Bus Transport in Delhi: Concerns and Action

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First generation measures in Delhi

On fuel quality

- Low sulphur fuels and petrol with 1 per cent benzene
- Mandated supply of pre-mix petrol to two- and three-wheelers

On vehicle technology

- Advanced enforcement of Euro II emissions standards for both petrol and diesel vehicles in 2000 and Euro III in 2005

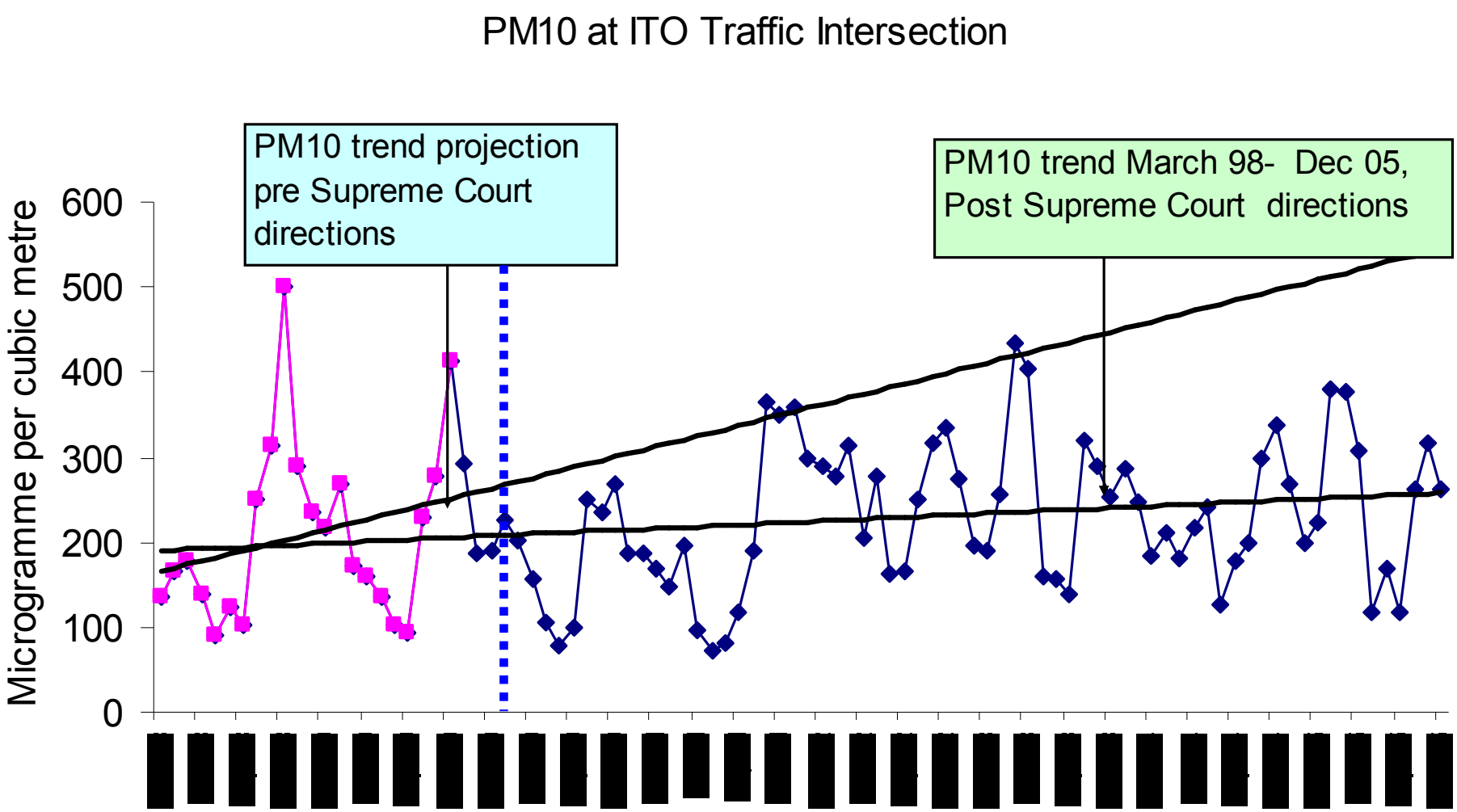
On alternative fuels

- Move three-wheelers and taxis to CNG or clean fuels
- Move the entire city bus fleet to CNG. Augmented bus fleet

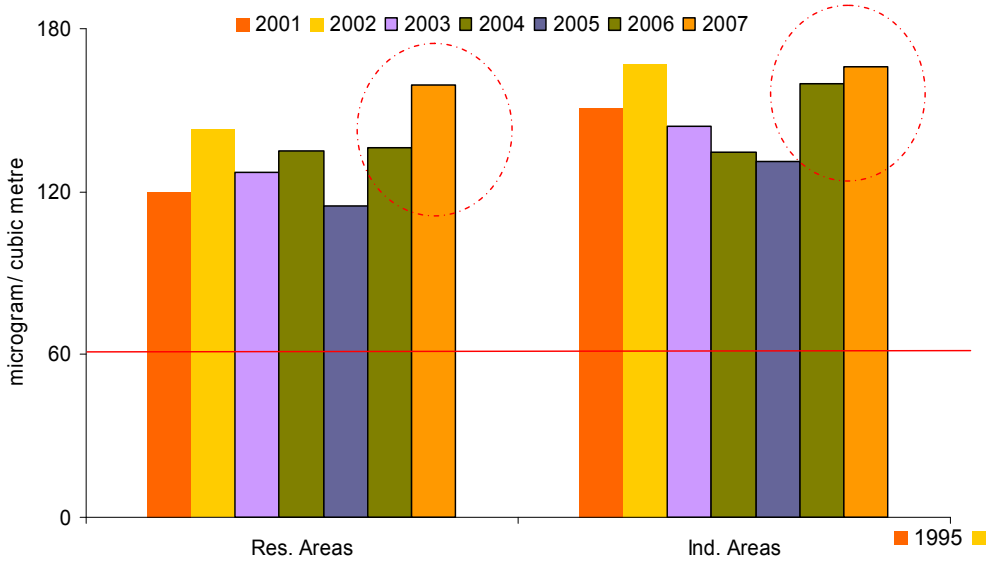
Cross cutting policy measures

- Strengthen air quality monitoring
- Set up inspection and maintenance programme
- Create bus terminus at the city boundaries to bypass transit traffic
- Set up independent fuel testing laboratories to check fuel adulteration

