

# **Partnership for Sustainable Urban Transport in Asia Pune - India**

**Srinivas Bonala, N.V.Iyer  
Pune Municipal Corporation**

9 December, 2004  
Agra, India

## **CONTENT**

- **Introduction**
  - A Brief Background
  - Transport Scenario/Challenges
  - Status of Pune Municipal Transport
  
- **Data Leading to Indicators**
  - Information Chart
  - Indicator Overview

# Pune Introduction



ONE OF THE MOST BLESSED AND AN  
OUTSTANDING CITY IN THE COUNTRY  
- THE SECOND LARGEST IN MAHARASHTRA



## A Brief Background

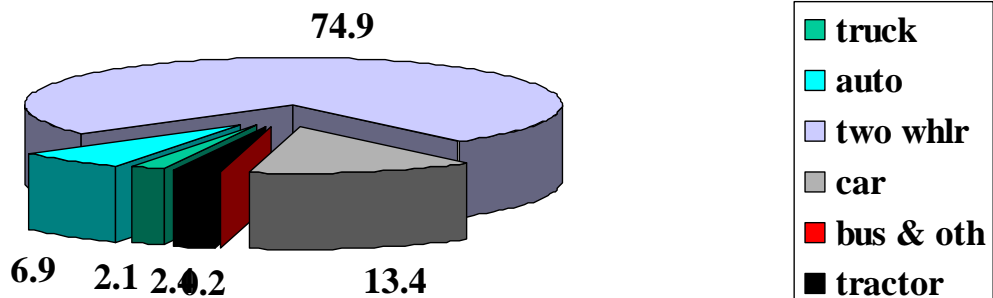
- **Density (persons/ sq km) :10657**
- **Population of PMA 4.2 million & Pune city : 2.7 million**
- **Length of road network : 1000 kms**
- **Vehicles registered in PMA (March 2003) :1.354 millions**
- **Avg. new vehicles registrations/day : 400**
- **Area of PMA 809 Sq. Km & Pune City : 244 Sq.Km**
- **No of PMT( 849) & PCMT(212) : 1061**
- **Supply of buses per Million population : 3.6**

# A Brief Background Cont....

- **Vehicular noise pollution : 70 - 90 Db**
- **Per Capita Income in 2004(Estm) : Rs 50400/**  
**(as per Business Today )**
- **Software export :2003-04 : Rs.42000 millions**
- **Financial strength of PMC&PCMC :**  
**Rs.12000 millions**  
**{PMC (900 millions) & PCMC(300 millions)}**

## PSUTA-PUNE: VEHICULAR COMPOSITION

- No of cycles in the city app.. - 1million
- Annual growth of vehicles - 9.32 %
- Two whlrs-0.788 million & cars-0.14 million
- Pie chart of Motorised vehicles



# Comparison of Population and vehicular growth rates in PMA area.

Population and vehicular growth in Pune

S. No.	YEAR	AREA		POPULATION				Vehicles in PMA	REMARKS
		PMA	Pune City	PMA		Pune City			
		sq.km.	sq.km.	Million	%	Million	%		
1	1981	809	143	1.686	48%	1.203	40.5	0.131	
2	1991	809	143	2.485	47%	1.56	29.6	0.5085	
3	2001	809	237	3.647	48.70%	2.697	72.8	1.14	PMC extended limits
4	2003	809	237	-	-	-	-	1.485	As on Mar 2004
Total Space requirement of vehicle if we park on city roads = 796 Ha.									

## City Manifests Problems Such

As.....

