Draft Development Plan For Pune City(Old Limit) 2007-2027

Executive Summary

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1.1. Introduction

Pune City is the second largest metropolitan city in the State, is fast changing its character from an educational-administrative centre to an important Industrial (I.T.) City. The area under the jurisdiction of the Pune Municipal Corporation (old limit) is 147.53 sq.km.

Vision Statement

"An economically vibrant and sustainable city with diverse opportunities and rich culture; where all citizens enjoy a safe and liveable environment with good connectivity"

1.2. Need for revision of Development Plan

Pune city, the second largest metropolitan city in the state, is fast changing its character from Pensioner's city to Educational – Administrative Center and now to an important Industrial hub with reference to the IT Center. The character of the existing use of the land within the limit is of complex nature. The city is not developed in conventional manner, but it consists of such users which are of different nature than the normal corporation area. In 1987 DP, this multiple character of the city as metro city has been studied since 1965, when the city had started experiencing the influence of the Industrial development occurred around the city i.e in the neighbouring Pimpri- Chinchwad area, due to development of large Industrial Townships by M.I.D.C. and IT Industries in Hinjewadi .

The overall scenario has resulted into higher population growth also due to migration, inadequacy of infrastructure, growth in vehicle thus causing congestion on city roads, parking problems and overall break down in traffic

system. Population growth also creates increase in informal housing slums and also more demand for housing, which results in the need of more housing stock. Unauthorized constructions and Non-agricultural use on agriculture zoned lands has occurred over a substantial area. All these situations has resulted in the creation of a need to revise the development plan of the city.

1.3. Present Scenario of the Pune City

1.3.1. Geographical settings of the City.

Pune City is located between 17 Degrees 50 Minutes N and 19 Degrees 24 Minutes N latitudes and 73 Degrees 19 Minutes E and 75 Degrees 10 Minutes E longitudes and lies in the western belt of Maharashtra State. The city is the urban core of the Pune Metropolitan Region, situated on the western margin of the Deccan Plateau at the confluence of the rivers Mula and Mutha and bounded by Hinjewadi IT Park on the north-south and Rajangoan MIDC on north east side on the south. It is about 16 km and 48 km respectively from the city. Shirwal MIDC situaid southern side at 43 km.

The city is located to the South East of Mumbai at a distance of 178 kms. At an elevation of 1840 feet (560 meters) above mean sea level. The Mumbai, Banglore, National highway (N: 4) passes through the City and runs towards Southern direction. National highway (N: 16) Pune Nashik road also connected to the City, while state highway Pune Ahmednagar (S.N.) road runs towards North Eastern side.The Pune–Solapur-Hyderabad National Highway (N.H) also runs from the City towards eastern side.

1.3.2. Climatology

Pune district forms a part of the tropical monsoon land and therefore shows a significant seasonal variation in temperature as well as rainfall conditions. The climate of Pune is mostly clear, sub tropical and according to season it is balanced i.e. to say during summer, maximum temperature goes up to 44^0, while in the winter temperature is as low as 5 to $6^{0.}$ Average rainfall is 62.5 cm.

In the Summer months the relative humidity ranges from a minimum of 20% to maximum of 67% during the day. During the monsoon period, the relative humidity varies from 68% to 87%. The relative humidity during winter shows diurnal variation varying from 37% to 88%.

Pune experiences winter from November to February. Pleasant windy days, clear skies and cool nights make it the most enjoyable time of the year. The day temperature hovers around 29°C (84°F) while the night temperature dips below 10°C (50°F) for most of December and January, often dropping to 5 or 6°C (42°F). On particularly cold days, the wind impresses as being extremely chilly due to the dryness in the air. Rainfall is rare in winter.

There was a disaster due to bursting of the Panshet Dam in 1961 where high floods in the Mutha river has been recorded. Also floods were observed in 1997.

1.3.3. Linkage and Connectivity

Pune has excellent external road, rail and air connectivity with almost all important cities in India. It is extremely well-connected to most of the important cities in India like Mumbai, Hyderabad, Bangalore, Delhi, Kolkata and Chennai. Pune has two main railway stations, Pune Junction and Shivajinagar Station; most trains halt at Pune Junction. Pune suburban trains also run from Pune Junction to the industrial towns of Khadki, Pimpri, Chinchwad etc. Pune now has an internationally airport, with flights to Singapore and Dubai. Domestic flights to most metropolitan cities in India are available. The city is located at the confluence of the National Highways viz. NH-4 leading to Mumbai in the north and Bangalore in the south, NH-50 to Nasik and NH-9 to Solapur. State Highways SH-60 connects to Ahmednagar , SH-64 to Saswad , SH-39 to NDA and SH-57 to Pirangut. Major Maharashtra district road MDR-60 connects Pune to Mulshi.

In addition, the westerly bypass connects the Pune- Satara Road (NH-4) in the south to Mumbai-Pune (NH-4) in the North. PMC is internally well-connected through an extensive road network comprising 11 major intercity roads.

1.4. Past planning efforts in the City

After the introduction of the Bombay Town Planning Act of 1915, then the Poona City Municipality took steps to control the development of the growing town on the west and the north of the City by undertaking of the Town Planning Schemes. Following are the TPS finalized and have been fully developed with proper roads and civic amenities.

Town Planning Schemes in Pune City			
Sr. No.	Name of T.P. scheme	Area in ha	Date of Implementation
1	TPS no.1(bhamburda)	545.60	16/8/1979
2	TPS suburban no.1	19.20	16/8/1973
3	TPS no.2 Somwar, Mangalwar Peth	20.66	1939
4	TPS Yerawada	162.80	1/6/1983
5	Hadapsar Industrial TPS no.1	11.40	1/6/1977
6	Hadapsar Industrial TPS no.2	146.00	1/7/1978
7	TPS Sangamwadi	452.4	1/6/1975
8	TPS no.3 Parvati	720.00	15/9/1989

The total area covered under all TPS is about **2078 Ha**. i.e. **20.78 sq.km**.

The Pune Municipal Corporation was established on 15-2-1950. The work of preparation of Master Plan was taken up in hand immediately after the establishment of the Corporation. A Draft Master Plan of Greater Poona was first prepared by the Corporation in the year 1952. The area covered under this Plan was consisting of 20 wards, having an area of 26,545.44 acres and a population of 4,85,485.

The State Government desired that a Development Plan for Poona should be prepared afresh in accordance with the Bombay Town Planning Act, 1954.The PMC declared its intention to prepare the Development Plan for the entire area under it's jurisdiction under the Corporation Resolution No. 312 dated 20-11-1958. The first development plan was sanctioned with large amendments by

the Government, Urban Development and Public Health Department Notification No. TPS-1365-14, dated 7-7-1966 to come in to force from 15-8-1966. The PMC declared its intention to revise the Development Plan on 15-3-1976, as per the section 23 of the MR and TP Act of 1966. The proposed draft revised DP was submitted to the State Government under section 30, in 1982. The State Government, sanction to the first revised Development Plan of Pune, under Government Notification, Urban Development Department No. TPS 1884/1377/Cr-220/84/(iii) UD-7 dated 5-1-1987.

1.5. Legal framework

Under the provisions of section 38 of MR&TP Act 1966 at least once in twenty years from the date on which a development Plan has come into operation the Planning Authority shall revise the Development Plan.

The Planning Authority has intended to revise the 1987 Development plan as per section 38 of MR&TP Act 1966 vide resolution no 512 dated 23rd February 2007.

1.6. Planning area considered for revision of 1987 Development Plan.

The planning area is the same area as showed in the 1987 Development plan area. The entire area within the municipal limits was considered under six sectors

Sector I – Congested area (Core city)

Sector II – Southern suburbs, which includes Parvati, Dhankawadi, Katraj, Munjeri etc.

Sector III – Southwestern suburbs, which includes Erandawane, Kothrud, Hingne Budruk, Bhamburda, etc.