Delhi got cleaner air: it avoided pollution; got health benefits

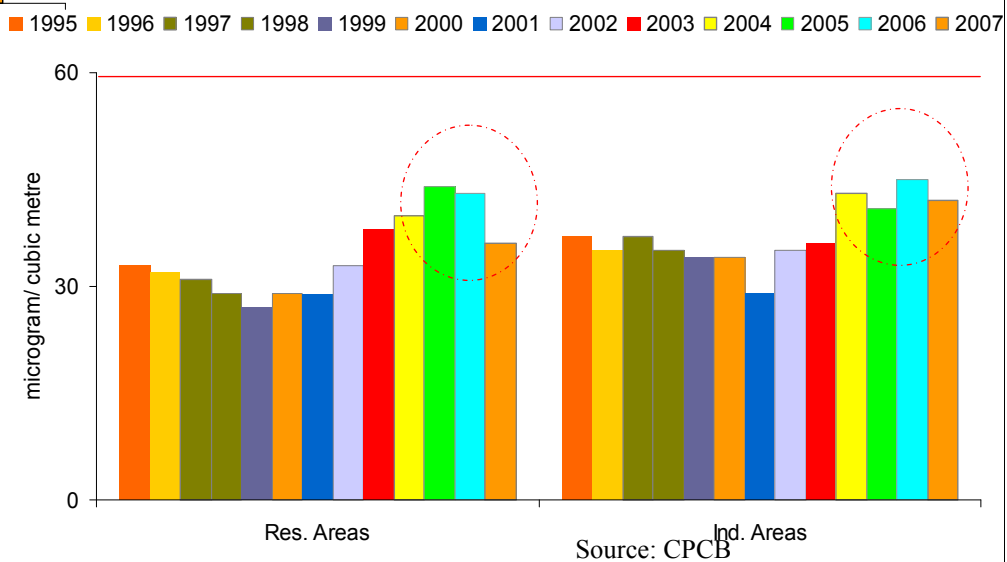


Delhi: at risk of losing gains



PM curve upward

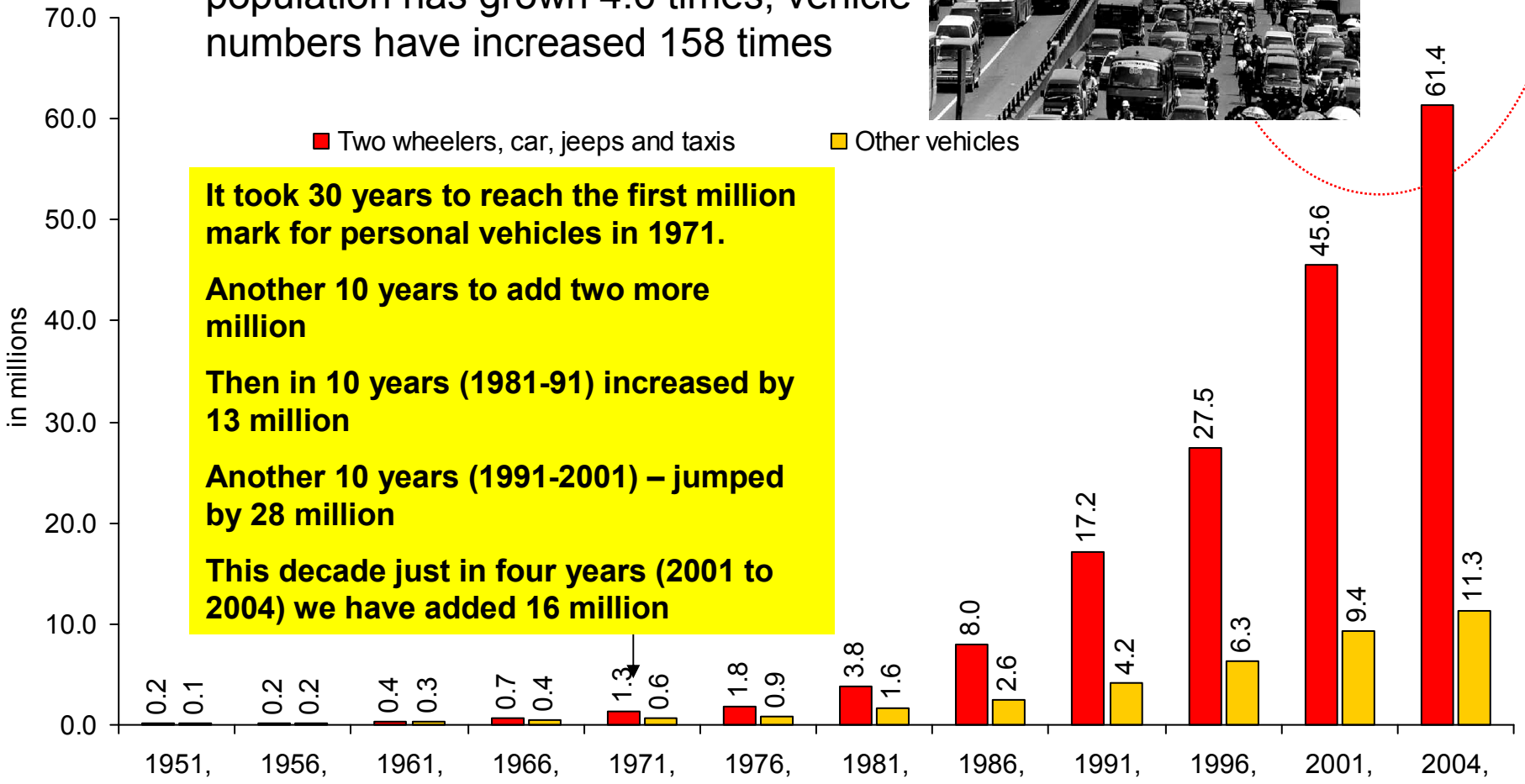
NOx levels Rising steadily



Source: CPCB

Explosive numbers

Vehicle registration in India: India's urban population has grown 4.6 times, vehicle numbers have increased 158 times



It took 30 years to reach the first million mark for personal vehicles in 1971.

Another 10 years to add two more million

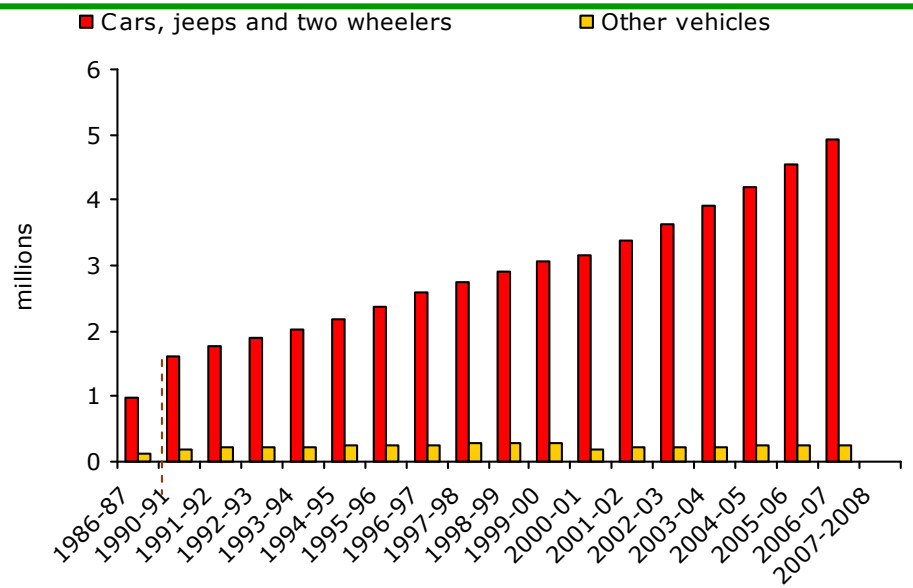
Then in 10 years (1981-91) increased by 13 million

Another 10 years (1991-2001) – jumped by 28 million

This decade just in four years (2001 to 2004) we have added 16 million

Source: Computed on the basis of MOSRTH motor vehicle registration data

Explosive numbers: Delhi choking



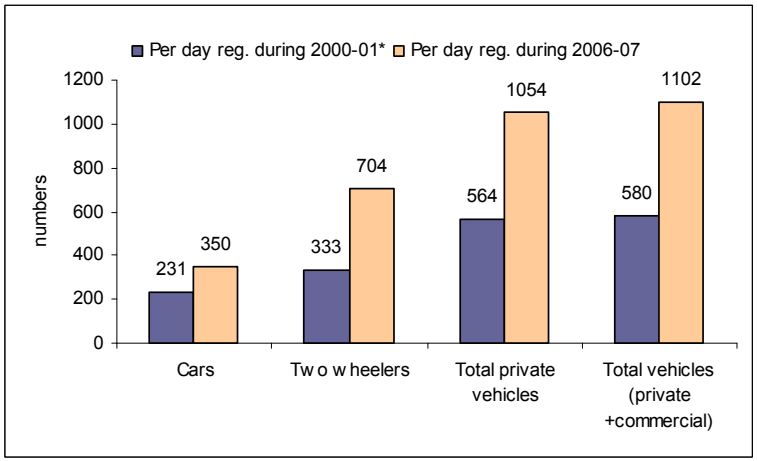
Source: Economic Survey of Delhi, 2007

Daily registration of vehicles is galloping at an alarming pace.