- **Increased traffic congestion,**
  - Reduced driving speed,
  - Increased environmental pollution and
  - Degradation of quality of life
- **Capacity of many intersections has been exhausted**



**The central city is experiencing capacity gaps, parking problems, low-speed travel, increased congestion, environmental pollution leading to worsening air quality.**

# **EXISTING TRAFFIC SCENARIO**

- **Narrow roads & absence of road hierarchy**
- **Absence of bypasses**
- **Low average speeds**
- **Lack of pedestrian facilities (60 % have footpath)**
- **Mixed traffic conditions – High % of 2 wheelers**
- **Inadequate public transport system**
- **Inadequate parking places and truck terminals**
- **Encroachment and large number of autos**

---

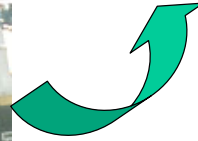
## **EXISTING TRAFFIC SCENARIO cont....**

- **Freight movement inside the city**
- **Severe congestion at all terminals**
- **Increase in pollution due to rise in vehicle numbers.**
- **Severe congestion on most of the city roads during peak periods.**
- **Increase in the numbers of accidents and deaths in fringe areas.**
- **Absence of comprehensive parking policy.**
- **Most in disciplined traffic. Traffic police collected fines Rs. 55 Millions in 2003.**

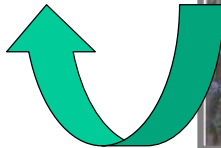
# TRAFFIC SCENARIO



Mixed traffic conditions



Conflict between vehicles and pedestrians in congested areas.

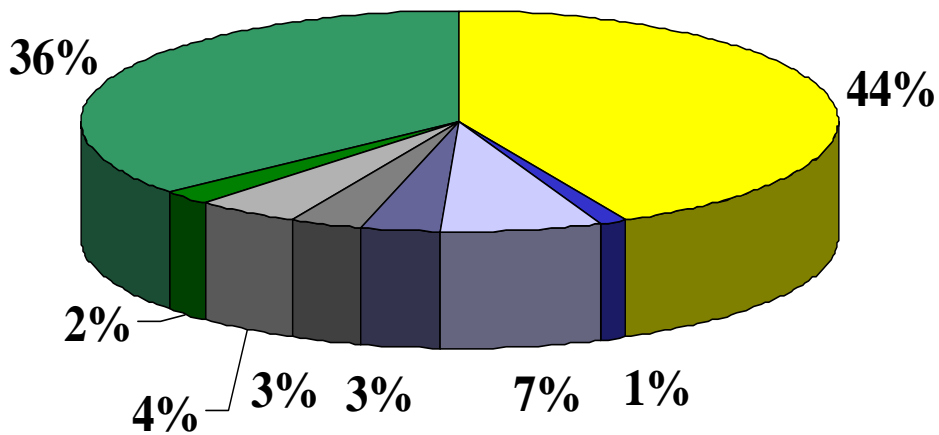


## Narrow Streets



Parking on both sides of narrow streets reduces the carriageway

# Land use distribution



■ resi 
 ■ comm 
 ■ psp 
 ■ indu 
 ■ oth 
 ■ trans 
 ■ park 
 ■ agr

## Share of Individual modes for each respective purpose

Mode /Purpose	Work	Education	Business	Social	Shopping	Recreation	Health	Return Home	Others
Car	31.24	4.14	9.23	0.36	2.01	3.79	0.12	48.05	1.07
2-WH	40.77	4.4	1.27	0.42	2.29	1.24	0.35	48.51	0.75
Auto	27.84	9.89	8.54	0.39	5.14	2.04	1.16	43.84	1.16
Cycle	21.58	23.73	1.03	0.31	2.51	1.08	0.31	48.74	0.72
Mini Bus	19.22	24.71	0.78	0.39	3.53	1.96	0.39	47.06	1.96
Bus	23.66	18.76	0.59	1.3	0	3.07	1.24	49.09	2.3
Others	0.97	0	0	0	98.06	0	0	0.97	0
Railway	44	0	0	4	0	4	0	48	0
Walk	1.13	20.66	0.66	0.61	14.41	2.57	1.47	53.98	4.51

# PSUTA-PUNE:TRAVEL PATTERN OF PASSENGERS AT OUTER POINTS

- Total passengers entering, passing and going out from the city is  
- 0.225 millions/day
- **Break up is**
  - External to Internal – 46.09 %
  - Internal to External – 47.34%
  - External to External- 8.57 %
- **Average daily tickets sold by railways is**
  - Pune station - 13,577
  - Shivaji Nagar - 2,762
- **Freight Movement:** Total trucks entering, passing and going out from the city is - 60,375/day
- **Break up is**
  - External to Internal – 33.29 %
  - Internal to External – 37.73%
  - External to External- 28.98 %

