Centre for Science and Environment

International Workshop on
“Our Right Of Way: Walking and Cycling”

New Delhi
March 22, 2012
Cities: the new growth story

- About 30% of India’s billion people are in cities…. This is more than the US population. Urban population will be close to 600 million by 2031.

- Metro cities with population of 1 million and above has increased from 35 in 2001 to 50 in 2011 and is expected to increase to 87 by 2031.

- Increased investment in urban infrastructure will demand sizeable part of GDP.

- Travel demand of the urban community will be phenomenal. The commuting choices will determine the liveability of cities.
Cities are losing battle of car-bulge: The rapid increase in vehicles is destroying all gains of air pollution and health
Fuel guzzler cities – Cities with more vehicles guzzle more fuel, emit more CO2

CO2 emissions strongly correlate with vehicle numbers

Cities with high walking and cycling have low CO2 emissions
Shadow of things to come
Modal share trend 2007-2031

Private vehicle usage will increase.
Public transport will stay stable or decline

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
High congestion index in many cities

Source: Compiled from SIM AIR, and MOUD report
Are we prepared?

Lessons from Delhi.........
Is Delhi prepared to meet the growing travel demand sustainably?

-- Total daily travel trips will almost double in Delhi by 2021
-- But public transport ridership will slide further.
-- Only with 14% of car ridership the city is gridlocked….
-- How will Delhi cope?

Increase in daily travel trips 2007-2021

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Trips</th>
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<tbody>
<tr>
<td>2007</td>
<td>15,011,134</td>
</tr>
<tr>
<td>2021</td>
<td>25,541,984</td>
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Trend in modal share 2007-2021

- **Car**: 2007 - 20%, 2021 - 30%
- **Two wheeler**: 2007 - 25%, 2021 - 40%
- **Auto**: 2007 - 5%, 2021 - 10%
- **Bus**: 2007 - 35%, 2021 - 50%
- **Metro**: 2007 - 5%, 2021 - 10%

Source: Based on RITES data
Where is the space to build more roads?

Even with 21% of space under road network Delhi has failed to solve the problem of congestion.

Cities are struggling to find more space to build roads.

Mumbai has 12% of its geographical area under road network.

Kolkata only 6%.

Public parking has used up nearly 10 percent of Delhi’s urbanised land.

How much more public and personal spaces are we prepared to sacrifice to build more roads and flyovers?

Source: On the basis of Economic Survey, Delhi Govt.
Where will Delhi find more space for cars?

Look at Delhi’s Ring Road -- Length of about 48 km……

- The 6-lane carriage has reached saturation capacity with 110,000 vehicles per day.
- Widening Ring Road from 6 lanes to 8 lanes in some stretches.
- But traffic is projected to reach between 1.5- 4 lakh PCUs.
- This will require expansion of the Ring Road to 18- 24 lanes ----- Is that possible?

Source: Delhi Economic Survey
We looked at Delhi roads………..
As cars dominate roads people carrying capacity of roads decline

**Aurobindo Marg** (near Yusuf Sarai):
Cars are nearly half of all vehicles on the road

But carry only 17% of the commuting trips

Source: Based on RITES data
Similar story on other roads

Swarn Jayanti Marg (near Dhoula Kuan)
Cars 63% of the vehicles

Cars carry only 20% of the trips

Source: Based on RITES data
Congestion grid of Delhi in 2021: Is this the kind of city we want?

Figure 4.2 Expected Peak Hour Traffic Volumes (in PCU’s) on Road Network in 2021 in BAU Scenario

Source: Based on RITES data
Cars hide the **invisible majority** in our cities -- walkers and cyclists
Indian cities have inherent strength in walking and cycling (modal share %)

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
Absolute numbers change the ranking of cities... Delhi has one of the highest count of cycle and walk trips.
.... Delhi has the highest count of cycle trips
Who has more right on roads?

While the total number of daily car trips is about 3 million, that of walking and cycling is 8 million – 2.5 times more. Cycling trips at 2.8 million are almost equal to car trips.