In 2000-01 Delhi registered only 564 private vehicles (both cars and two-wheelers) a day. This has jumped to 1054 personal vehicles per day in 2006-07 – close to two-fold increase.

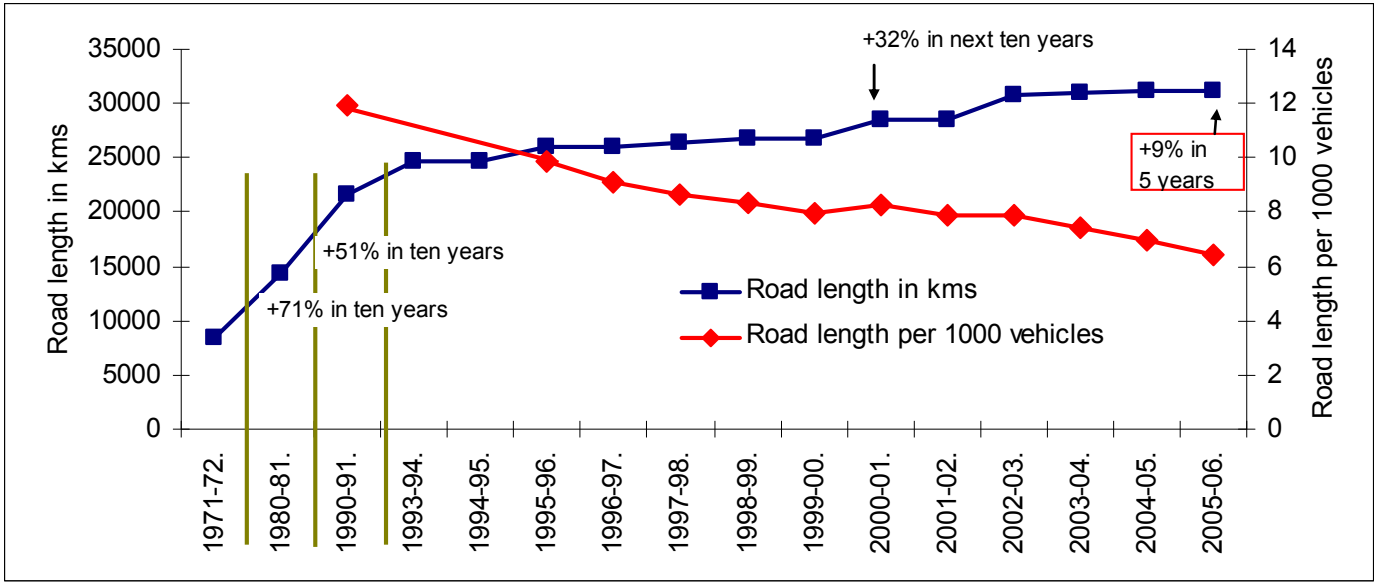
If commercial vehicles are also added then Delhi registers more than 1100 vehicles a day

Cars have grown at 10 per cent annually since 1995 as opposed to 7 per cent for two-wheelers. On the whole the growth rate in the personal vehicles sector is the highest.



Source: Computed from vehicle registration data published in the Economic Survey of Delhi, 2007

Roads hitting dead end



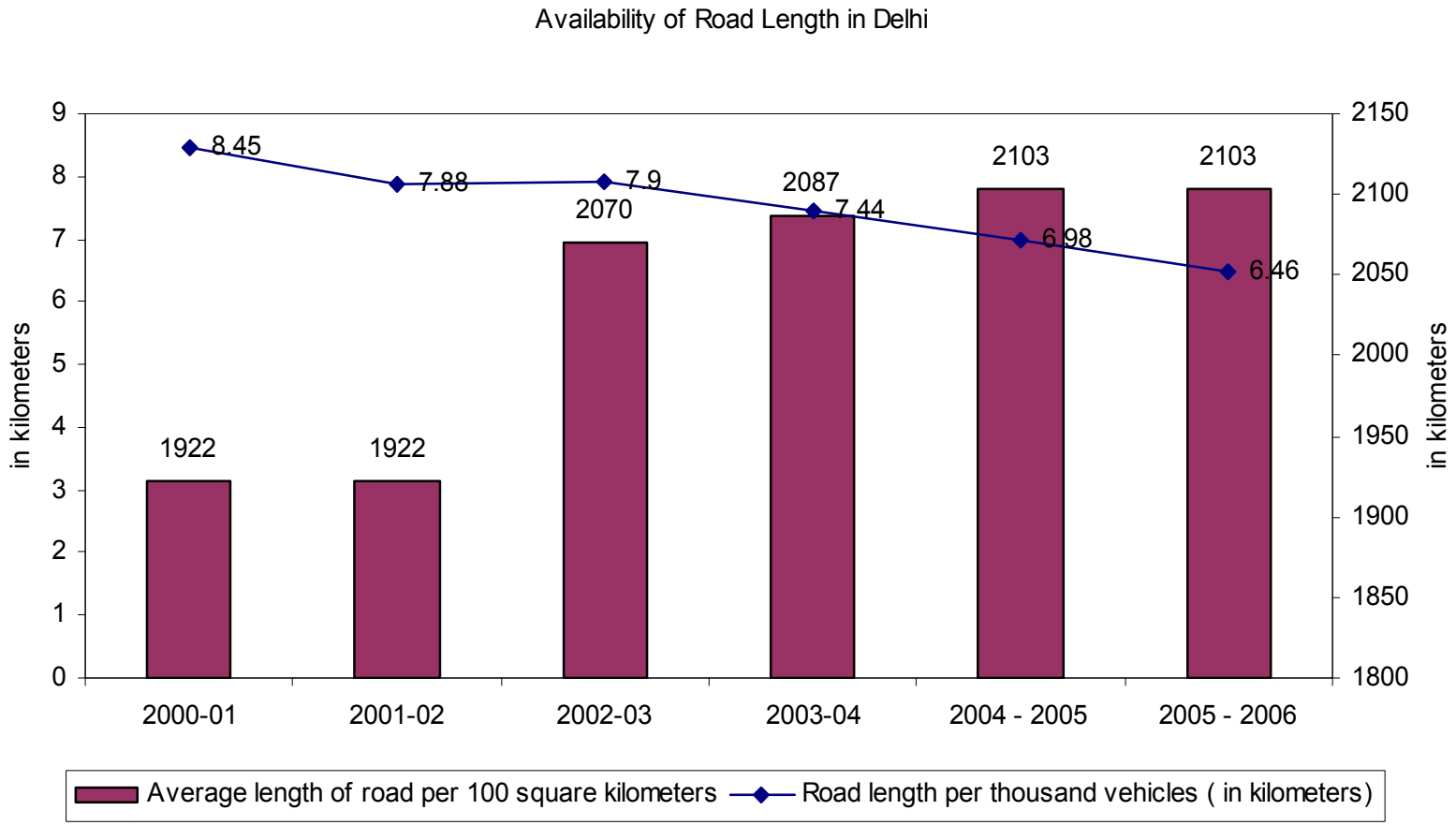
Roads overcrowded even when more than half of population does not own motorized transport: In this populous city of 16.8 million, vehicles are overcrowding city roads even when more than half of our population does not own motorized vehicles. Just about 20 per cent of households in Delhi own cars. Only if two-wheelers are included then about 43 per cent of the households own motorized vehicles.