## Pune Municipal Transport (PMT)

- PMT is one the most important and essential mode of transport to a common man
- PMT annual budget is Rs -1520 Millions
- No of buses held -847 (incl 35 mini)
- Average buses on road -750
- Routes operated by PMT -199 (incl 22 janata)
- Average daily revenue Rs -3.3 Millions
- Average daily passengers - 0.618 Millions
- Total no of bus stops – 500, which includes 150 are most modern illuminated

# **Pune Municipal Transport (PMT)**

- PMT is one the most important and essential mode of transport to a common man
- PMT annual budget is -152 crores
- No of buses held -847 (incl 35 mini)
- Average buses on road -750
- Routes operated by PMT (janata) -199 (incl 22)
- Average daily revenue -33 lakhs
- Average daily passengers -6.18 lakhs
- Total no of bus stops - 500  
( which includes 150 are most modern illuminated)

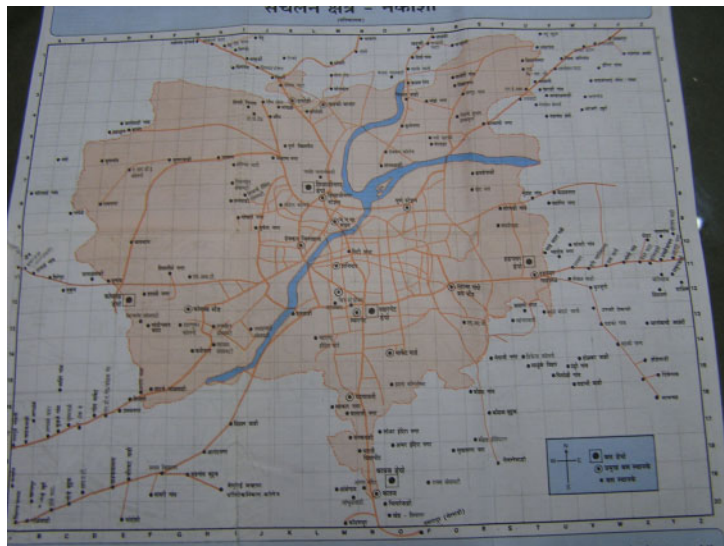
## **Revenue loss to PMT due to -**

- Concessions to students - 35.0 Million / annum
- Physically handicapped, blind and freedom fighters - 5.3 Million/ annum
- Operating buses on routes which collect revenue less than Rs 11.0/km- 95 Millions / annum

## Other major constraints are

- Accumulated loss is -1080 Millions
- Commuter tax due to Govt.-260 Millions
- Average commuter tax out go-60 Million/annum
- No of buses more than 15 yr old – 100
- No of buses more than 10 yr old – 338
- Loss in the last financial year – 240 Millions
- Hiring (135) and Purchasing (200) new buses

## Municipal Transport Bus network



# Indicator and Data - OVERVIEW

## People

Indicator	Units	Possible source	Frequency of collection	Quality of data	Gaps in data
Population	Thousands of people	Census	ten years	Excellent	
Demographic structure	Number of people by - districts - employment - students - working - retired - military - age - gender	Census	10 years	Good	Yearly information is not available. Study specific information is collected as and when required.
Daily time use	Minutes/day	Primary Survey of 10,000 households carried out for Comprehensive Traffic study in 2003.	As required	From analysis and estimation.	
Daily personal travel patterns	Trips and distance per day by purpose mode	Primary Survey of 10,000 households carried out for Comprehensive Traffic study in 2003.	As required	From analysis and estimation.	
Household structure	Number of households by - size - number of adults - parents - grandparents - children - related individuals - unrelated individuals	Primary Survey of 10,000 households carried out for Comprehensive Traffic study in 2003	As required	From analysis and estimation.	