Sector IV – Northwestern suburbs, which includes Shivajinagar, Sangamwadi, Aundh, Pashan, Bopodi, etc.

Sector V – Northeastern suburbs, which includes Lohegaon, Yerawada,

Wadgaon Sheri, Kalas, Dhanori, etc

Sector VI – Eastern suburbs, which includes Hadapsar, Ghorpadi, Mundhwa, Wanawadi, Kondhava, etc.

1.7. Studies carried out for revision of Development Plan

As part of the planning process various surveys have been carried out as follows :-

1) Demography survey

The responsibility of conducting the Demography projections Survey of Pune city was entrusted upon Gokhale Institute of Politics and Economics Pune.

Component method of Population projection

In this method, assumptions about the future trends in all the three components of population growth (fertility, mortality & migration) are made & then the different predicted components are combined to give the projected population for the city.

A) Fertility

In case of fertility and mortality, the estimates from the sample registration system (SRS) are used. The level of TFR (total fertility rate) for urban Maharashtra is

2.1. Pune city does not have different TFR from urban Maharashtra.

TFR for Pune are					
TFR	**2001-06**	**2006-11**	**2011-16**	**2016-21**	**2021-26**
Value	2.1	1.9	1.8	1.8	1.7

B) Mortality

Projections are required for male & females separately starting with birth.It were necessary to know the value of sex-ratio at birth for current and future years. Mortality pattern is always represented through e^0 (expectation of life at birth). Consideration for Pune city is as follows.

Mortality pattern Consideration for Pune city					
Years e^0	**2001-06**	**2006-11**	**2011-16**	**2016-21**	**2021-26**
Male	70	71.5	72.5	73.5	74.5
Female	73.5	75.0	75.5	76.0	76.5

C) Migration

Migration is the most crucial component for growth of any city. Pune is growing with an expanding IT sector. It was observed that during 1981-91, there were 3.1 lakh in-migrants in the urban agglomeration, while during 1991-2001, the figure went up to 7.4 lakhs, amounting to about 13 and 20 percent of the total population.

It was also observed that the proportion of intra-state migrants coming for employment was 32% for 1991-2001, while the same was 22% for 1981-91. Proportion of migrants coming for employment has risen significantly. Among others reasons, family moved +moved after birth is prominent accounting for 41% for intra-state migrants. It is stated that during 1991-2001, 3.6 lakhs of migrants came to the Pune City i.e @ 23% for the recent decade. Taking into account the expansion of IT activities in Pune during last 7 years & the probable impact on migration, migration projection is as follows.

Migration Projection					
Year	**2001-06**	**2006-11**	**2011-16**	**2016-21**	**2021-26**
Migration %	12%	12%	10%	10%	8%

D) Territorial expansion

Jurisdictional changes do contribute to the population growth. This factor had a noticeable contribution in growth during 1991-2001. In future also, jurisdictional changes in PMC limit are expected. In 1997, 38 villages were included in PMC. However, in the year 2001, 15 complete villages and 5 part villages were de-linked. It is possible that these villages may be merged in PMC, in next few years during 2012-17. The new townships developing along the periphery may also sooner or later be included in PMC limits.

Considering the major aspects of fertility, mortality and migration, the projection of population by Gokhale Institute with the help of software DEMPROJ is as follows:

Projection of population by Gokhale Institute

Year	Population	Male	Female
2001	25,38,473	13,20,438	12,16,410
2007	31,48,041	16,42,049	15,05,992
2012	37,29,694	19,51,413	17,78,281
2017	44,55,574	23,40,923	21,14,651
2022	51,37,671	27,08,460	24,29,211
2027	57,14,890	30,20,329	26,94,561

E) Growth rate

Cities do not grow at the same higher rates for longer periods. Cities, such as Bangalore & Hyderabad which are comparable to Pune have also slowed down.

The annual growth rate % for Pune for the coming years is as follows:

Alternative II (realistic)

Year	Growth rate
1991-2001	4.82
2001-2007	3.6
2007-2012	3.39
2012-2017	3.99
2017-2022	3.23
2022-2027	2.95

F) Age distribution and Sex ratio of projected population

Population Projections for the Old City, 2002-27

2002	Total	Male	Female
0 - 9	327,953	170,525	157,428
10-19	371,383	194,477	176,906
20-29	393,659	206,834	186,825
30-39	308,174	158,293	149,881
40-49	219,245	114,940	104,305
50-59	138,451	73,023	65,428
60-69	87,374	41,871	45,503
70-79	42,515	20,460	22,055

2007	Total	Male	Female
0 - 9	370,675	194,341	176,334
10-19	366,999	189,681	177,318
20-29	416,262	223,962	192,300
30-39	368,156	190,248	177,908
40-49	265,038	137,584	127,454
50-59	176,575	91,571	85,004
60-69	100,166	49,105	51,061
70-79	60,312	26,835	33,477

80+	13,080	6,123	6,957
Total	1,901,834	986,546	915,288

80+	14,060	6,335	7,725
Total	2,138,243	1,109,662	1,028,581

2012	Total	Male	Female
0 - 9	393,855	207,377	186,479
10-19	368,126	192,654	175,473
20-29	426,996	226,796	200,202
30-39	437,398	229,606	207,791
40-49	311,517	161,054	150,463
50-59	211,847	109,945	101,902
60-69	127,617	64,307	63,309
70-79	74,337	32,510	41,827
80+	19,970	8,393	11,577
Total	2,371,663	1,232,642	1,139,023

2017	Total	Male	Female
0 - 9	392,131	207,808	184,321
10-19	426,172	224,946	201,225
20-29	445,572	235,320	210,252
30-39	473,720	254,016	219,703
40-49	374,170	194,784	179,384
50-59	257,821	132,445	125,376
60-69	164,537	81,369	83,168
70-79	89,519	39,925	49,593
80+	26,840	10,620	16,220
Total	2,650,482	1,381,233	1,269,242

2022	Total	Male	Female
0 - 9	412,077	218,887	193,190
10-19	470,597	249,782	220,815
20-29	476,465	255,815	220,651
30-39	511,402	271,143	240,258
40-49	447,947	237,269	210,677
50-59	304,802	156,205	148,597
60-69	199,819	98,983	100,835
70-79	118,029	53,962	64,066
80+	34,582	13,749	20,833
Total	2,975,720	1,555,795	1,419,922

2027	Total	Male	Female
0 - 9	448,493	238,693	209,799
10-19	490,623	262,284	228,338
20-29	563,991	305,308	258,683
30-39	554,197	292,573	261,623
40-49	488,987	264,838	224,150
50-59	367,890	190,042	177,848
60-69	245,535	120,548	124,987
70-79	152,408	68,654	83,754
80+	43,997	17,933	26,064
Total	3,356,121	1,760,873	1,595,246

The broad indicators of the age pattern are as below:-

Alternative II

	2001	**2007**	**2012**	**2017**	**2022**	**2027**
Percentage 0-14 age group	27.45	25.56	24.93	23.74	22	20.83
percentage 65+ age group	4.85	5.89	6.41	7.08	7.65	8.16
median age in years	26	28	29	30	31	33
Dependency ratio	0.46	0.46	0.46	0.45	0.43	0.41

G) Labour Force

Taking into consideration the past trend and the availability of the labour-force, the future trend is assumed as follows.

Year	**Male**	**Female**
2007	49.20	14.60
2012	49.40	15.20
2017	49.60	16.00
2022	49.80	16.80
2027	50.00	17.80

H) Population Projections for Pune 2027

Pune is well known as a 'cultural capital' of Maharashtra and also as an educational centre. Growing emphasis to the IT sector, impact of the IT sector on the infrastructural facilities, Real Estate, Housing, etc move towards decentralization of the IT activities, the adverse impact of rising vehicle

ownership on accidental deaths, disparity within the city, impact of American recession on the IT sector in India, need for strengthening the production sector, rising Economic level of Pune city, etc are the major causes of migration in Pune.