Source: Based on data provided in the Delhi Economic Surveys, Delhi Planning Department

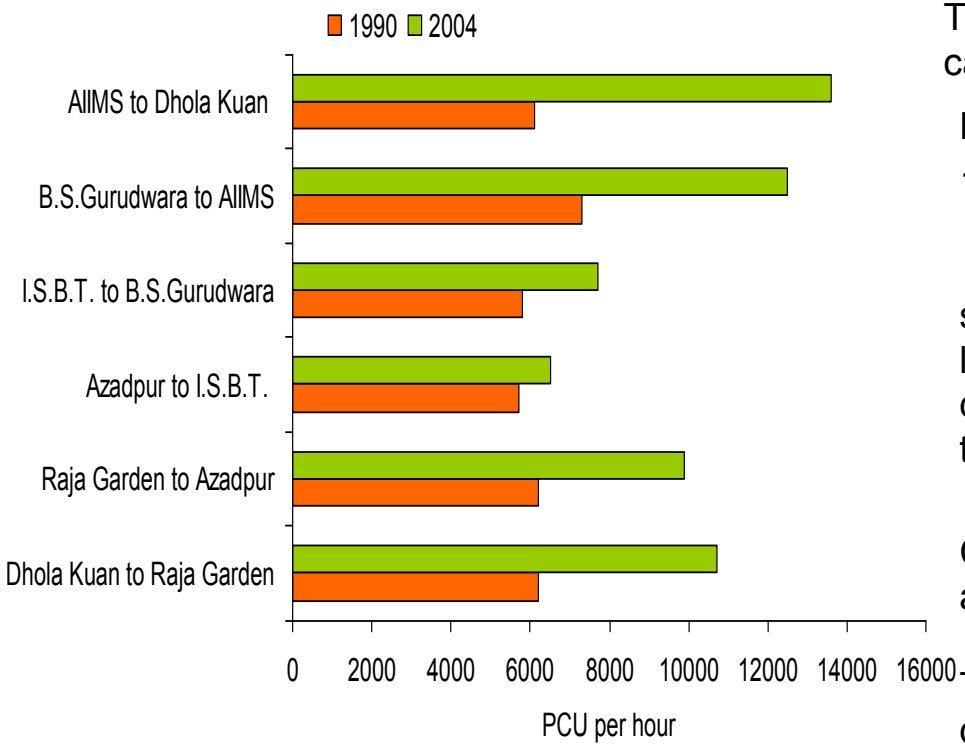
Where is the space for more cars?

Between 1996 and 2006 total road length in Delhi has increased by about 20 per cent. But cars increased by 132 per cent

Delhi has 21 per cent of its area under roads; only quarter of its population own cars; cars and two-wheelers together drive less than 20 per cent of its people -- and yet roads are choked



Explosive numbers have exhausted roads' capacity



Source: Based on City Development Plan of Delhi, 2006, Eco Smart

But where is the space?

Traffic volume exceeds the designed capacity of the capital's key arterial roads.

Peak volume traffic has increased phenomenally Nearly 123 per cent growth on many roads (in PCU/hour)

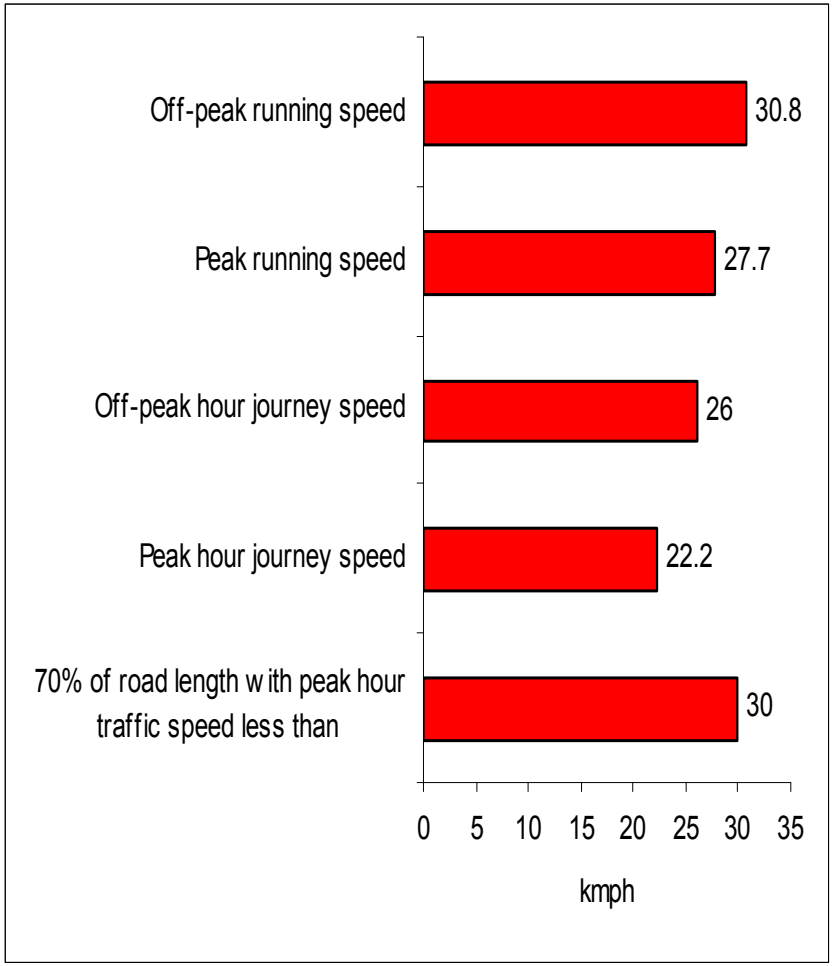
A recent survey shows of the 170 traffic locations surveyed by RITES in 2008 shows that in 44 per cent of locations traffic volume is already exceeding the designed capacity, about 19 per cent locations are on the verge of exceeding it

City development plan reports total length of Ring road as 48 km that has 6 carriageways.

These were designed to carry about 75,000 vehicles a day. But already the road carries 1,60,000 passenger vehicles per day and it is expected to carry about reach 4,00,000 by 2011.

It is anticipated that Ring road will require anywhere between 18 to 24 lanes.

Travel speed plummets
Result congestion.....



Surce: Anon 2008, transport demand forecast study: study and development of an integrated cum multi modal public transport network for NCT of Delhi, RITES, et al , September

Desired traffic speed should be close to 40 km per hour.

Central Road Research Institute (CRRI) study of 2006 shows that during the morning and evening peak hours 55-60 per cent of the major arterial roads have travel speeds less than 30 kmph.

Even during off-peak hours 40-45 per cent of major arterials have travel speeds less than 30 kmph.

Congestion costs can be as high as Rs 3000 to 4000 crore per year.

ASSOCHAM study: the commuting population could be losing Rs 420 million human hours in congestion. Each day 2.5 hours are lost in commuting to destinations.

Need second generation reform

Need big answer:

Need to make transition to public transport

In our cities **Car** has **not replaced** the **Bus**

In our cities car **has marginalised** the bus

- Metro in first phase carries 0.5 million passengers/day
- DTC+private buses carry roughly 9 million passengers

We looked at bus numbers……

- Delhi adds 1000 vehicles/day, but few buses/year
- Missed the target of 10,000 buses by 2002