# Indicator and Data - OVERVIEW

## Transport (1)

Indicator	Units	Possible source	Frequency of collection	Quality of data	Gaps in data
Road supply and network	Km and lane –km of road Km of lane/ registered vehicles	PMC, PCMC, PWD, MSRDC, Cantonment Boards	As required	Average	
Parking supply	Number of spaces or capacity (for numbers of cars, two-wheelers etc)	PMC, PCMC, PWD, MSRDC, Cantonment Boards	Annually	Good	
Bus network	Km of line, Passenger capacity/hour	PMT & PCMT	monthly	Excellent	
Cycling paths	Km of cycling of paths	PMC & PCMC	As required	Good	
Rail network	Km of line, Passenger capacity/hour	Indian Railways	updated annually	Good	
Interchange s/ stations	Capacity on/off loading, Interchanges with railway / bus Number of nodes Capacity people/hour	PMT & PCMT	As required	Good	
Vehicle numbers and characteristics	Numbers per 1,000 pop Ownership by - vehicle type - private - company - government - commercial Characteristics by - vehicle type - fuel type	RTO	As required	Good	

# Indicator and Data - OVERVIEW

## Transport (2)

Indicator	Units	Possible source	Frequency of collection	Quality of data	Gaps in data
Driving cycles	Specified in terms of -speeds -times	Primary Surveys, implemented by PMC / PCMC	As required	Good.	
Vehicle usage	Vehicle km/year by -vehicle type -fuel type -emission control status (by year of manufacture)	Primary Surveys, implemented by PMC / PCMC	As required	Good.	
Transportation activity including walking, cycling, handcart, cycle freight, cycle-rickshaw etc.	Travel in terms of -passenger-km per year -(freight) ton-km per year	PMC, PCMC, PWD, MSRDC and Town Planning	As required.	Good.	
Local portion of activity and transportation starting or ending in the region.	-Km/year/vehicle -Passenger-km/year -Tonne-km/year	PMC, PCMC, PWD, MSRDC and Town Planning	As required.	Good.	
Fuel use by vehicle type and fuel type	Litres or PJ of fuel use (e.g., petrol in two-wheelers and cars, diesel in buses and trucks, etc	Oil Companies/ Petrol Dealers Association.	As required	Good	
Fuel intensity by vehicle and fuel	Litres or MJ of fuel/100km for each kind of vehicle and fuel	Primary Surveys, implemented by PMC / PCMC	As required	Average	

# Indicator and Data - OVERVIEW

## Economics

Indicator	Units	Possible source	Frequency of collection	Quality of data	Gaps in data
Contribution to GDP, employment, investment of transport branch	- Percentages or absolute (Rs.) or per capita (Rs.).	Census, MCCI, Collector Office and PMC.	Census 10 years, Others - Yearly	Census - Good, Others - Average	
Transport construction activity and investment	- Percentages or absolute (Rs) or per capita Rs.	-PMC, PCMC Builders Associations, Dealers Associations, etc.	As required	Good,	-
Economic profitability of public and private transport	- Turnover, profit and loss, subsidies (Rs) or subsidy per passenger	PMT & PCMT	As required	Good	-Not available for private transport
Transport expenditure of households	Expenditure in Rs. Broken into vehicle acquisition costs, fuels, oil, insurance, repairs, parking and tolls, public transport etc in absolute (per household) or share of household budget	Primary Surveys, implemented by PMC / PCMC	As required	Good	

# Indicator and Data - OVERVIEW

## Access and Land use

Indicator	Units	Possible source	Frequency of collection	Quality of data	Gaps in data
<b>Access</b>					
Congestion	- Time lost – (by km of road congested or time lost in traffic)	Primary Surveys, implemented by PMC / PCMC	As required	Good	
Travel times and speeds	Minutes per person spent in travel, minutes spent traveling to/from work, school,. Average walking time to nearest transit stop	Primary Surveys, implemented by PMC / PCMC	As required	Good	
Access to public transportation	Population living or working within 500 meters of major bus stop etc				Primary Surveys have to be carried out
<b>Land Use</b>					
Land use	Land costs (Rs/sq.m), rents , population density (persons/sq km), building areas (sq meters), non-built areas by type (e.g., garden, parking etc), as share of area or in sq km or in sq	Development Plan of PMC and PCMC	Once in 10 / 20 years	Good	
Location of housing, services, jobs	Employment/sq km by part of city, population density by location	Development Plan of PMC and PCMC	Once in 10 / 20 years	Good	
Green space (parks, wild areas, river and lake area)	Sq km or hectare, sq meters/capita	Development Plan of PMC and PCMC	Once in 10 / 20 years	Good	