The Demographic Projections for Pune had the objectives to carry out population projections from 2006-2026 (or 2027), to give details like break-up by age and sex, to estimate the number of workers and to estimate the migration. The method used for the projection is the component method, including the components fertility, mortality, migration and territorial expansion.

The projections result in two alternatives, I (high) and II (realistic). The higher scenario expects the population to increase by alternative I (high) from 26 lakhs inhabitants 2002 to 62 lakh in 2027. The corresponding figure for 2027 for the realistic scenario is 57 lakh inhabitants. Updated to 2027, the figures are 62 lakh and 57 lakh respectively. Even if these population figures are very high, they are not in any respect surprisingly high, since the population growth has been very high during a long period of time.

I) Territorial Expansion in PMC limit

1) Considering the expansion of PMC limits due to the merger of 23 fringe villages.

2) Assuming the merger of further 15 full and 5 part fringe villages in PMC limit in the near future.

3) Considering the township development in village Nanded which is likely to be included in the city.

4) The earlier identified future urbanisable area admeasuring about 1140 Ha is now converted from agriculture zone to residential zone.

Considering the above factors, the necessary analysis for the exercise of population projection is carried out by applying the software DEMPROJ for the projections and results thus obtained were found out for two alternatives I

(high) and II (realistic). Taking into consideration the various above factors, the realistic option has been taken into account.

Alternative – II (Realistic)

Year	2001	2007	2012	2017	2022	2027
Population	25,38,473	31,48,041	37,29,694	44,55,574	51,37,671	57,14,890
Male	13,20,438	16,42,049	19,51,413	23,40,923	27,08,460	30,20,329
Female	12,16,410	15,05,992	17,78,281	21,14,651	24,29,211	26,94,561

Sector-wise Demographic projection

DEMOGRAPHIC PROJECTION GIVEN BY GIPE FOR REVISION OF DEVELOPMENT PLAN FOR OLD PMC LIMIT

Year	2001		2007		2012		2017		2022		2027	
Population	1855476		2138243		2371663		2650482		2975720		3356121	
Sector	%	Population	%	Population	%	Population	%	Population	%	Population	%	Population
I	16	296876	16	342119	16	379466	16	424077	15	446358	15	503418
II	25	463869	25	534561	23	545482	22	583106	20	595144	18	604102
III	19	352540	19	406266	18	426899	17	450582	16	476115	15	503418
IV	11	204102	11	235207	12	284600	12	318058	13	386844	14	469857
V	12	222657	12	256589	14	332033	16	424077	18	535630	19	637663
VI	17	315431	17	363501	17	403183	17	450582	18	535630	19	637663
		1855476		2138243		2371663		2650482		2975720		3356121

Base map for ELU

The base map is prepared by PMC by taking advantage of modern survey techniques such as Total station machines, Differential Global Positioning System (DGPS), etc. ground features were collected and geo-referenced base map was prepared for the city. In this survey, all the street

furniture, buildings/ structures along roads but falling under specified buffer and reservation areas were picked up with their ground co-ordinates.

This entire survey was based on a traverse referred with DGPS points already established all over the city, which is projected to UTM co ordinates for working purpose. For Geo referencing, WGS1984 (World geodetic survey) is the latest datum level and UTM43North (universal transverse Mercator) is the projection system, which can be adopted for Pune depending upon its location on the globe.

Existing land use survey

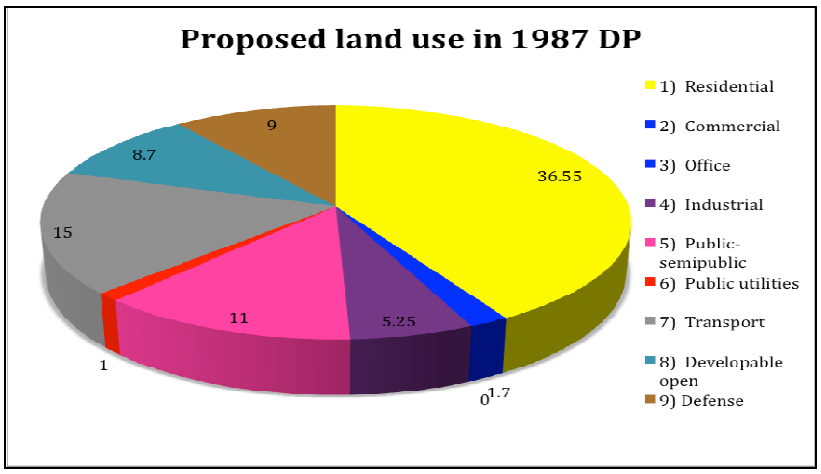
The responsibility of conducting the Existing land use survey of Pune city was entrusted upon College of Engineering Pune.

The total city comprises of about 60 - 65 thousand properties which have been surveyed. Major Land use that have been observed are residential, commercial, mixed land use, public and semipublic users, industrial, recreational users, etc. The data so collected has been taken on GIS Format on various layers and themes in order to get the land use survey analyzed and mapped in up to date manner. List of uses shown on ELU map is as follows:

Residential	Recreation**,**
Mixed use	Agricultural,
Fully commercial	Water bodies,
Public semi public	Hill top- hill slope,
Public utilities (water supply)	Forest,
Defense	Vacant,
Industrial	Slum,
Transport	Area Under construction,
Roads.	

b. Proposed land use of 1987 DP

Major land use	% of total area
1) Residential	36.55
2) Commercial	1.7
3) Office	0
4) Industrial	5.25
5) Public-semipublic	11
6) Public utilities	1
7) Transport	15
8) Developable open	8.7
9) Defense	9
10) Recreational	9.8
11) Water bodies	1.7



c. Character of the existing land uses in the city

The character of the existing use of the land within the limit is of complex nature. The city is not developed in conventional manner, but it consists of such users which are of different nature than the normal corporation area. The city had started experiencing the influence of the Industrial development occurred around the city i.e in the neighbouring Pimpri-Chinchwad area, due to development of large Industrial Townships by M.I.D.C.

Major Land uses identified are Residential, Mixed use, commercial, Public semi public, Public utilities (water supply, sewerage, burial ground, cremation ground, garbage disposal etc.) Defense, Industrial, Transport, Recreation, Agricultural, Water bodies, Hill top- hill slope, Forest, Vacant, Slum, Roads etc.

The overall status of Existing land use seen in the city after the survey is as follows:-

EXISTING LANDUSE SURVEY DETAILS SECTORS I TO VI			
ZONE	**%**	**ZONE**	**%**
Agriculture (A)	5.52%	Residential (R)	20.48%
Commercial (C)	2.54%	Recreational Spaces (RS)	3.89%
Defence (D)	8.41%	Slum (SL)	3.01%
Hill slope (HL)	8.38%	Transport & Communication (TC)	0.92%
Industrial(I)	1.82%	Under Construction(UC)	0.49%
Mix Land use(ML)	5.26%	Vacant (VL)	6.70%
Public-Semi Public(PSP)	9.19%	Water bodies (WB)	6.37%
Public Utilities(PU)	1.04%	ROADS (RD)	15.99%

3) Socio-economic survey

The responsibility of conducting the Socio- Economic Survey of Pune city was entrusted upon B. D. Karve Research and Consultancy Cell of Karve Institute of Social Service.

a) Density of population

The density of population in Pune city in the year 1951 was 18.29 persons per acre. The most densely populated areas were the central areas like Raviwar Peth, Rasta Peth and Nihal Peth where the density was almost 300 persons per acre. In the newly added areas such as Guruwar Peth, Budhwar Peth, Sukhrawar Peth, Ghorpadi, Gultekdi, Bopodi, etc, the per acre density was less than 11 persons per acre. The density of population according to the Census 2001 was 10412 per sq.km. Currently, the most densely populated wards in the city are Bhavani Peth followed by Kasba Peth and Vishrambaug Wada wards. The city appears to be growing in the southeast and southwest directions. As per the 2005 population estimates, the Tilak Road ward on the southwest side of the city is experiencing a rapid growth of 50%. The Karve Road is also growing at a rate of 32%. In the southeast direction, the Bibwewadi ward with its proximity to the Solapur bypass is growing at a rate of 38 % followed by Hadapsar at 26 %.

