URBAN MOBILITY IN INDIA :
Opportunities for low carbon transport

GEETAM TIWARI

INDIAN INSTITUTE OF TECHNOLOGY DELHI

Supported by:

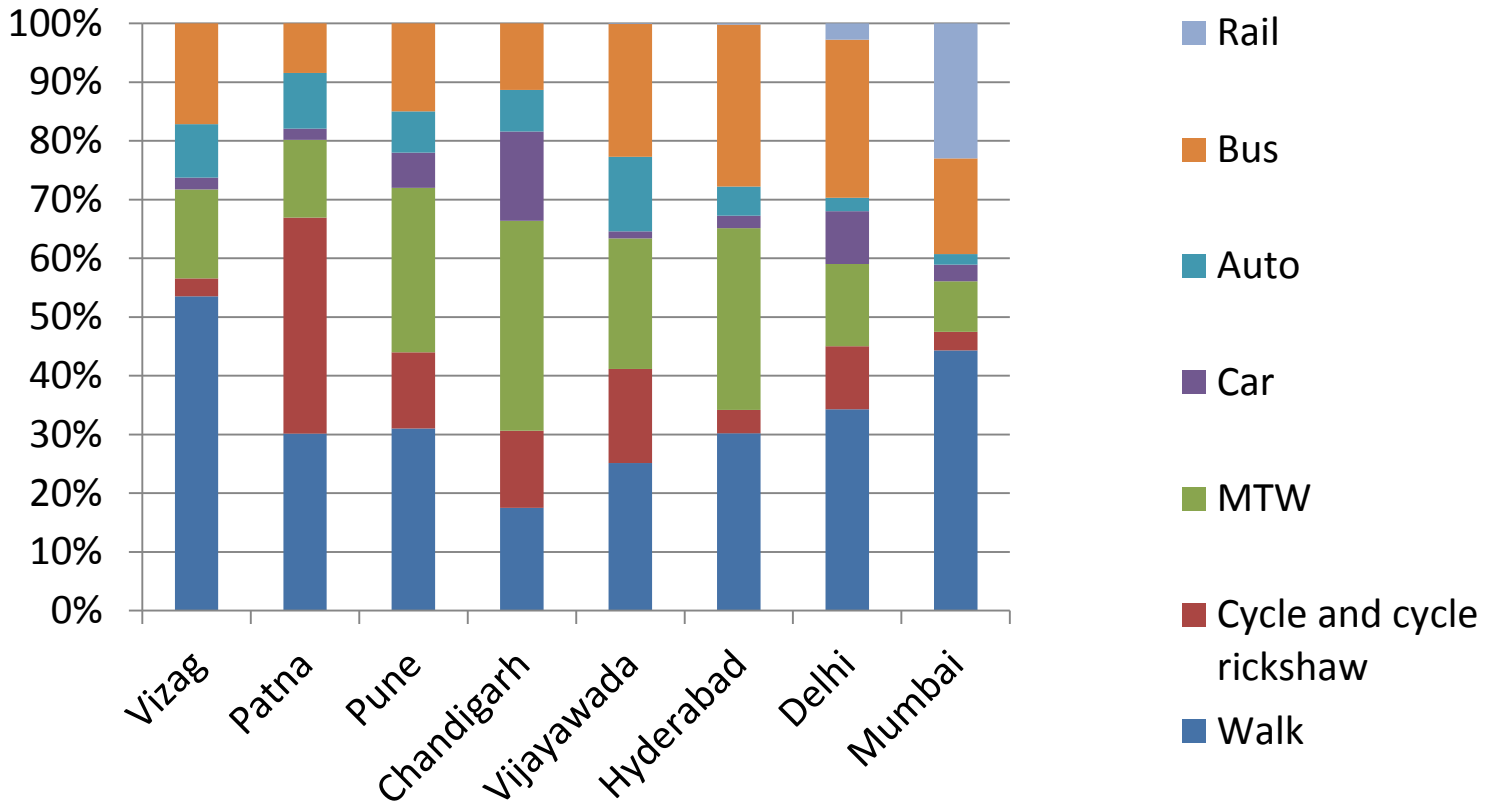
Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

based on a decision of the German Bundestag

Partner Organizations:

In collaboration with:

Travel modes in selected cities



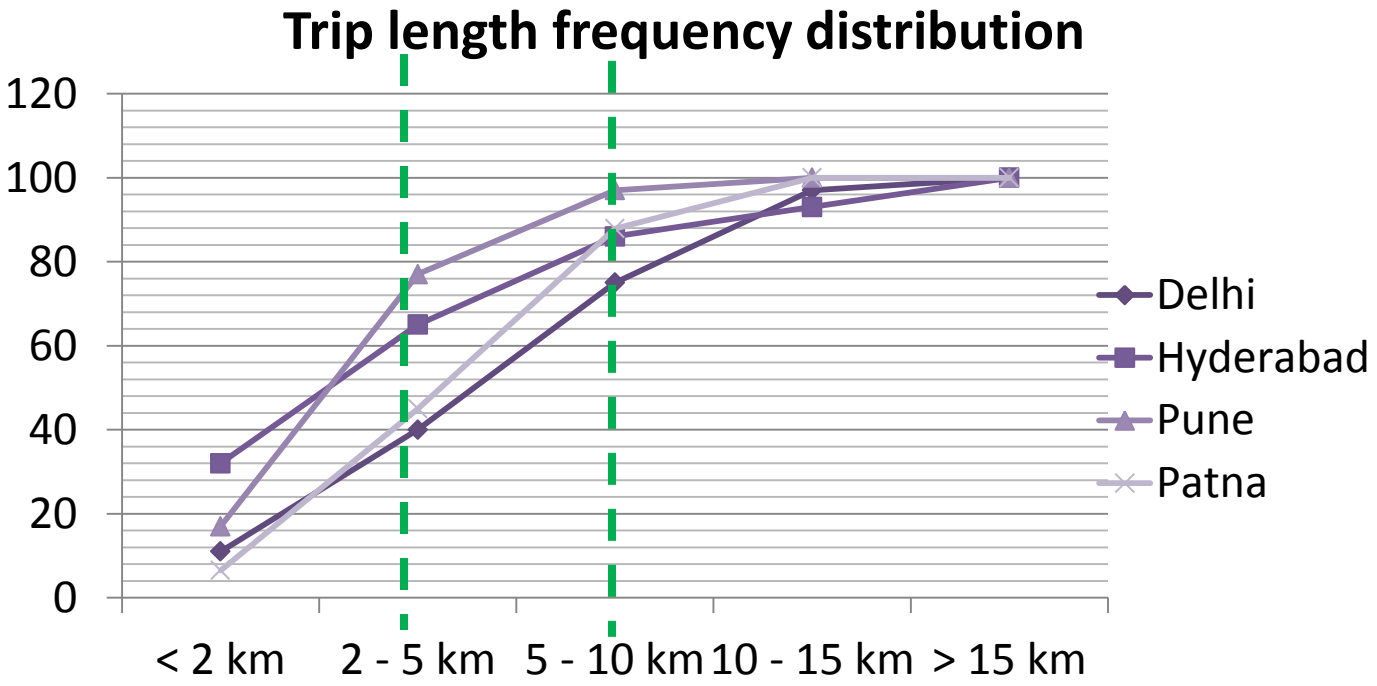
- NMT is the dominant mode of transport in all cities
- Existing use of the public transport in Indian cities is high
- cities where formal bus service does not exist motorized two wheeler and informal para-transit service dominates the motorized transport modal share

Table 4: travel Mode Share and Mode wise average trip length

Majority trips on “green modes”