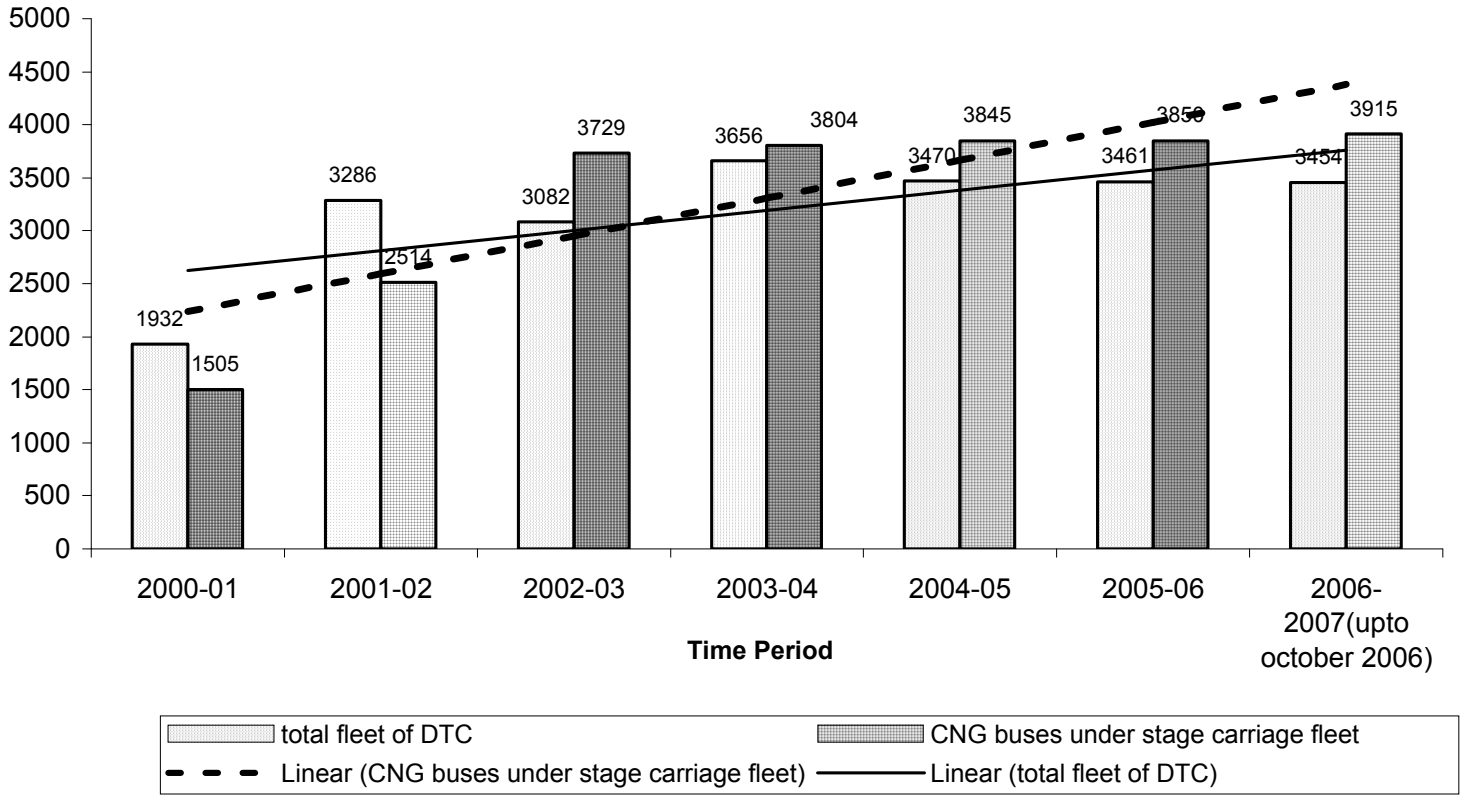
Bus availability going down

1980-81: 57 buses/lakh population

2007-08: 34 buses/lakh population

Source: DIMTS

Note: 1 Lakh = 0.1 million

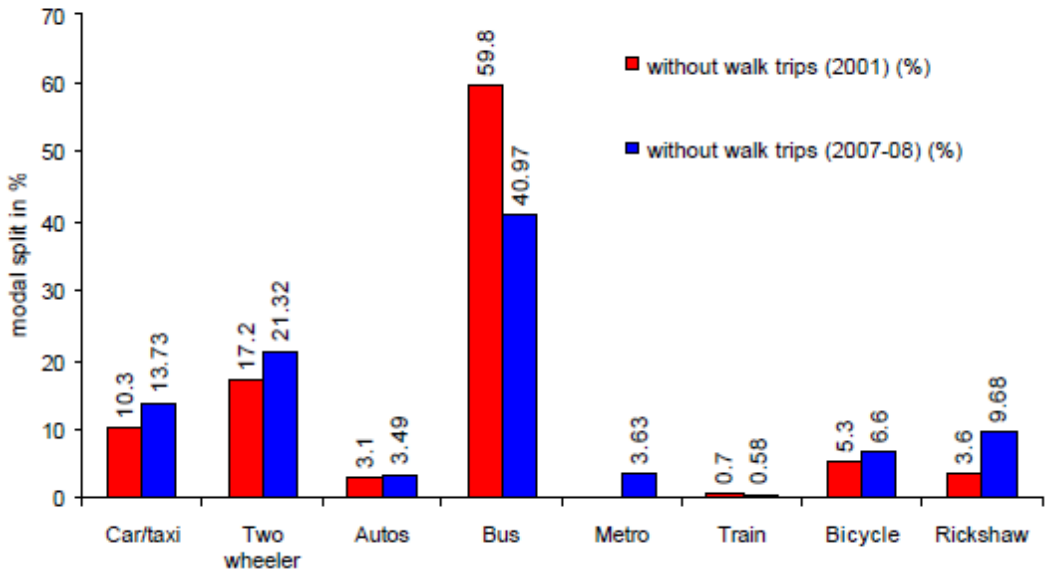


Source: CSE

Nationwide bus registration dropped from 11 per cent in 1951 to a mere 1 per cent in 2004

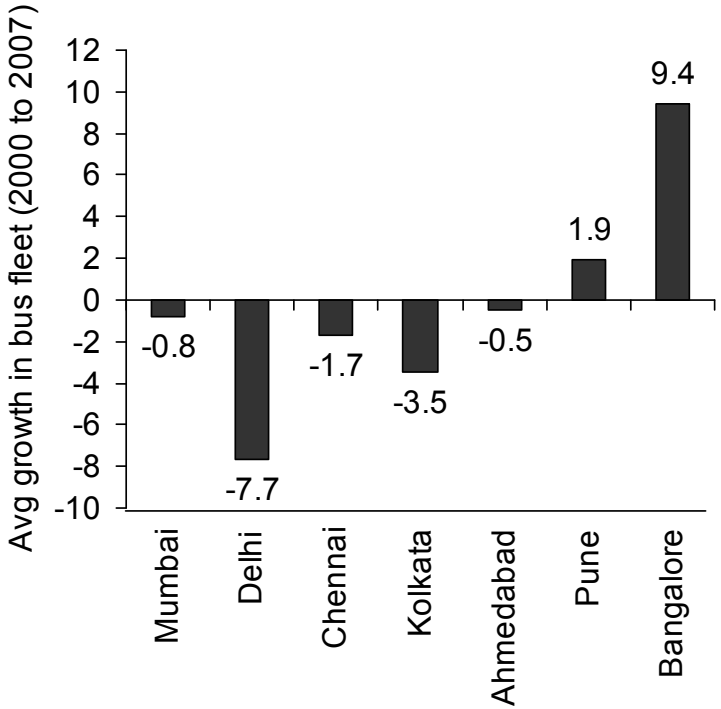
Reality check

Buses marginalised in Delhi



RITES: Modal share in Delhi

The Annual Average Growth in STU Bus Fleet in selected cities (2000 to 2007) (In%)



Source: Anon 2008, transport demand forecast study: study and development of an integrated cum multi modal public transport network for NCT of Delhi, RITES, MVA Asia Ltd, TERI, September

Poor mobility management

By 2021 there will be a shortfall of nine million trips per day

Biggest barrier, ironically, is the bus itself……

Delhi government is investing to expand the bus fleet by nearly 5000 buses – Cities want modern, convenient and even air conditioned buses.

But……

Barriers …..

Constraints of supply….

-- Tata and Ashok Leyland produce nearly 90 per cent of the buses. But serious delays in delivery.

-- As per contractual agreement between Tata and DTC there is delay penalty of 10 per cent per month. Tata has been fined for Rs 2 crore for this delay.

