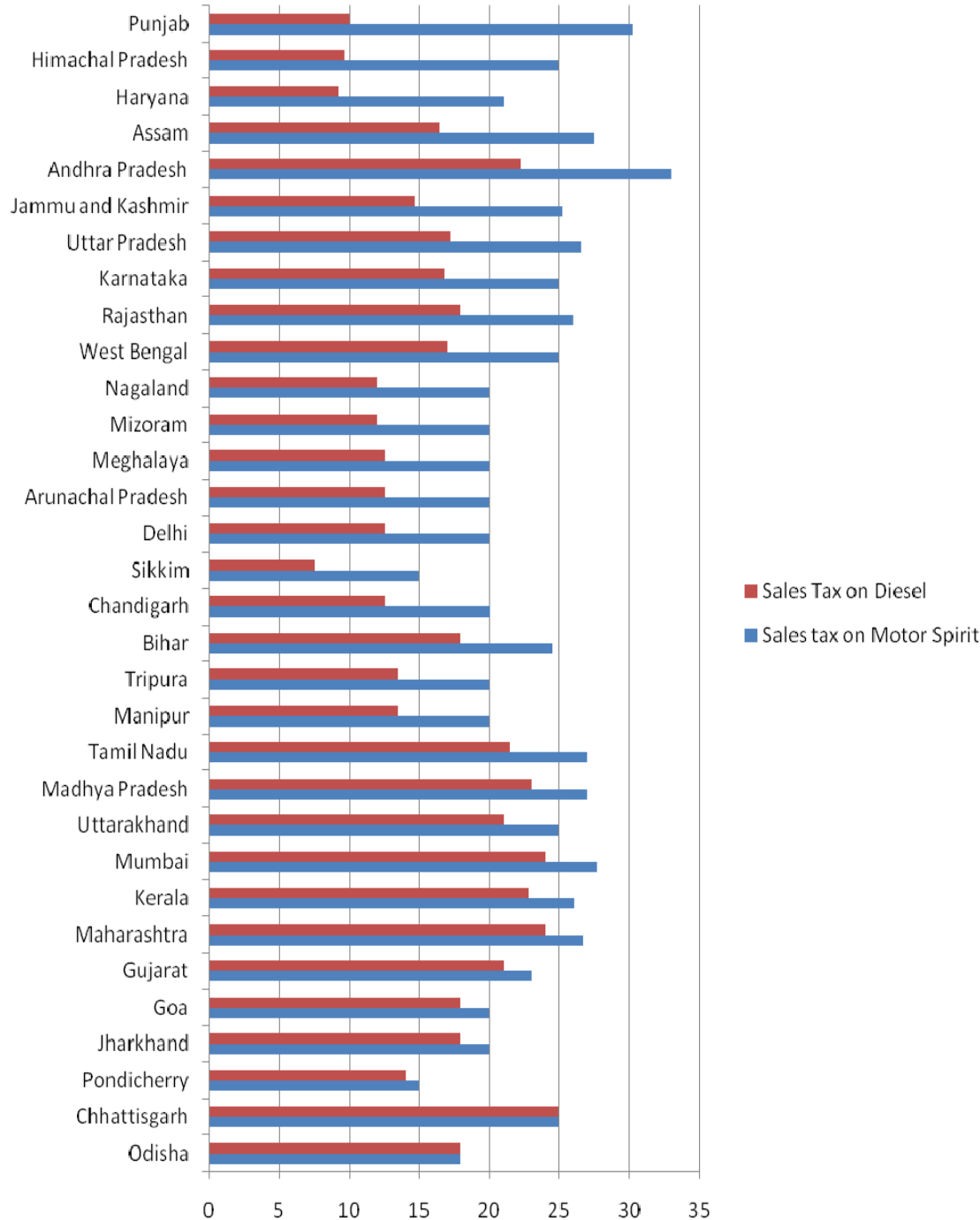




In India all
states tax
cars with care
and love

**Tax on cars is highest in
Karnataka followed by Andhra
Pradesh and West Bengal.**

Source: CSE computation based on Road Transport Year Book, 2009-10 and 2010-11, Transport Research Wing, Ministry of Road Transport and Highways, Government of India, New Delhi



In India all
states tax
diesel with
love

**Only Odhisa and
Chattisgarh do not
maintain any differential
between petrol and
diesel tax**

**Need tax policy to
discourage dirty fuel**

Source: Source: CSE computation based on Basic Statistics on Indian Petroleum and Natural Gas, 2011-12, Ministry of Petroleum and Natural Gas, Government of India, New Delhi

Different choices



- Pollution injurious to our health
- No need to first do wrong and then fix it
- Can and must get it right
- **Get people to move and not cars**
- **That has to be our mantra**