b) Average family size :-

In the year 1951, about 82 percent families the average family size was 5 members. Around 13 percent families had an average family size of 7-9 members and only 5 percent families had 10 members and above. This number has gone down to 4.5 members according to 2001 Census.

c) Economic profile of Pune City:-

Pune is the eighth largest city in India; it has the sixth largest metropolitan economy and the second highest per capita income in India, with the least income disparity between the rich and poor. The economy of Pune city is one of the fastest growing cities in India. Pune ranks 7th in top 10 towns

in India, with highest family income. It ranks 6th in top 10 wealthiest cities in India.

d) Future Economic trends for the Pune City

Since 1985, Pune's ability to generate workforce and skilled manpower for new and knowledge intensive industries has been even more sharply felt. It has increasingly enhanced its historical reputation as an educational and R &D centre. Three areas, noted for their professional training setups, have merged in the last two decades: management education, IT and computer education, and engineering. Moreover, a number of established educational institutions have introduced new courses and research areas (for example NCL, NIV and NARI in cell research in the department of bio-informatics in Pune University). This course of events helped Pune emerge as an IT-BT centre.

The future driver of the Pune economy would be the IT sector. Pune was the first city in the country to have a software technology park; today Pune has a burgeoning software industry and almost all of the major software players in the country have a base in Pune; TCS, Wipro, Infosys, Mahindra British Telecom, Mastek and PCS have significant presence in Pune. Global majors like HSBC Global Technology, IBM, Sasken, Avaya, T-systems and Syntel also have a major presence in the city. During the last eight years, this sector has grown from Rs. 250 crores to Rs.6500 crores.

Pune as the Oxford of the East: The other big sector that Pune has hosted is education. Famous as the Oxford of the East, the first landmark in Pune's evolution as an educational centre was the establishment of the Deccan Education Society in the city. Today the city has six universities, which include 600 functional colleges and PG departments in their fold. It is estimated that the student population exceeds five lakhs.

Pune as an auto-hub: One of the first notable milestones in the industrial history of Pune was the entry of Kirloskar Oil Engine Ltd. In 1960, MIDC set up a huge industrial estate on 4000 acres of land at Bhosari. This

development led to a spate of engineering-ancillary industries being set up in Pimpri-Chinchwad and the city started developing. Later, it also witnessed the entry of auto-majors such as Tata Motors, Bajaj Auto and the world's second largest forging company Bharat Forge Ltd. It is also home to Kinetic Engineering and Force Motors (previously known as Bajaj Tempo). Also, Daimler Chrysler has an assembly line for its Mercedes Benz brand in Pune. Cummins Engines Co Ltd has a Research & Technology India centre in Pune in addition The establishment of the commercial motor vehicle unit of Telco in Pimpri-Chinchwad transformed the pace and rhythm of Pune. Availability of skilled manpower and later, supply of ancillary development based entrepreneurs in and around Pune became the major drivers of Pune's industrialization. Thus 1965 is a turning point in Pune's economic history. Its present reputation as the Detroit of India is a consequence of its development since mid- sixties. For the next two decades, industries around Pune were largely spurred by the presence of Telco, Bajaj Auto and Bajaj Tempo.

Pune as an Agro Business Centre: In addition to the above characteristics, Pune has also emerged as an business centre. The hinterland of Pune witnesses intense farming of sugar and grapes, horticulture, and floriculture. Given the distinctive characteristics of this industry, many value-added industries like food processing have flourished in and around Pune. Pune has a locational advantage, being close to to several demand driven markets such as Mumbai, Nasik, Nagpur, and Aurangabad. Consequently, Pune is fast evolving as a sunrise city; already some big names in this sector have established their presence, namely Gits Food Products, Weikield Products, and Chitale Bandhu.

The scaling up of this activity depends upon the development of supportive infrastructure in and around the city, focused development of the peri urban areas so as to reduce the pressure on the main city, provision of civic amenities in proportion to the size of the population.

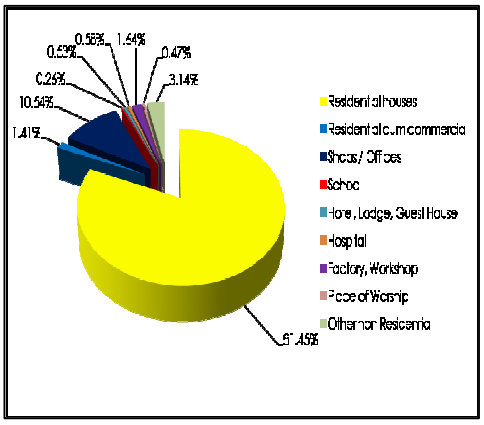
"Pimpri-Chinchwad Municipal council (later municipal corporation); also, in addition to educational opportunities, industrial employment opportunities gave a fillup to in-migration. Moreover, the development of

industrial estates by Maharashtra Industrial Development Corporation (MIDC) on the then outskirts of Pune (Parvati, Hadapasar,) and declaration of the C zones for sales tax exemption in Pirangut and Shivapur expanded the industrial activity map of Pune in almost all the major geographic directions. This was further strengthened by the emergence of MIDC estates areas around Ranjangaon, Daund and Karkumbh.

4) Housing survey

The responsibility of conducting the Housing Survey of Pune city was entrusted upon Mashal.

a. House distribution by use

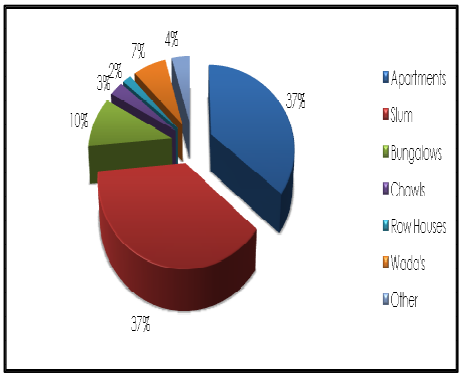


The distribution of houses by use in Pune as per Census indicates that about 509,819 houses contributing about 82% of that of occupied houses is under residential use and total 65,951 are shops and offices with about 11% share from total 625,336 occupied houses.

Census Houses	763133
Occupied Houses	625,336
Residential houses	509,819
Residential cum commercial	8,810
Shops / Offices	65951
School	1,615
Hotel, Lodge, Guest House	3,318
Hospital	3,603

Factory, Workshop	10,265
Place of Worship	2,935
Other non Residential	19,650

b. Housing typology

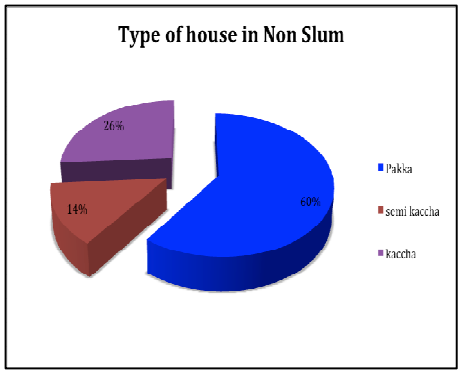


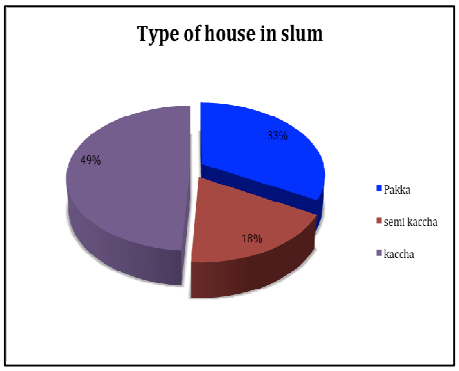
Pune consists of maximum number of slums as housing typology followed by Bungalows and Wada. Presently, the percentage of Bungalows and Wada is decreasing as these units are getting redeveloped into apartment units.