-- JNNURM stimulus package has created committed demand of nearly 15,000 modern urban buses. This needs ramped up production over and above the 30,000 standard buses manufacturers produce annually.

Diverse bus specifications fragmenting markets, increasing costs

-- **Case of bus procurement in Delhi and Ahmedabad** -- Wide variation in design specs from operators, and near monopoly pushing up prices – Height of bus floor,, manual or automatic transmission, type of suspension, standard vs monochoque body, CNG vs diesel…..

The first bid fetched staggeringly high price in Ahmedabad Rs 62 lakh a bus. But with more features Delhi got the same for Rs 41 lakh/bus.

Ahmedabad re-tendered for semi low floor diesel bus with automatic transmission but not a full air suspension. It cost Rs 26 lakh per bus.

Note: 1 Lakh = 0.1 Million, 1 Crore = 10 Million

Solutions exist…..

Standardised specs exist…….There is no reason why market should remain fragmented….

-- Bus code of the Union Ministry of Shipping, Road Transport and Highways

-- Guidelines on bus specs of the Union Ministry of Urban Development

With standardisation cities can even do collective bargaining with bus industry to procure buses at reasonable standardised rates

Sale volumes should allow economy of scale and reduce prices further

Even the tendering process can be simplified

Only increasing numbers will not help

Need reform in the bus sector …..

- Revitalise the public bus agency
- Implement new model for private operations…

Even this hits roadblock…

City bus corporations: In the red

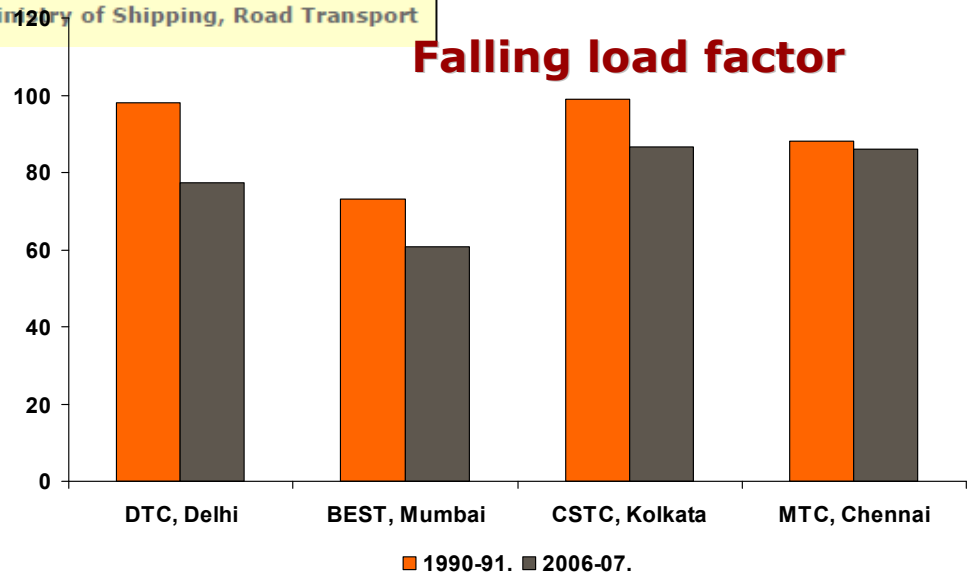
Bus company	Fleet size	Average (years)	Fuel efficiency	Staff/ bus ratio	Vehicle productivity (km/bus /day)	Total revenue (Rs crore)	Total costs (Rs crore)	Net profit /loss (Rs crore)
Calcutta	1,144	6.4	3.70	6.65	124	72	177	-105
Mumbai BEST	3,391	5.56	3.31	10.11	194	850	1,088	- 238
Chennai Metro	2,773	8.39	3.77	6.40	209	472	557	- 85
Delhi DTC	3,467	4.70	2.99*	8.21	205	464	1,267	-803
Bangalore MTC	3,977	4.47	4.66	4.78	218	687	574	+ 113
Ahmedabad MTS	685	11	—	5.72	172	76	99	-23

*Runs on CNG, and price has not increased, so costs of fuel are under control

Source: Review of the performance of state road transport undertakings, Ministry of Shipping, Road Transport and Highways, Government of India, 2007

Note: 1 Crore = 10 Million

Falling load factor



Solution: Public transport
But progress very slow

Public transport projects to engineer change

High capacity bus system – 100km; Metro plan -- 245 km planned

If implemented on time and on an extensive scale, can make significant impact on car numbers, congestion and air quality. But these have longer time schedule.

Need effective action in the short run as well. Augment the available public transport.

Supreme court directive to increase the bus fleet to 10,000. City fails to meet the target

Restructure……

All city bus routes have been bunched into 17 clusters. Private bus agencies will bid and operate these clusters within defined performance parameters.

But unaffordable…….

Affordability challenge of public transport…

The bid for the first cluster shows cost at Rs 47/km with low floor buses. This can cost Rs 45-85 crore (US $ 9 to 13 million) per annum per cluster. This can be even higher for other clusters – Rs 50-60/km (US$ 1 to 1.2 /Km) while the operating revenue will be half of this.

The financial gap is estimated to be Rs 600 - Rs 1000 crore (US $ 16 to 20 million) annually….. Government's contribution will be enormous….Need strategy to address this.

How do we reduce the costs of capital and operations?

Negotiate bids to reduce both capital and operational costs……

Should we move from low floor buses to semi low floor buses to reduce capital costs …? Renegotiate operational costs and make operators fully responsible for meeting that cost.

Government is already paying hugely for the inefficiency of the state owned agency – Rs 66/km (US$ 1.2/Km)

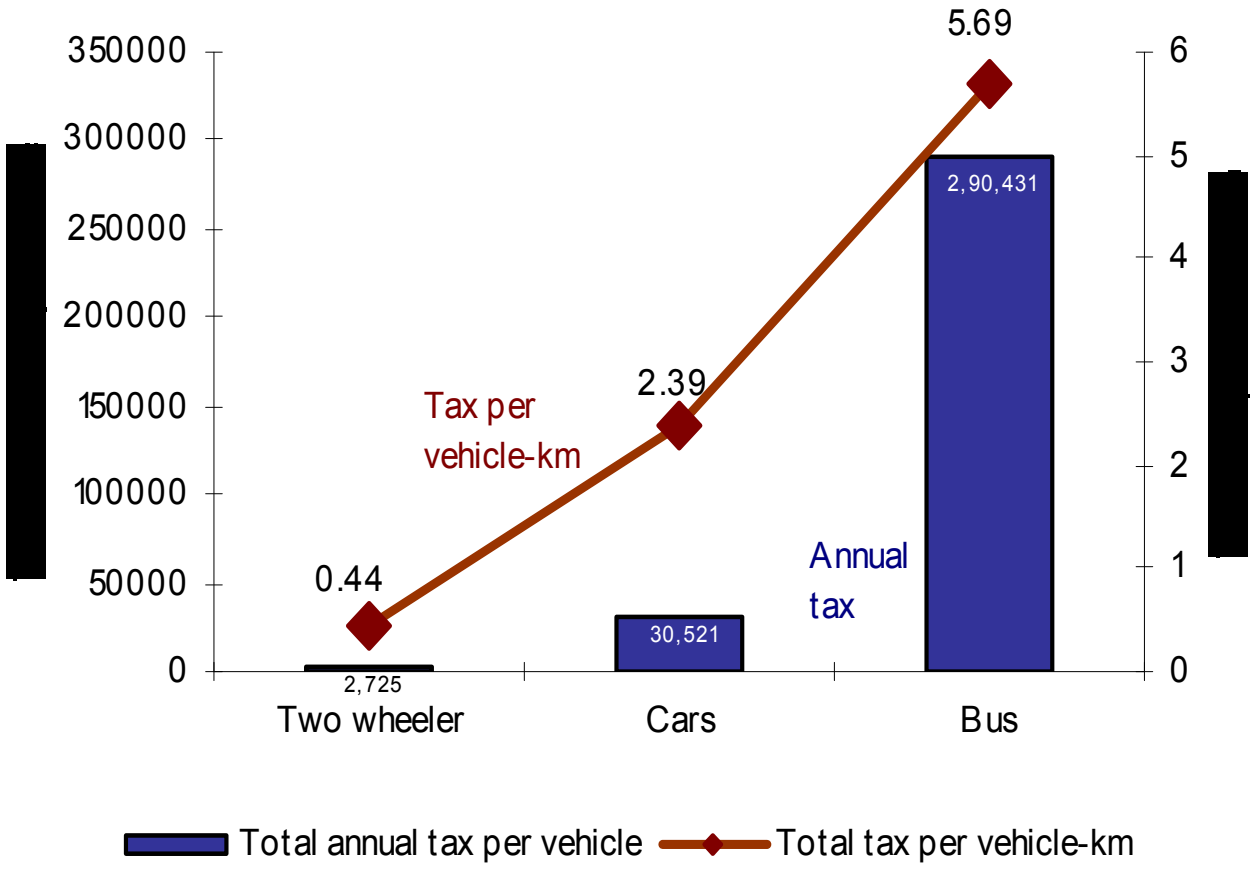
How do we increase revenue?