# Indicator and Data - OVERVIEW

## Health and Environment

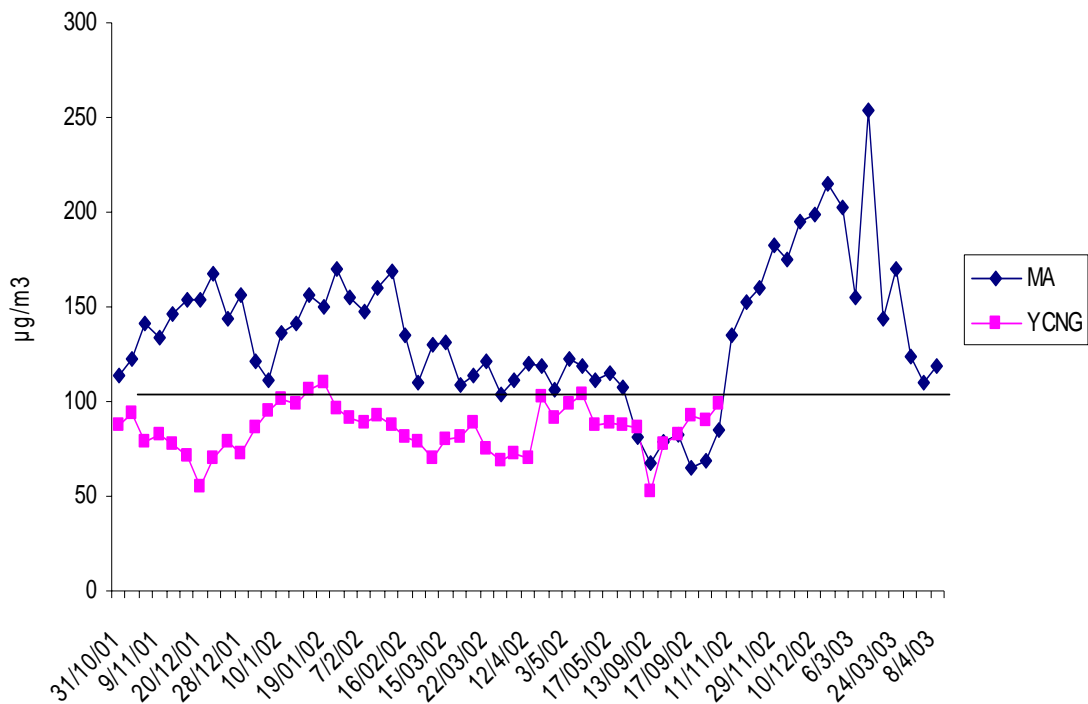
Indicator	Units	Possible source	Frequency of collection	Quality of data	Gaps in data
<b>Air Quality</b>					
Pollutants in atmosphere from transport, concentrations and total pollutants. Days concentrati	Micrograms/ cubic meters, Values of pollutants exceed limits for ____ days per year	MPCB, PMC, UoP,	Daily/ Twice in a week	Good,	
Hot spots for pollution	Places with unusually high levels of pollution, concentrations	MPCB, PMC, UoP	As required	Good	
Criteria emission coefficients	Emissions in Tonnes, coefficients measured as g/km by vehicle type	CPCB, US-AEP, US-EPA	To be done		Required to be generated
Vehicle emission standards and compliance	Share of vehicles by type meeting different levels of emission standards	MOSRTH,	As per CMVR	Good	
CO2 emissions and emission intensity	Direct from vehicles, with share representing power production for electricity used in the buses, trains etc. Tonnes of CO2 by mode, g/km, by mode,	TERI	Infrequent	Good	