c. Housing distribution by tenancy

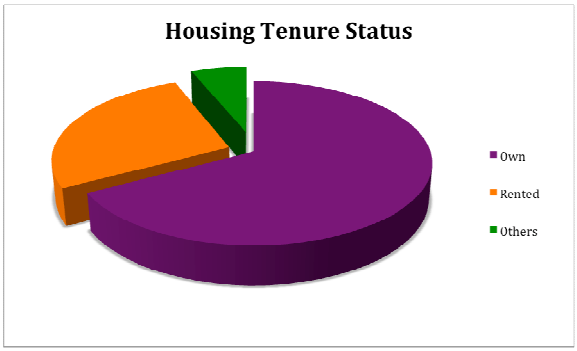
Household condition by condition of Houses: -

SN	Category	Census 2001		MASHAL	
				Non Slum	Slum
1	Good	358, 900	68.45%	60% (Pakka)	33% (Pakka)
2	Liveable	152, 923	29.17%	14%(Semi Kaccha)	18%(Semi Kaccha)
3	Dilapidated	12, 496	2.38%	26% (Kaccha)	49% (Kaccha)
4	Total	524, 319	100%		





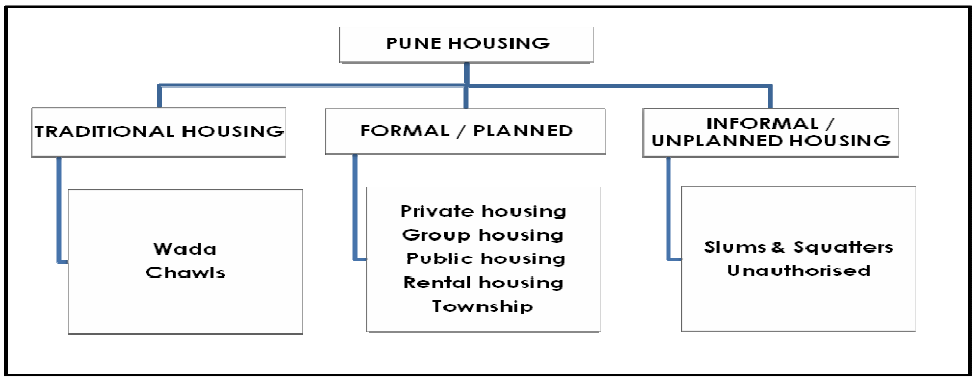
Housing Distribution by Tenure: -



Sr No	Category	Census 2001	MASHAL	
1	Household by ownership	524, 319	100%	
2	Own	351, 569	67.05%	67%
3	Rented	151, 414	28.88%	27%
4	Others	21, 336	4.07%	6%

e) Housing types in Pune

Like any other developing city, Pune has also got the diversified development in housing. Since Pune is a historical city, the traditional look is maintained in some parts of the city, about 40% population is the slum population and some part is planned development



Housing systems Pune

Traditional Housing

1. Wada/ Chawl

Wada/ Chawls symbolizes the tales of Pune's rich culture and heritage. They are historical symbols of Pune. They are famous for their typical architectural character and the traditional character of old city of Pune. Wadas were used mainly for residential purpose. The age of structure, tenancy, lack of maintenance, legal litigations are some of the hurdles for development /redevelopment of wadas/chawls. There is a need of new incentivised development policy for redevelopment of wadas/chawls.

2. Formal /Planned Housing

- Private housing
- Group housing
- Institutional Housing
- Public housing
- Townships
- Municipal Housing
- Slums

3. Informal / unplanned housing

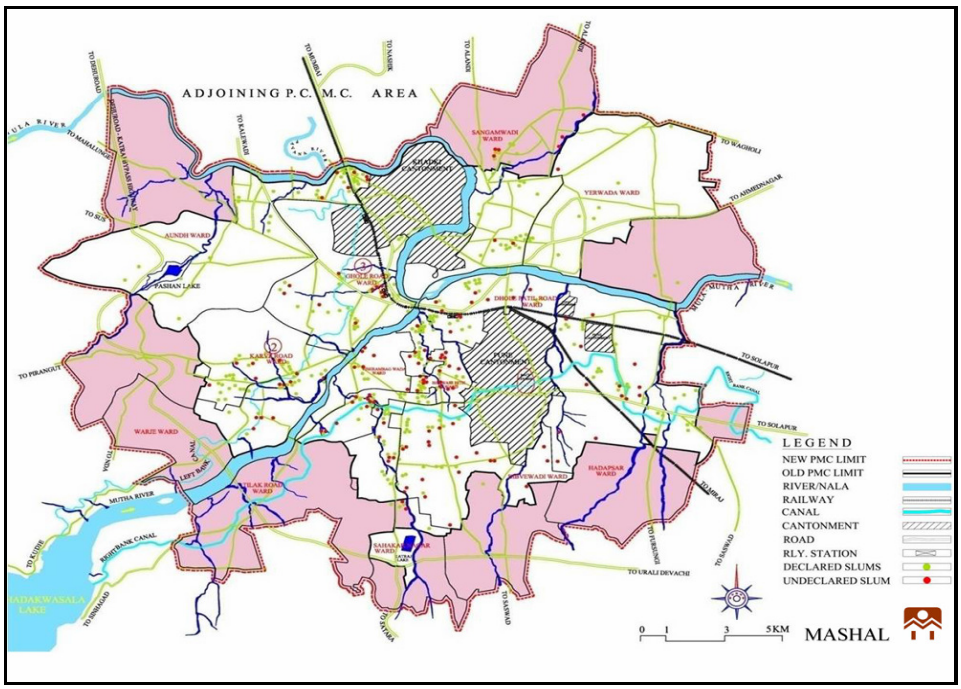
Slums in Pune City

Slums are solutions found by urban poor for satisfying their housing needs. Urbanization and slums in Pune is going hand in hand. In PUNE bigger the growth, higher is the proportion of people living in slums. This situation is mainly due to the fact that urbanization in Pune leads to mass migration of rural poor who have low skills and are not in position to meet their demand for formal housing from the given market. Timely introduction of appropriate policies could have curtailed the growth of slums.

Growth of total population and slum population in PMC area

Sr. No	Year	Total Population	Slum Population	% Of Slum Population To Total Population
1	1921	1,33,000	NA	NA
2	1931	1,62,000	NA	NA
3	1941	2,38,000	NA	NA
4	1951	4,81,000	38,500	8
5	1961	6,06,777	92,101	15.18
6	1971	8,56,105	2,39,701	28
7	1981	12,03,363	3,77,000	31.33
8	1991	15,66,651	5,69,000	36.32
9	2001	25,38,473	1,025,000	40.38

(Source: Census of India and ESR 2004-05)



Details of declared and undeclared slums, PMC							
Year	**Declared Slum**	**Population of declared Slum**	**No. of Undeclared slum**	**Population of undeclared slum**	**No. of Total slum in Pune city**	**Total slum Population**	**Percentage of Slum population**
1990	226	4,73,438	87	1,27,112	213	5,40,550	35.98%
1991	272	4,28,672	87	1,40,328	359	5,69,000	36.47%
1992	272	4,47,122	87	1,50,328	359	5,97,450	37.34%
1993	288	4,53,888	97	1,73,412	385	6,27,300	38.25%
1994	295	4,75,857	100	1,82,828	395	6,58,685	38.74%
1995	307	4,86,723	127	2,04,891	444	6,91,615	39.74%
1996	308	4,93,723	136	2,06,277	444	7,00,000	39.32%
1997	326	N. A.	133	N. A.	459	7,25,000	30.60%
1998	321	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.
1999	321	N. A.	N. A.	N. A.	N. A.	N. A.	N. A.