How can we build public transport funds?

Difficult within the existing tax regime

Buses bear significantly higher tax burden than cars and two-wheelers.

If not corrected and bus fares are raised, a substantial public transport ridership can be lost to two wheelers that have a running cost of a mere Re 1/km



Note: 1 US$ = Rs 50 approx

Taxing the poor to subsidise the rich?

Delhi: If lifetime tax is amortised for the life of the vehicles then car pays roughly Rs 533 as taxes per year. But buses pay for more for carrying passengers. They pay about Rs 13000 per year – 26 times more than cars. .

Mumbai: bus occupies one tenth of the road space per passenger compared to personal cars. Cars pay one time registration fee which is only 3.5 per cent of the value. Buses pay annual passenger tax. Cars pay Rs 9000 for life and bus pays Rs 41000 every year.

Name of the state	Estimated tax paid annually by two - wheelers	Estimated tax paid annually by cars (only petrol cars)	Estimated taxes paid annually by buses	Number of times the tax paid by buses exceeds a car
Haryana	33	100	27,000	270
Punjab	67	267		
Delhi	53	533	13,765	26
Himachal Pradesh	80	533	27,000	50
Uttar Pradesh	107	667	1,970	30
Rajasthan	133	800	12,000	15
West Bengal	260	1980		
Goa	187	933	12,420	13
Maharashtra	187	1067		
Gujarat	100	1333		
Chattisgarh	107	1333	97,200	73
Karnataka	187	2400	1,08,000*	45
Andhra Pradesh	240	2400		

1 US$ = Rs 50 approx

Reinvent the fiscal regime for transport

Reform taxes to lower the cost of capital and operations

-- Demand for complete waiver on central excise duty on buses. It has now been reduced to 8%

-- State governments should waive off state taxes like passenger tax that perversely taxes passenger

Options to generate revenue to create urban transport funds

DIMTS is considering the following sources. No decision yet.

Receipts from inter-state bus terminus
From plan allocation for public transport
50 per cent of collection from the Air Ambience Fund
Fees levied on transport department for issuing licenses, vehicle registration, etc
Fees and cess that may be levied in future on polluters
Fund deposited with the supreme Court
Budget support
Waive off taxes on buses

Need clear policy on sources of revenue to augment the fund, restrain cars and increase bus ridership

Higher road tax on cars and two wheelers. Currently, it's the lowest in Delhi
Parking tax
Congestion tax etc

Tap Advertisement revenue for public transport (Delhi has designed a policy under the aegis of EPCA)

Revenue from land-use densification. But this should be done with proper land-use and network plan