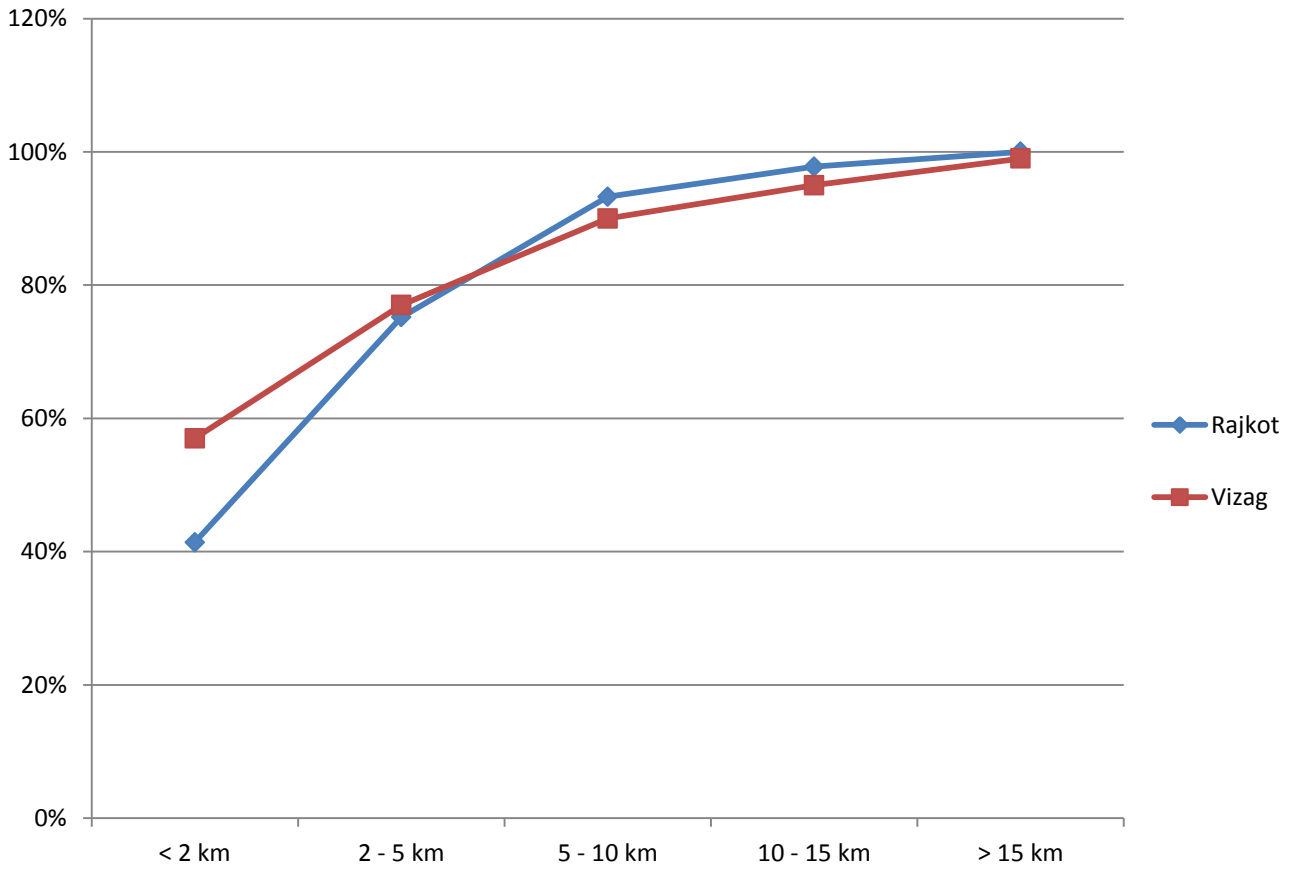
	Udaipur		Rajkot		Vishakhapatnam	
	Modal share	ATL (km)	Modal share	ATL (km)	Modal share	ATL (km)
Walk	48%	2.5	38%	1.7	53%	0.6
Bicycle	2%	5.0	10%	3.4	4%	2.5
MTW	34%	5.2	35%	4.2	15%	5.0
Car	3%	6.0	2%	11.7	2%	6.6
Ipt	11%	4.5	11%	4.3	9%	4.2
Buses	2%	8.5	3%	8.5	17%	9.0
Others			1%			

Trip length distribution



Cities	Trips shorter than 5 km	Trips shorter than 10 km
Delhi	40%	70%
Hyderabad	65%	88%
Pune	77%	95%
Patna	45%	90%

80% Short Trips(>5 km)



BACKGROUND

Problem statement	Degrading bus service and increasing risk to pedestrians and cyclist
	Declining use of NMT and public transport system
	Increasing use of personal motorized vehicles
	Increasing energy consumption

Need to restrain increasing FUEL CONSUMPTION & EMISSION LEVELS

RETAINING and INCREASING PT AND NMT MODAL SHARES

Improve Public Transport System

Infrastructure for safe and secure use of NMT

STRATEGIC OPTIONS

IMPROVE BUS INFRASTRUCTURE
IMPROVE NMT INFRASTRUCTURE

Improve NMT infrastructure

Key elements –

- Reserve right of way
- Intersection treatments
- Traffic calming strategies
- ‘Eyes on street’