2000	337	N. A.	166	N. A.	503	N. A.	N. A.
2001	353	N.A.	150	N.A.	503	1,025,000	40.38%
2002	353	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
2003	353	7,75,000	150	3,50,000	503	1,125,000	40.42%
2004	353	N.A	150	N.A	503	N.A.	N.A.
2009	353	N.A	211	N.A	564	1,259,216	40.56%

(Source: Census of India, ESR 2004-05 and MASHAL, 2009)

Slum improvement schemes

We envisage on the vision of "Slum Free City" by encouraging policies to tackle the problem of slums in a definitive manner. This can be achieved by a multiprolonged approach focussing on :-

- Bringing the existing slums within the formal system and enabling them to avail of the same level of basic amenities as the rest of the town.
- Redressing the failures of the formal system that lie behind the creation of slums.
- Tackling the shortages of urban land and housing that keep shelter out of reach of the urban poor and force them to resort to extra-legal solutions to retain sources of livelihood and employment.

To achieve the above vision many policies have been framed for development of slums

1) Slum redevelopment / rehabilitation schemes.
2) Lok Awas Yojna
3) Valmiki Ambedkar Awas Yojna
4) Basic services for the urban poor (BSUP) under JNNURM
5) Rajiv Awas Yojna.

Slum rehabilitation/redevelopment Schemes developed in Pune City

Slum Rehabilitation/ redevelopment Schemes Developed		
SN	**Schemes**	**Numbers**
1	Total proposals for rehabilitated schemes submitted	**140**
2	Proposals cancelled	**11**
3	Sanctioned schemes	**49**
4	Construction in progress	**39**
5	Schemes completed	**10**
6	Proposals under legal formalities	**80**

(Source: SRA for PMC and PCMC area)

3) The Basic Services for the Urban Poor (BSUP)

The basic aim of BSUP is to provide a garland of 7 entitlements/services – security of tenure, affordable housing, water, sanitation, health, education and social security – in low income settlements in the 63 Mission Cities. The Integrated Housing and Slum Development Programme (IHSDP) seek to provide the aforementioned garland of 7 entitlements/services in towns/cities other than Mission cities. PMC is constructing 20,528 t/s. for Urban poor out of each 4,000 t/s. are being constructed in-situ. The schemes under BSUP undertaken by PMC in at Hadapsar and Warje.

Gunthewari

Gunthewari is the type of unauthorized development that has taken place in some parts of the city which has been regularized by the PMC as per the Maharashtra Gunthewari Regularization Act 2001.

Housing Demand in Pune City.

Housing demand is a product of "Household formation" as a consequence of net population growth. Demand has two aspects "Absolute" and "Effective" Absolute demand is a physical phenomena of number of

houseless households, while the "Effective demand" is a consequence of the Household affordability. It is the lack of attention to the former that leads to the growth of slums and housing shortage.

Total housing demand by 2027 in Old PMC limit		
Total no. of households in 2007	475165	Projected
No. of residential units in 2007	384884	Estimated
Total Numeric Shortage (HH) till 2007	90281	Calculated
Total number of Dilapidated houses	11309	Primary Survey, MASHAL
Total number of Kutchha houses	123543	Primary Survey, MASHAL
Up gradation need for slum (HH)	76026	40% slum removal till 2027
Total shortage up to 2007	**301160**	
Projected population	**3,356,121**	**(2027)[1]**
Total housing need in 2027	734381	Estimated
Total housing stock up to 2007	384884	Estimated
Total housing required in 2007-2027	349497	Calculated
Total number of Dilapidated houses that are to be added during 2007-2027	8318	Estimated
Total housing need from 2007-2027	**357815**	Calculated
Total housing need in 2027 (Nos.)	**658975**	

(Source: MASHAL, Pune)

Land Requirement for Projected Housing.

Based upon primary survey future housing requirement for different housing group is studied by Mashal in housing study considering the projected population as given in Table\

Housing requirement by income group		
Income Group	**% Distribution**	**HH units in Nos.**
EWS	44.14	290873
LIG	20.03	132022
MIG	26.24	172977
HIG	9.58	63103

(Source: Primary Survey, MASHAL, Pune)

Housing requirement in different typology				
Income Group	**Plotted development in %**	**Group development in %**	**Total no. of Plotted Development**	**Total no. of Group development**
EWS	10%	90%	29087	261786
LIG	15%	85%	19803	112218
MIG	25%	75%	43244	129733
HIG	40%	60%	25241	37862

(Source: MASHAL, Pune)

Land area required						
Income Group	**Total no. of**		**Area of Plot size per DU for Plotted (sq.mt.)**	**Net density considered for group housing (DU/ha)**	**Area Required for**	
	Plotted Develop-ment	**Group develop-ment**			**Plotted Develop ment (ha)**	**Group Develop ment (ha)**
EWS	29087	261786	30	550	87.262	475.974
LIG	19803	112218	100	450	198.033	249.374
MIG	43244	129733	225	350	972.995	370.665
HIG	25241	37862	400	250	1009.65	151.447
TOTAL LAND AREA REQUIRED (ha)					**2267.94**	**1247.46**

(Source: MASHAL, Pune)

Therefore net area required for housing is **3515.4 ha.** Adding the total area required for amenities gross residential area required to be reserved to cater to the future housing demand is **4745.79 ha.**

This area will reduce down substantially with the implementation of new development policies introduced in the development control regulations like giving additional FSI for development of affordable housing of household size 30sqm, also for higher additional FSI particularly for EWS and LIG. Policies like, MHADA policy for redevelopment of MHADA colonies and on vacant land will also contribute to affordable housing. Also major land is made available by converting agriculture land to residential land. eg Sangamwadi, Pashan, Lohegoan, Mundhawa. The agricultural area & vacant pockets in the Pune old limit area will cater the need of this housing stock. Policies of densification along MRTS corridor i.e metro and BRTS corridor is also proposed in development control regulations. There are also places where there will be redevelopment in existing properties due to old structures

aged from 30 and above years and dilipalated structures, also more housing stock shall be available with new policies of redevelopment. Additional housing stock shall be available with new policies of redevelopment. In addition to this TDR generated against proposed reservations/roads and premium FSI shall also contribute to fulfill the need of housing for the projected population.

Recommendations for housing

I. The stock of affordable housing can be enhanced by introduction of new policies such as increase in FSI particularly for the EWS group, like additional FSI for EWS, Slum redevelopment, MHADA policies etc.
II. Vision of slum free city can be achieved through implementation of Rajiv awas yojana, BSUP schemes, policies for Slum rehabilitation/redevelopment schemes through SRA rules and D.C. regulations.
III. Policies for providing rental housing need to be introduced taking into consideration the demand for the same.
IV. Cluster development for dilapilated wadas/chawls in the old parts of the city needs to be introduced.
V. Policies for promotion of Integrated development of townships, densification along MRTS corridors needs to be introduced.
VI. With an intention to make affordable housing available for the EWS/LIG group provision have been made regarding handing over 20% area in the form of 30 to 40 sqm and 10% area in form of 41 to 60 sqm for MIG tenements compulsory in layouts.