Bus is not just about numbers. It is also about frequency and speed

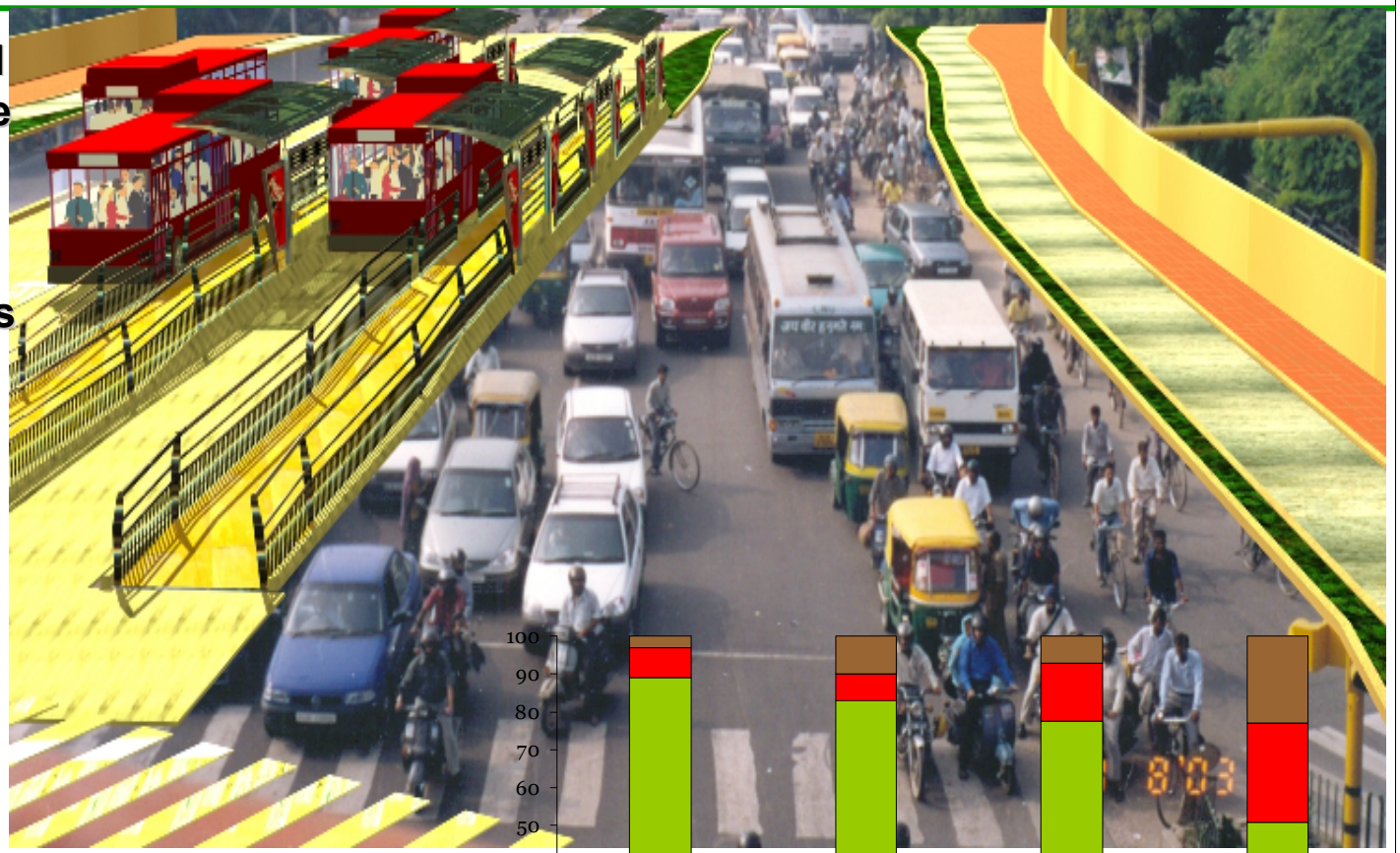
Build support for the BRT

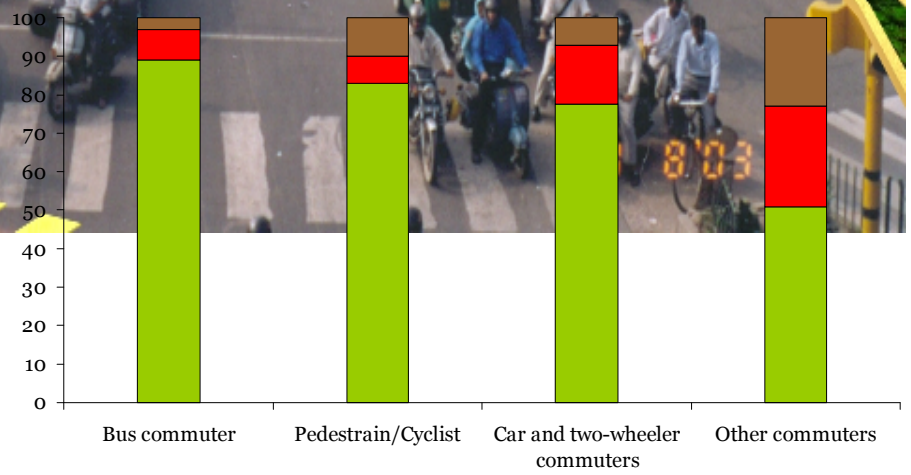
EPCA is monitoring and coordinating to expedite its implementation

CSE oragainsed surveys to see how people feel about the corridor:
Found overwhelming support amongst the bus users, pedestrians and cyclists

Commissioned studies to understand the benefits of the pilot corridor

Awareness raising:
Meeting with schools etc





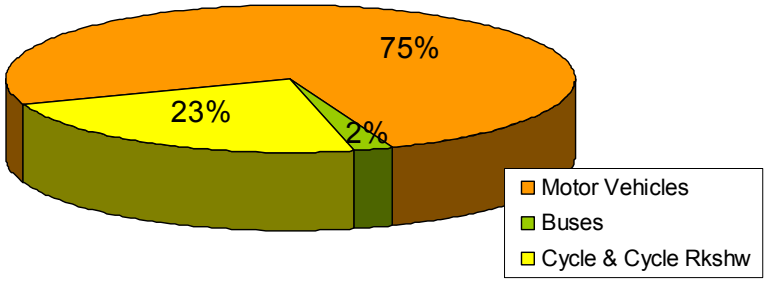
Are you happy about the corridor?

The new assessment has helped to highlight real improvements….

Benefits for more people, not vehicles

Waiting time reduced for more people

Distribution of Vehicles - By Mode



Chirag Delhi Junction

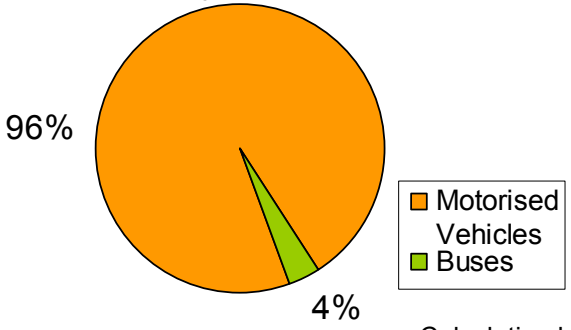
Morning Peak Hour

AK to MC

4,916 Vehicles

11,480 People

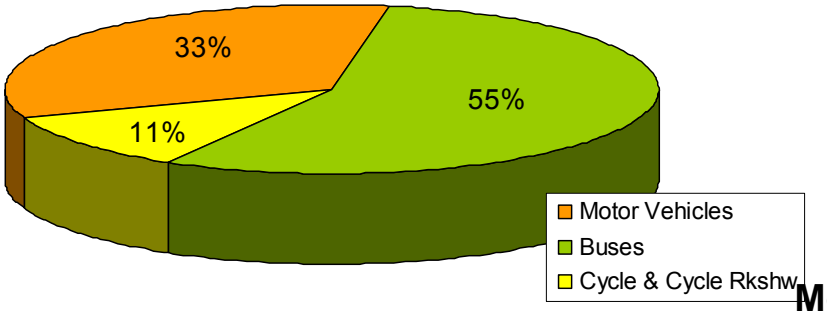
Distribution of wait time @ Chirag Delhi junction - Vehicles



Calculation based on Webster's Delay Formula for Signalized Intersections

One Leg

Distribution of People - By Mode

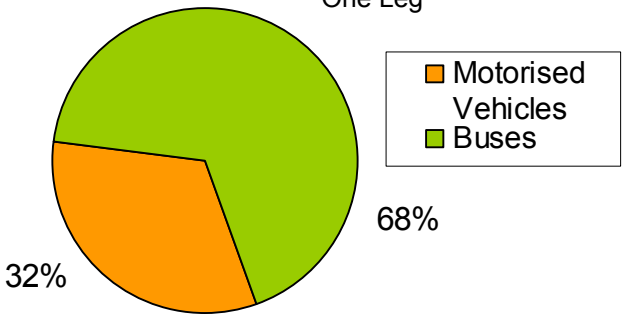


Morning Peak Hour

AK to MC

53.0 Vehicle-Hours

164.8 Person-Hours

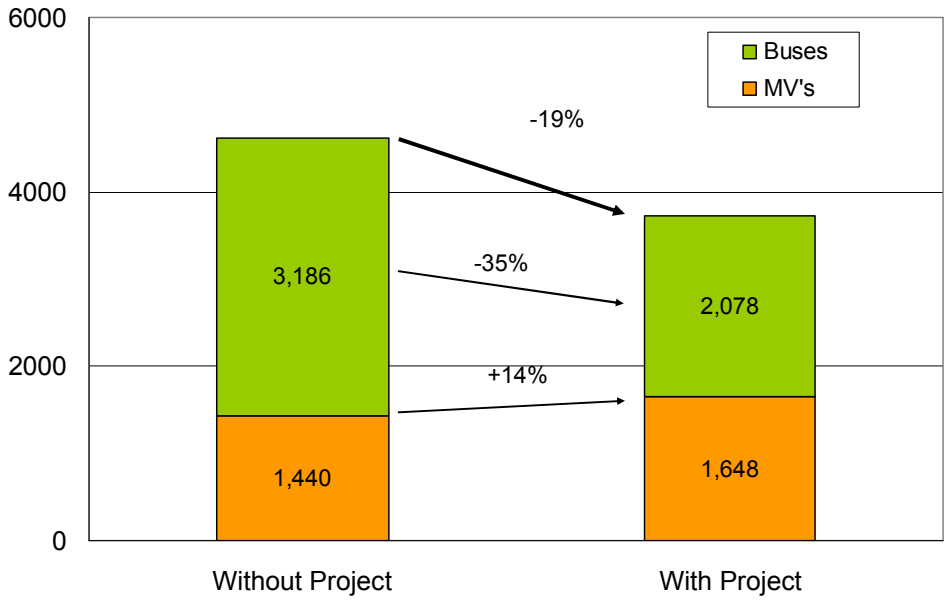


Distribution of wait time @ Chirag Delhi junction - People

Source: Dario Hidalgo- Madhav Pai study for CSE, 2008

….. Bus Corridor has also reduced the average travel time

People Delay - Morning Peak Hour - In Hours



Source: Dario Hidalgo - Madhav Pai study for CSE, 2008

Bus transport is a chance to make a difference in our cities…….

The reform agenda

Reforms linked with bus procurement

- Form Unified Metropolitan Transport Authority
- Dedicated Urban Transport Funds
- Reimbursement of taxes by state governments
- Advertisement policy
- Parking policy
- Vehicle Tracking system
- Passenger information system
- Traffic information control centre etc

This is a chance to make a difference……

Thank you