Wide footpaths, Enschede, Netherlands

Signalized pedestrian crossing

At grade pedestrian crossing, Delhi BRT

Segregated footpaths, Delhi BRT

Infrastructure for Bicyclists

Bicycle signals, Delhi BRT

Roundabout treatment for bicycles, Enschede, Netherlands

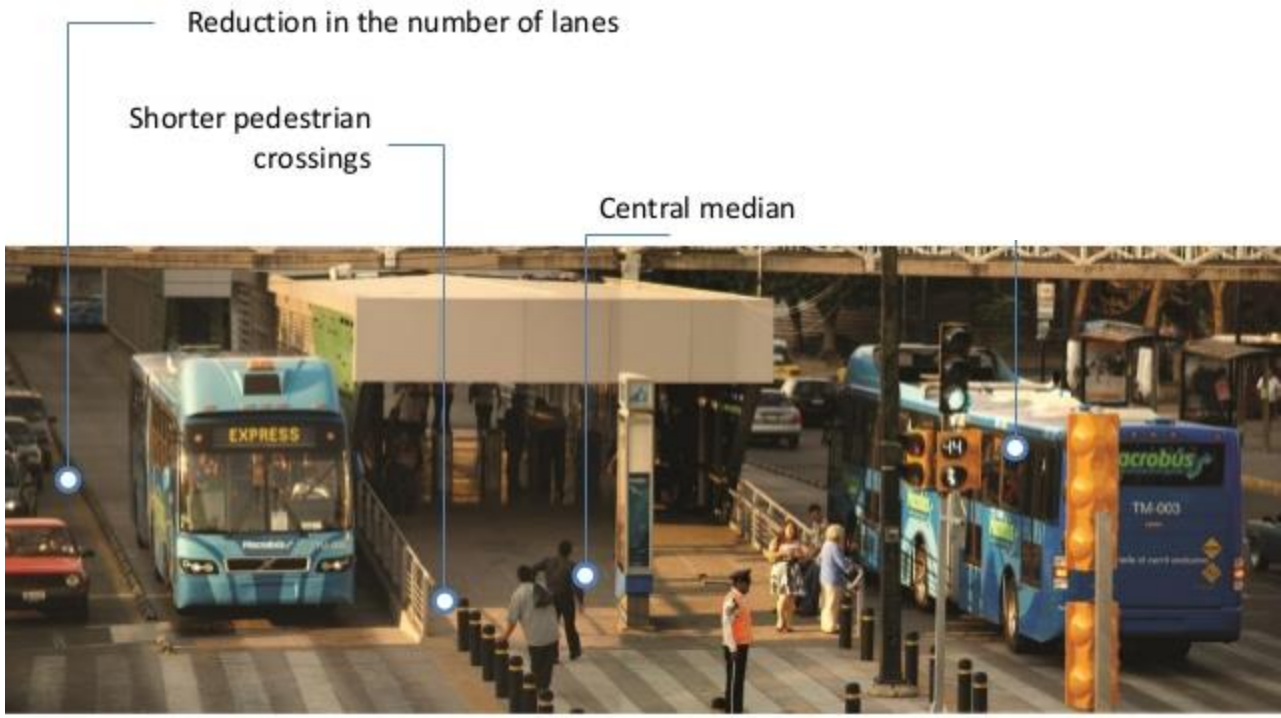
Bicycle lanes in Delhi

Marked Bicycle lanes, Enschede, Netherlands

Improve Public Transport System

Key elements –

- Route optimization
- Scheduling
- Location and design of bus stops
- Bus priority
- Vehicle design