Source: Based on MOUD 2008, Study on traffic and transportation policies and strategies in urban areas in India, Ministry of Urban Development, Delhi, Wilbur Smith Associates
Cycle numbers are substantial even in some car dominated roads

Even in car dominated Outer Ring Road (near Soami Nagar) cycle numbers are close to auto numbers

Source: Based on RITES data
Stunning: In some high usage areas, NMT traffic is more than the car traffic

Comparison of Car and NMT traffic on the busiest NMT roads

**Shivaji Marg** (near Subhash Nagar metro station) records around 18000 NMT vs 4000 cars per day.

**Loni Road** (near Jyoti Nagar East) --18221  NMT vs only 4372  cars per day.

**Shivaji Marg** (near Uttam Nagar West metro station) records around 18000 NMT vs 14000 cars per day.

Source: Based on RITES data
Some high cycling roads in Delhi

Source: Based on RITES data
High ownership of bicycles: But usage not increasing

- India produces 2 million cars but 12-15 million cycles.
- While 34% of Delhi household own cars, less than a quarter own cars
- More and more people are buying bicycles......Domestic bike market is expanding steadily at 3-4% every year
- The market for high end bikes and kids bikes is growing
- People like to own bikes. But do not feel safe to use them
- Until last decade, 90-95% units were sold in the standard, low cost bicycle segment.
- Today, 50-55% of new customers are opting for higher end designs.
- High growth of ‘recreational user’ and cycle group. Growing societal interest.

...............such low usage..... Why?
**Shocking:** Delhi has highest road accidents in the country. Fatalities and injuries to walkers and cyclists are unacceptably high.

Cities with high numbers of walkers as well as vehicles show high injuries as more people are exposed to friction with motorised traffic.

**Share of bicyclists and pedestrians in road accidents**

**Pedestrian deaths and walk trips in some cities**

Delhi has highest pedestrian fatality.
Unsafe

Outer Ring Road
State level
In many cities plying of cycle rickshaws are being curtailed

Kolkata is withdrawing cycles from 39 key roads

GOVT. OF WEST BENGAL, KOLKATA POLICE, NOTIFICATION
In exercise of power conferred …West Bengal Traffic Regulation Act, 1965…and in supreession of all previous orders or notifications on the subject and with the approval of the State Government, …… Commissioner of Police, Kolkata, with a view to providing for safe, and uninterrupted movement of vehicular traffic, do hereby order that no bi-cycle shall ply or remain standing between 09.00 hrs and 19.00 hrs on all days on the following roads :

National level
No funding support urban ministry’s Public Bicycle Scheme,
Cities to meet target of 80% public transport share by 2020: Even 50% increase in kilometer traveled by public transport will lead to massive increases in walking. Roads will have to hold……

Multi-modal integration needs walking and cycling access: Public transport can be successful only with efficient last mile connectivity

Active transport and health: Health alert on lifestyle and pollution. Coorelation between active transportation (walking and cycling) and obesity and other ailments. Eg, China – 1.8kg weigh gain after and twice as likely to get obese for a Chinese who acquired a car. King County – people weigh 7 pounds less on an average in walkable neighbourhoods

Who walks? The urban majority.............
For work, education and services.....Of all education trips – 58% walk trips; Service and business trips – 31% walk trips (RITES 2001)

Urban poor.......Many people are too poor to even afford a bus. About 60% live in low income localities. Moving slums out to periphery has sharply reduced women employment as accessibility reduced.
Our cities were meant to be walkable…. BUT................

-- High density, mixed land use, and narrow streets make our cities walkable
-- More than 40 to 50 per cent of the daily trips in many of our cities have distances less than 5 kilometers.
large captive pedestrian traffic but worst infrastructure

Govindpuri and Zaffrabad: Traffic and people on collision course……
- Discontinuous, poorly paved footpaths, and not easily accessible
- Height and width of pavements violate norms
- Poor signages, no pedestrian refuge islands -- crosswalk are ordeal
- No kerbed ramps or blended crossings to access the crosswalk facilities
- Exposure to traffic very high.
Aurangzeb Road and Govindpuri

We have counted 3 persons per 10 minutes in Aurangzeb Road and 100 person per five minutes in Govindpuri.

Urban planning does not keep people in focus.
Design of sidewalks near AIIMS has improved
But cloverleaf flyover has disrupted at-grade continuity, increased walking distance for the ailing visitors using public transport
At least in one direction use of subway is unavoidable
But these are not handicap friendly and are without supportive tools
Cloverleaf has completely severed neighbourhood, increased walking distance, disrupted direct shortest route
Road design is forcing jay walking....

Seamless and signal free traffic is interrupting shortest direct route for pedestrians. This is inciting jay walking

Sai Chowk, Patparganj

Scindia House, CP
As cars get advantage on roads pedestrians are either pushed out of roads to FOBs or subways. But people and public transport need to be at grade.

Seamless, signal free travel for motorized vehicles disrupts direct shortest routes. Impeded access.

Increasing distances and travel time for them. This will reduce public transport usage, walking and cycling.

Mumbai to sink Rs 600 crore to erect 50 skywalks that are poorly sued.

FOB near Batra Hospital, M.B. Road, Delhi.