# Indicator and Data - OVERVIEW

## Health and Environment

Indicator	Units	Possible source	Frequency of collection	Quality of data	Gaps in data
<b>Physical Damage</b>					
Pub health impacts. Disease and death from air poll, share est. caused by transport	Deaths/year (deaths per 1,000,000 population), years of life lost	PMC, PCMC and Hospitals			Data needs to be collected
Noise	Levels of noise at main intersections, in housing units, parks etc (dab)	PMC, PCMC, MPCB	Weekly	Good	
Noise exposure	Number of people exposed to levels >70 dab				To be generated.
Social costs	Cost/km by mode, time, place				To be generated.
<b>Safety and Accidents</b>					
Accidents, damages, injuries, deaths by mode	Measured per passenger-km or vehicle-km. Also can be measured per capita (includes pedestrian and cyclists deaths caused by motor vehicles)	Traffic Police	As required	Good	
Safety requirements, Driver training etc.	Share of car drivers wearing seatbelts, share of two-wheeler riders wearing helmets, share of population taking driver	Traffic Police/ RTO			To be generated
Accident hot spots	Accidents/km	Traffic Police			To be generated

## Daily concentration of PM10 at MA and YCNG

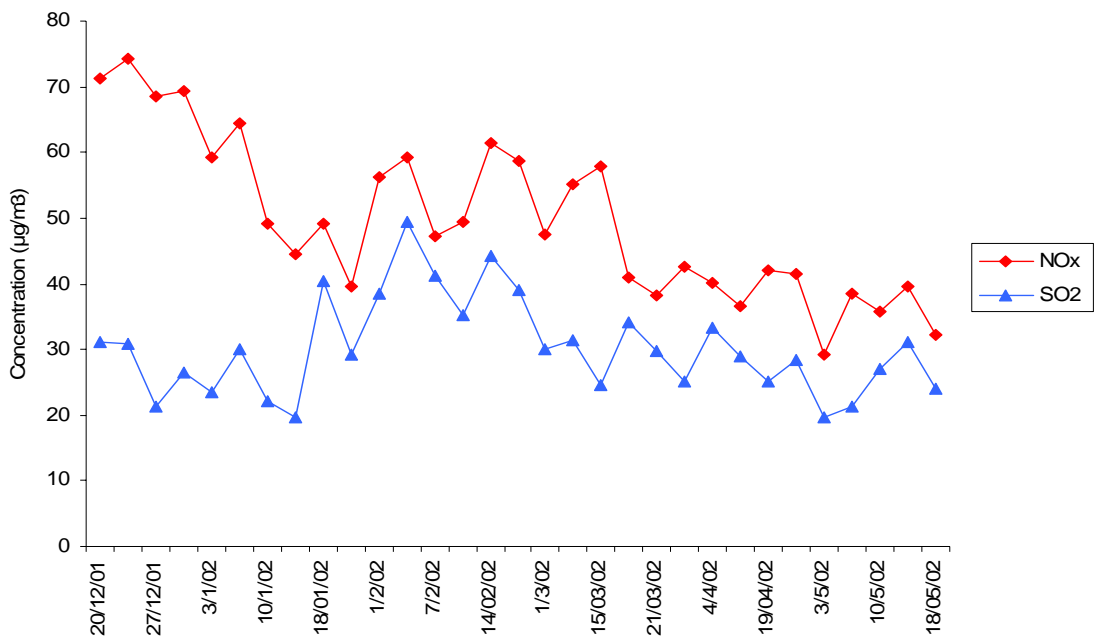




**Ambient Air Quality Monitoring station at YCNG**

## Daily concentration of Nox and SO2 at YCNG

Daily Concentration of NOx and SO2 at Yeshwantrao Chavan Natya Gruha



# Daily concentration of NOx and SO2 at YCNG

Daily Concentration of NOx and SO2 at Yeshwantrao Chavan Natya Gruha