TRAFFIC AND TRANSPORTATION

PAST TRAFFIC AND TRANSPORTATION STUDIES IN PUNE CITY

To improve the traffic & transportation situation in Pune Metropolitan Region, the planning authorities in PMC and PCMC have carried out several studies from time to time and implemented the recommended measures to a

great extent. The major transportation studies carried out for Pune region include:

- Cycle Network Project for Pune, Town Planning Dept., Pune, 1981
- Traffic and Transportation Plan for Pune Metropolitan Area-2001 by Dept. of Town Planning, Maharashtra, 1984
- Traffic and Transportation Flows for Selected Cities in India by CRRI, 1986
- Transport in Pune Metropolitan Region by CIRT, Pune, 1987
- High Capacity Mass Transit System for Pune: Feasibility Study by MTP (Railways), 1988
- Report of the Pune Action Plan, 1991
- Deshmukh Committee Report for Long Term Measures for Pune Agglomeration, 1994
- Report of the Committee appointed by Divisional Commissioner, Pune Division, Pune to recommend "Short Term Measures for Improvement of Traffic in Pune City", 1994
- Pune Traffic 2000 'Parking', 1996
- Project Report: Mega City of Pune, 1997
- Feasibility Report on Construction of Flyovers, Traffic Planning Cell, Pune, 1998
- Mass Rapid Transit System for Pune Metropolitan Area by RITES, 1998
- Sharing of Inter-City Services Operated by PMT & PCMT, CIRT, 2000
- Final Report on "Study on the Working of Pune Municipal Transport", CIRT, 2000
- A Study on Traffic and Economic Analysis of Road Improvement Project in Pune by CIRT, 2001
- Traffic Study for Pune City by AAKAR Enterprises, 2003
- Comprehensive Traffic & Transportation Study for Pune City, Span Travers Morgan, 2003
- Integrated Traffic Dispersal System for PMC & PCMC, CES, 2004

- Pune Sustainable Urban transport Study; CIRT June 2005
- Comprehensive Mobility Plan for Pune, CMP; IL&FS and Wilbur Smith, December 2008
- Forecasting passenger demand on the proposed metro rail lines, IIT Bombay (submitted to DMRC), 2008.

Evaluation of traffic by development of travel model

Traffic and Transportation has been the major backbone of the city. . The Pune Municipal Corporation has also prepared the comprehensive mobility plan for the city with the help of consultant IL&FS. Several studies, relating to traffic and transportation aspects in Pune Metropolitan Area, have been carried out in the recent past by various organisations. These studies covered transport systems like metro, bus rapid transit, tram, non-motorised transport and aspects like mobility, traffic management and road improvement schemes. The detailed project report was prepared by DMRC through IIT Bombay. With a view to evaluate the development scenarios towards sustainable transport strategy for Pune city, has upgraded the transport planning model developed for the metro study based on the enormous data available from previous transport plans and it is fully integrated with the revised development plan by development of travel model and development of model for various scenarios is entrusted to IIT Mumbai.

The data on planning variables and the transportation system as listed below, which were collected during previous studies, were made available for the present study.

- Planning Variables
- Population
- Employment
- Transport System data
- Highway network and link attributes
- Public transport network and link attributes
- Public transport routes and system data

Generation of alternative transport scenarios based on existing traffic situations, CMP & envisaged land use scenarios has been done by IIT Bombay which is listed as follows:-

I) Usual Land Use Scenario (Scenario 1):

With the prevailing land us pattern (base year is taken as 2008), forecasting the traffic for future with different transportation network for the horizon year 2011, 2021 and 2031.

II) Increasing Floor Space Index (FSI) along Metro corridor(Scenario 2):

In this scenario horizon year is considered as 2021, wherein the transport network consists of metro. FSI of 4 is considered, 500 m along both the side of the metro corridor. The basic variables used in the four stage planning model are the population and the employment. Population and employment is been forecasted for year 2021 and the distribution is done as per the land use scenario considered. Employment can be worked out with the type of commercial and industrial activity to be increased along the metro corridor.

The zonal map is superimposed on the road network of the PMC region and the area along the metro corridor taking 500 m on both the side is been calculated for the zones through which the metro line is passing using the ArcGIS software.

Considering the total area of the city area under influence of metro corridor is 32.95 sq km. The population is estimated for the area under the influence of metro by taking the FSI of 4. This scenario is developed for horizon year 2021. Since 75% of the land is been used as a part of construction as per the DP plan implemented by the Pune Municipal Corporation. The population for all other zones is been calculated as per the prevailing condition of land use pattern of individual zones.

III) Considering Public transport share as 80% (Scenario 3) :-

A hypothetical scenario has been developed wherein the share of public transport is considered as 80%. Due to large Public Transport share its effect on the Public transport is been analysed.

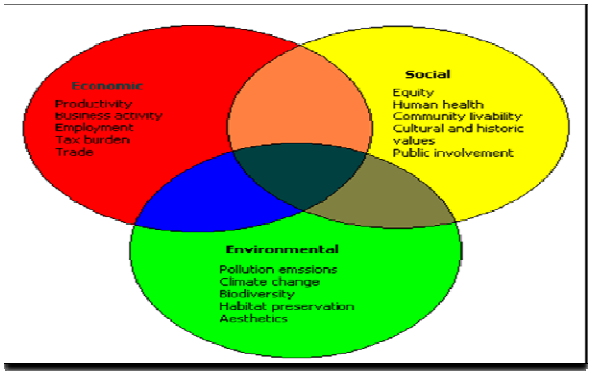
IV) Considering Work Participation ratio of 0.6 (Scenario 4):-

A hypothetical scenario has been developed wherein the work participation ratio considered is 0.6. Due to increase in work participation ratio results to increase in employment which results in increase in trips.

Source :- (Final Report on Evaluation of development plan towards Sustainability for Pune Metropolitian Area by IIT Bombay 2011.

SUSTAINABLE TRANSPORTATION GOALS

Sustainability reflects the fundamental human desire to protect and improve our earth. It emphasizes the integrated nature of human activities and therefore the need for coordinated decisions among different sectors, groups and jurisdictions. Sustainability generally refers to a balance of economic, social and environmental goals, including those that involve long-term, indirect and non-market impacts. Sustainability planning (also called *comprehensive planning*) expands the objectives, impacts and options considered in a planning process, which helps insure that individual, short-term decisions are consistent with strategic, long-term goals.



Summary of Sustainable Transportation Goals, Objectives and Performance Indicators

Sustainability Goals	Objectives	Performance Indicators
Economical		
Economic productivity	Transport system efficiency. Transport system integration. Maximize accessibility. Efficient pricing and incentives.	Per capita GDP Portion of budgets devoted to transport. Per capita congestion delay. Efficient pricing (road, parking, insurance, fuel, etc). Efficient prioritization of facilities

Economic development	Economic and business development	Access to education and employment opportunities. Support for local industries.
Energy efficiency	Minimize energy costs, particularly petroleum imports.	Per capita transport energy consumption Per capita use of imported fuels.
Affordability	All residents can afford access to basic (essential) services and activities.	Availability and quality of affordable modes (walking, cycling, ridesharing and public transport). Portion of low-income households that spend more than 20% of budgets on transport.
Efficient transport operations	Efficient operations and asset management maximizes cost efficiency.	Performance audit results. Service delivery unit costs compared with peers. Service quality.

Social		
Equity / fairness	Transport system accommodates all users, including those with disabilities, low incomes, and other constraints.	Transport system diversity. Portion of destinations accessible by people with disabilities and low incomes.
Safety, security and health	Minimize risk of crashes and assaults, and support physical fitness.	Per capita traffic casualty (injury and death) rates. Traveler assault (crime) rates. Human exposure to harmful pollutants. Portion of travel by walking and cycling.
Community development	Help create inclusive and attractive communities. Support community cohesion.	Land use mix. Walkability and bikability Quality of road and street environments.

Cultural heritage preservation	Respect and protect cultural heritage. Support cultural activities.	Preservation of cultural resources and traditions. Responsiveness to traditional communities.

Environmental		
Climate stability	Reduce global warming emissions Mitigate climate change impacts	Per capita emissions of global air pollutants (CO2, CFCs, CH4, etc.).
Prevent air pollution	Reduce air pollution emissions Reduce exposure to harmful pollutants.	Per capita emissions of local air pollutants (PM, VOCs, NOx, CO, etc.). Air quality standards and management plans.
Prevent noise pollution	Minimize traffic noise exposure	Traffic noise levels
Protect water quality and minimize hydrological damages.	Minimize water pollution. Minimize impervious surface area.	Per capita fuel consumption. Management of used oil, leaks and stormwater. Per capita impervious surface area.
Openspace and biodiversity protection	Minimize transport facility land use. Encourage more compact development. Preserve high quality habitat.	Per capita land devoted to transport facilities. Support for smart growth development. Policies to protect high value farmlands and habitat.