Direct access blocked.
With seamless traffic and FOBs pedestrians disappear from the roads.
The transition ......
Sign of improvement....... 

• Road building can also be an opportunity

Connaught Place
Delhi has just begun to build walking and cycling infrastructure....

We must get this right.....
We looked at the new walking and cycling infrastructure. Are we on track?

What’s working ......What is still not right?
Cyclists and walkers have their own space. But few takers. Why?

Clean Air team traversed the following roads:

1. Vikas Marg from ITO to Laxmi Nagar.
2. Tughlakabad Stretch from Jamia Hamdard to Pulpahlad pur
3. Noida Link road- Akshardham to New Ashok Nagar
4. Marginal Bund Road near Shastri Nagar
5. The BRT stretch from Ambedkar Nagar to Pragati Maidan

Tughlakabad Fort

CSE conducts random survey of new cycle and walking lanes implemented during the Commonwealth Games to understand the improvement and the barriers. **We looked at the usability of the new tracks from the users standpoint**
What is working........
Message from the new road design: 
...............Human dignity and respect

Walking and cycling lane in the bus rapid transit corridor
Design details that show walkers and cyclists matter
Specially designed junctions for at-grade crossing

Source: CSE
Pelican signal: Advantage NMT

Source: CSE
Proper signages for walkers and cyclists

Source: CSE

BRT Corridor
Smooth ride on a well design wide track.....
Disable friendly design....

BRT corridor has good disable friendly features

Source: CSE
Well shaded track

Near Pragati maidan

Source: CSE
Cycle and walk lanes in BRT corridor score best in engineering design and usability – though there are problems with enforcement. During peak hours more than 2000 bicycles cross this lane. Vikas Marg comes second
What might still be going wrong………

Treating walking and cycling spaces as streetscaping and not as usable infrastructure……
Discontinuous: Goes nowhere

Source: CSE
Beautiful well designed stretch.
But design bars entry. No amenity

VIKAS MARG

Source: CSE
High speed motorised traffic at the entry point of the track.
No traffic calming for easy and safe access to the lane

Source: CSE
Unsafe Junction:
How do we turn without protection?

VIKAS MARG

Source: CSE

TUGHLAKABAD FORT
Poor maintenance and obstruction

Need design solution to deal with tree obstruction

TUGHLAKABAD FORT

Source: CSE
Sharp and sudden turns make negotiation difficult.

Source: CSE
Public Utilities: Show pieces. Locked and barred.

TUGHLAKABAD FORT

Source: CSE
• Raised track without proper levelling with the adjacent grounds make it dangerous

Source: CSE
An uphill task

NOIDA LINK ROAD

Source: CSE
Invasion

BRT CORRIDOR

Source: CSE
Where is our “Right of Way”? Walk and cycle lanes encroached

BRT CORRIDOR
Poor neighbourhoods:
Cycle rickshaws edged out

MARGINAL BANDH ROAD

Source: CSE
City regulators crossing roads on wheelchair to understand universal road design

Disability and walking......Samarthy am survey: 58% of the disabled found steps, ramps, difficult to negotiate; 45% of elderly found steps and ramps daunting; 20% found uneven, narrow sidewalks difficult. Engineering guidelines for disables are not implemented.

Source: CSE
Walk and cycle access to Metro?
QUTAB Metro station: Very poor access

Source: CSE
Autos and Metro

IPT not built into the design

QUTAB MINAR

Source: CSE
Feeders to metro

Source: CSE
Cycle feeders in residential colonies: Victims of neglect

Source: CSE
Bike rental Scheme: A non starter…

Planet green bikes introduced at every junction along BRTS stretch

Source: CSE
Poor cycle catchment: Bike sharing and parking Dismantled

Pragati Maidan Metro stations
Change the practice

-- Design cities to be public transport, walking and cycling oriented

-- Road engineering interventions once made cannot be changed easily. But it will permanently decide the design of the network and influence travel choices of people.

-- Ensure that road design does not increase dependence on and usage of personal vehicles.

-- Shift policy focus to public transport, walking and cycling.
Surprises……
There are policies and laws…but don’t help

• National level…
  – National Urban transport policy: Advisory
  – JNNURM – CDPs can be effective instruments.
  – City level…many rules converge
  -- CMVR safety rules -- passive protection: but says motorist cannot enter pedestrian way. Liable to penalty
  -- Indian Penal Code (sec 283), sec 34 of Delhi Police Act -- obstruction in public space punishable
  -- Urban street vendor policy, 2007, to protect livelihood rights – Guidelines for proper vending zones. They are service providers on footpaths…
  -- Master Plan 2021 provides for pedestrian facilities
  -- Police Act provides for penalty for jaywalking
  -- Design and engineering guidelines (IRC) –
  -- Disabilities Act 1995 (Sec 44) – guidelines for disable
• But these rules don’t add up to allow stringent enforcement…….
• People are not included in decision on pedestrian space..There is no impact assessment of road infrastructure

“11. Right of way.—The pedestrians have the right of way at uncontrolled pedestrian crossings. When any road is provided with footpath or cycle track specially for other traffic, except with permission of a police officer in uniform, a driver shall not drive on such footpath or track.”