Level Boarding & alighting

Accessible bus stops

Bus lane in congested area

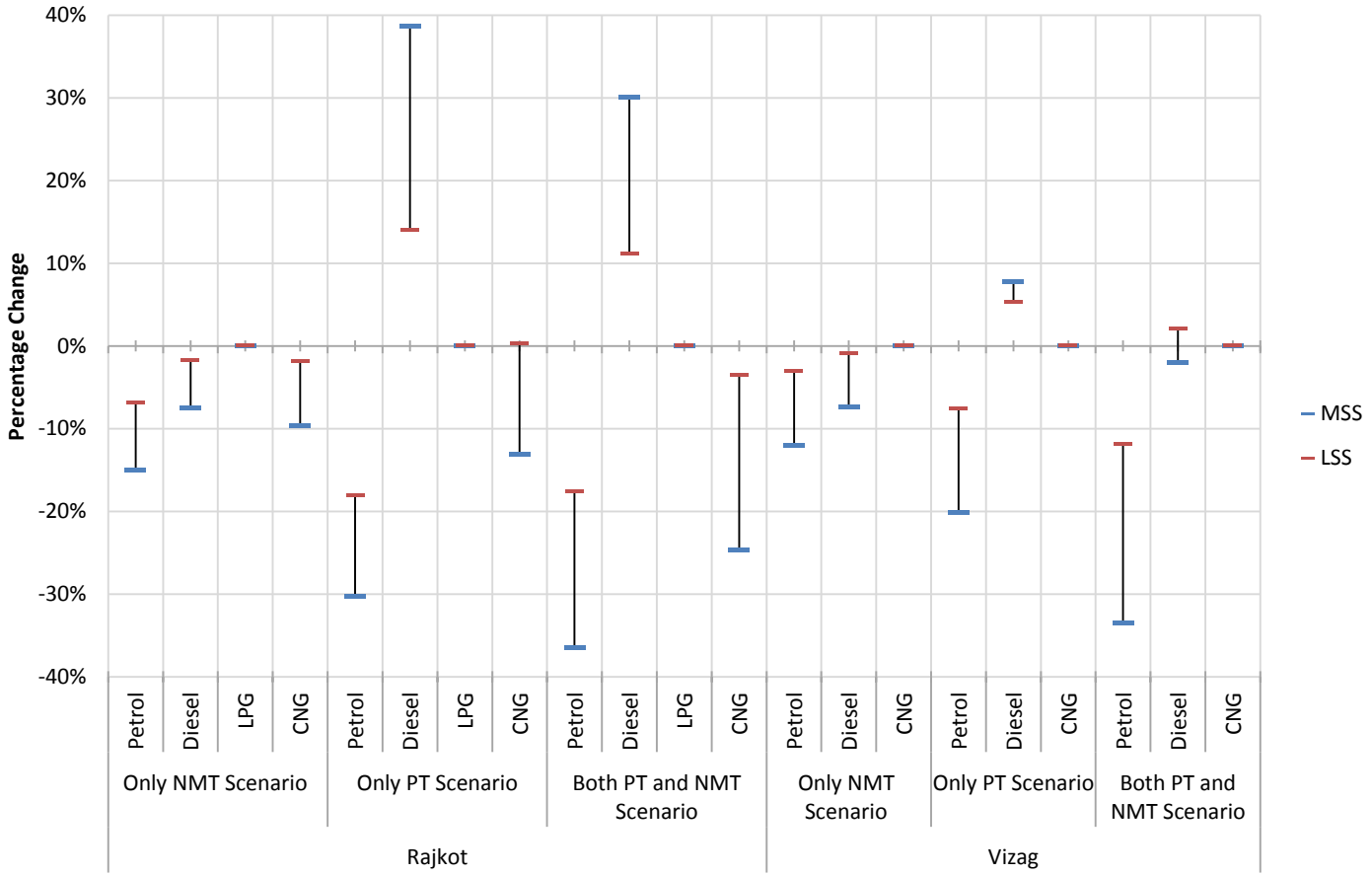
Table 10: Scenarios

SCENARIOS

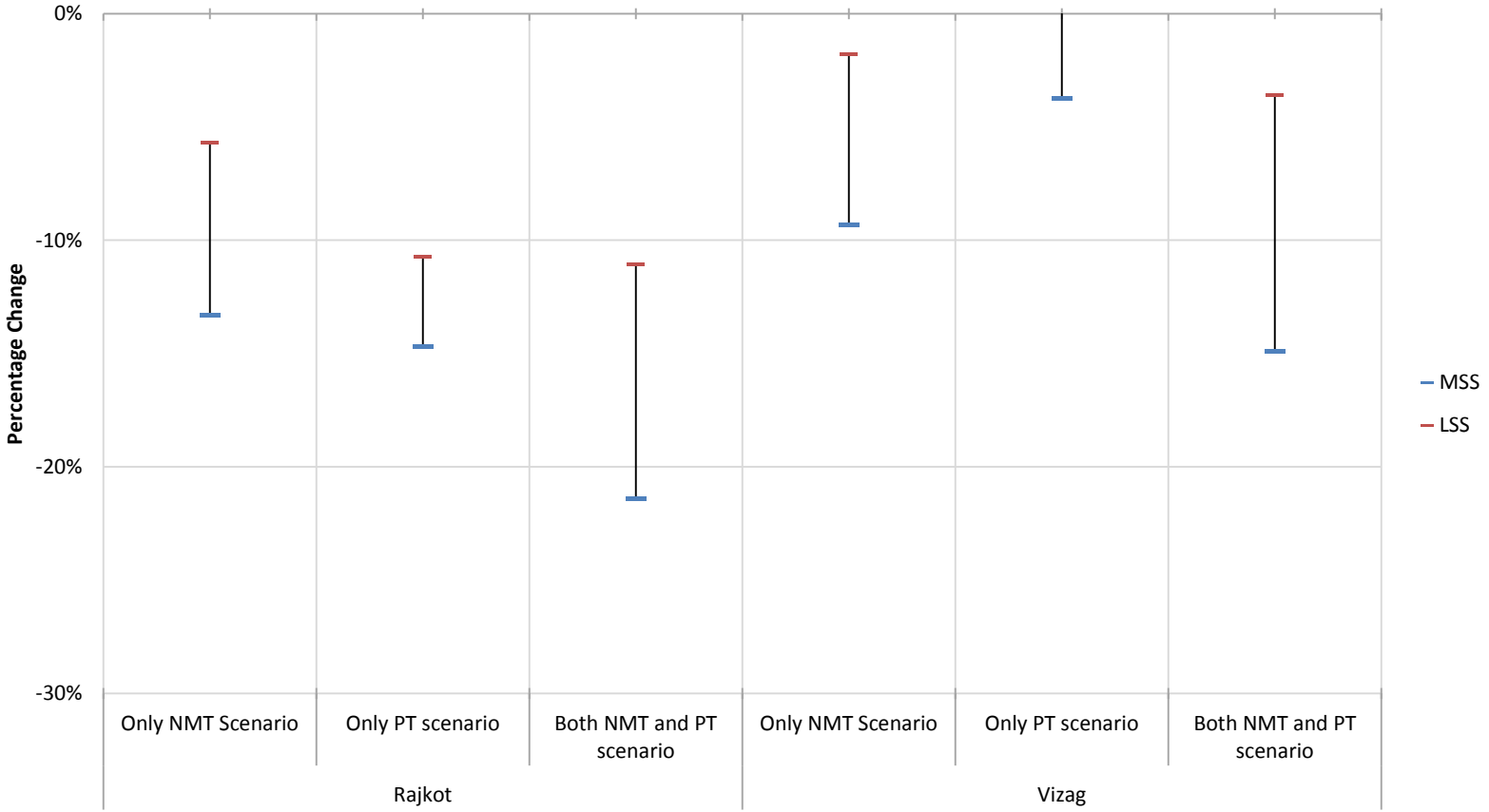
	Description		Share of trip shorter than 5 km shifting to NMT	Share of trips longer than 5 km shifting to bus
Scenario 1	Improving NMT infrastructure	MSS	30% from MTW, three-wheelers & Bus	0%
		LSS	10% from MTW, three-wheelers & Bus	0%
Scenario 2	Improving bus infrastructure	MSS	0%	50 % from MTW & three-wheelers
		LSS	0%	20% from MTW & 5% from three-wheelers
Scenario 3	Improving both NMT and bus infrastructure	MSS	30% from MTW, three-wheelers & Bus	50 % from MTW & three-wheelers
		LSS	10% from MTW, three-wheelers & Bus	20% from MTW & 5% from three-wheelers

Change in energy consumption

major change in NMT scenario



Percentage change in Emissions (CO2 equivalent) in Rajkot and Vishakhapatnam under three scenarios



Change in traffic risk to road users

Conclusion

- The results can easily be extrapolated to other Indian cities also.
- Improving NMT in all cities will result in CO_2 benefits as well as improved safety.
- PT improvement in cities will result in increased share of bus users. Since most of the trips will shift from motorised two wheelers, overall CO_2 emissions will reduce. However, risk to bus users and other road users will increase;
- PT improvement strategy must include development of safe spaces for pedestrians, bicycles and dedicated lanes for buses and safe road crossing facilities for bus commuters.