-- The Central Motor Vehicles Rules, 1989

... Driving test—….. show courtesy and consideration for the safety and convenience of other road users, such as pedestrians, drivers of other motor vehicles or cyclists.
Current

- Anyone injured in a road accident is entitled to monetary compensation by the offender(s). The quantum of compensation -- As per the **Central Motor Vehicles Act (CMVA) 1988**, -- Bodily injury resulting from accident with motorized vehicle: Rs. 12,500
- Death of victim caused by accident with motorized vehicle : Rs. 25,000
- The compensation amount is payable by the owner(s) of the vehicle involved in the accident.

Proposed for amendment of CMVR:--

- Increase in No Fault Compensation from Rs. 25,000 to Rs. 100,000
- Increase in Compensation for injuries from accidents from Rs. 15,000 to Rs. 50,000
- De-criminalization of Road Accidents: De-linking the provision of medical care/emergency medical attention to accident victims from the legal/criminal aspects of the case.
- Creation of a dedicated fund: to provide financial assistance to those victims of road accidents who cannot prove their identities at hospitals or nursing homes due to their disadvantaged social backgrounds, or do not have adequate insurance cover to pay the expenses involved in surgery/treatment/medicines.
- Stricter Insurance premia: Insurance companies should link insurance premia with the accident record of drivers in order to establish an incentive for safe driving.
- **Proposal to increase monetary compensation in hit-and-run cases.** amount to be paid out to the victim would be Rs. 100,000 in case of death of victim, and Rs. 50,000 for grievous injuries.
Opportunity in Delhi to influence road building
Learning from others

What other governments are doing…..

**Setting legal framework:** Laws to pedestrianise as well as to reduce traffic volumes.
-- London, Road Traffic Reduction Act allows authorities to pedestrianise and reduce traffic levels or their rate of growth in a particular area to reduce congestion and improve air quality.
-- San Francisco has enforced Better Street Policy. New York city is promoting pedestrian infrastructure.
-- In Auckland The Land Transport (Road Users) Rule stops motorists from stopping, or parking on a footpath and give right of way to pedestrians etc.

**Creating pedestrian space:** Many US and European cities are creating walkable neighbourhoods and fully pedestrian spaces. Copenhagen has done extensive pedestrianisation. So has Kaufingerstrafe in Munich, Nanjing Road in Shanghai. Zurich and Oxford streets. Buenos Aires, Curitiba, Sai Paolo, Shanghai have begun to create car free shopping streets. Studies show pedestrianisation of shopping areas has positive effects on sales. *European Charter for Pedestrian Rights*

**Traffic calming measures**

**Car free housing and car free centres**

**Smart growth approaches and home zones**
Our emerging policy opportunities……..

National level

JNNURM programmes: A lost opportunity: 70% of funds spent on roads but not on inclusive design

Climate change mitigation efforts will help---
-- Urban Habitat Mission of Ministry of Urban Development
-- Government of India proposal to Global Environment Facility (GEF) for climate mitigation. Proposed projects include non-motorised transport and pedestrian facility for Hyderabad, Pune, Ajmer-Pushkar, Jalandhar, Thiruvananthapuram

In Delhi
Framing of UTTIPEC guidelines for pedestrians in Delhi underway and expected to be issued before the Commonwealth Games….

Reforms of guidelines for urban roads
Way forward….

- Reallocate road space to urban majority and sustainable modes. Give them priority

- Reform laws to protect the integrity of walk and bike lanes.

- Make pedestrian and cycle plans mandatory and link to infrastructure funding. Public transport plan must be conjoined with pedestrian plan

- Reform guidelines for pedestrian and cycling infrastructure

- Urban local bodies must conduct walkability and safety audits

- Need zero tolerance policy for accidents

- Involve communities in decisions on use of road space

- Need pedestrian and cycling network plan: Pedestrian travel have unique aspects that influence network planning. Short trip lengths that evolve informally imply that the “corridor” concept is less significant for pedestrians than when planning for vehicles

- Adopt traffic volume reduction plan
PROTESTS PERSIST: Locals says the government body doesn’t have necessary approval to undertake the work.

Source: Times of India

Thank You