Study area for traffic studies.

13.6.1 Area

The study area will be taken as the area comprising the present Pune Municipal Corporation area, Pimpri Chinchwad Municipal Corporation area and both the cantonment areas namely Pune and Khadki (with major concentration on PMC area). The study area that will be adopted in this study will be similar to the one adopted during the Pune metro study by IIT Bombay but with appropriate modifications as stated above and as per the area decided by the development plan. The map in Figure shows the Pune Metropolitan Region showing the areas mentioned above forming the study area.

13.6.2 Traffic Analysis Zones

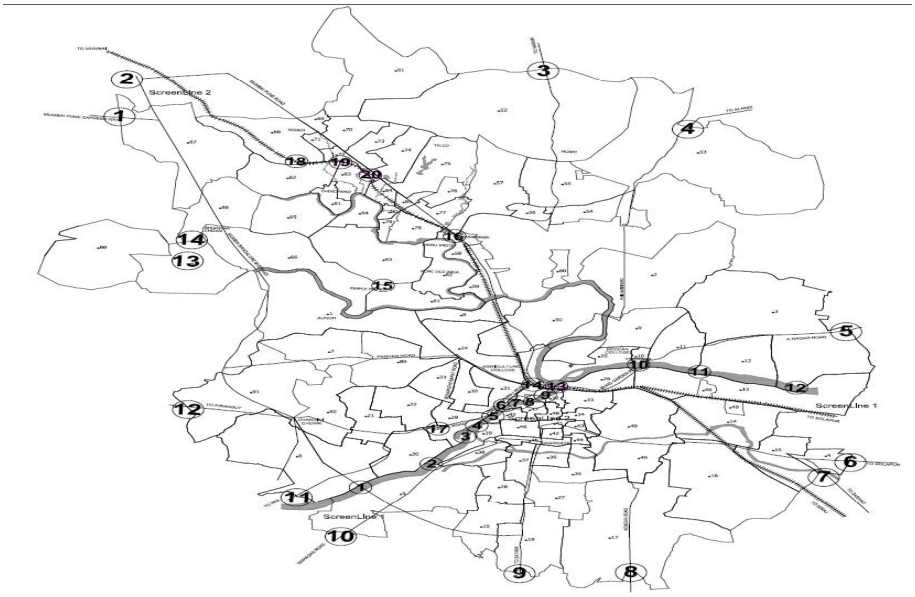
The zoning system considered for the Pune metro study by IIT Bombay comprises of only 91 internal zones and 13 external zones. In the present study, it is proposed to redefine these traffic analysis zones (TAZ) to the extent possible as per the administrative units like wards utilizing the available GIS maps with PMC and PCMC. Accordingly, the zoning system of the present study has been adopted based on the City Development Plan (2007-2027) comprising 144 zones in the PMC area, 105 zones in PCMC area and 16 zones in hinjewadi. Pune and Khadki cantonments have been considered as two zones. In addition to these 267 internal zones, 13 external zones are considered.

Zonal Map of PMC region

13.6.3 Screen-lines and Cordon-Lines

Screen lines will be established along the natural barriers viz., railway lines and rivers in PMA. Screen line count stations will be formed at the intersection of the transport links and the screen lines. The volume counts at screen line stations will be utilised for validating the O-D matrix as well as the models. All the past studies more or less adopted two screen lines, one along the existing railway line and other along Mula – Mutha River. In this study also the same two standard screen lines will be adopted. The boundary of the study area will be the outer cordon line. Figure below shows the location of these screen lines and screen line stations at which traffic counts were taken in Metro study. Figure below shows the external cordon line and the cordon stations where in addition to traffic counts, origin – destination surveys were done.

Locations of Screen Lines in Study Area



Locations of Screen Lines and the External Cordon

PCU Values adopted for the Study

S. No.	Vehicle Type	Adopted PCU Values
1	Car / Jeep	1.0
2	Bus	3.0
3	Autorickshaw	0.8
4	Two-wheeler	0.5
5	LCV/ Mini-bus	2.5
6	Truck	3.0
7	Truck Trailer	3.5

(Source: Traffic studies by IIT Powai 2010)

13.6.4 Vehicular Growth and Modal Split:

In 2002, 58.8 million vehicles were plying on Indian roads (Table below shown). According to statistics provided by the Ministry of Road Transport & Highways, Government of India, the annual rate of growth of motor vehicle population in India has been about 10 percent during the last decade. The basic problem is not the number of vehicles in the country but their concentration in a few selected cities, particularly in metropolitan cities (million plus). It is alarming to note that 32 percent of these vehicles are plying in metropolitan cities alone, which constitute about 11 per- cent of the total population. During the year 2000, more than 6.2 million vehicles were plying in megacities (Mumbai, Delhi, Kolkata, and Chennai) alone, which constitute more than 12.7 percent of all motor vehicles in the country. Interestingly, Delhi, which contains 1.4 percent of the Indian population, accounts for nearly 7 percent of all motor vehicles in India.

Growth trend in Vehicle Population (in thousands)							
City	1995	1996	1997	1998	1999	2000	Annual growth rate (1995 – 2000) in %
Pune	358	412	468	527	568	593	11

Number of Vehicular type in Pune		
	Type of vehicle	**No of vehicles** **Upto march 2011 (Source RTO Pune)**
1	**Car**	3,86,559
2	**Jeep**	57,215
3	**Two wheeler**	17,96,339
4	**Autorickshaw**	69,946
5	**Bus**	10,001

Modal Share in %							
	Year	**Walk**	**Cycle**	**Two wheeler**	**Public Transport**	**Car**	**IPT**
1	**2007 (*Source: T& T Policies and Strategies in Urban Areas in India by Ministry of Urban Development & WSA)***	25	11	26	21	10	7

Public Transport Share in %

PT share estimated	Rites 1994	WSA 2007
	45.8 to 59.7%	11.2 to 32.1%

Estimated Mode Share in future in %

	2007			2011			2021			2031		
	PT	**PV + IPT**	**NMT**	**PT**	**PV + IPT**	**NMT**	**PT**	**PV+ IPT**	**NMT**	**PT**	**PV+ IPT**	**NMT**
1. (*Source: Traffic & Transportation Policies and Strategies in Urban Areas in India by Ministry of Urban Development & WSA)*	22	42	36	21	45	35	15	51	34	12	54	34
2.(Source Metro Study by DMRC and IIT Powai)	36	64		39	61		40	60		41	59	

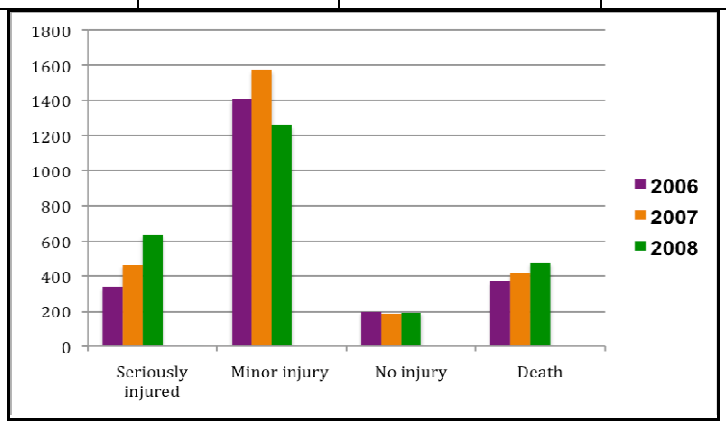
Note: PT- Public Transport, PV- Personal vehicles, IPT- Auto rickshaw, NMT- Non motorised transport including walk and cycles.

Road accidents

Following are the data for accidents from 2001-2008 for the Pune Police Commissionerate area including PMC,PCMC , cantonment board and suburban areas.

Criteria	2006	2007	2008
People involved	**4482**	**4878**	**4880**
Seriously injured	**338**	**462**	**634**

Minor injury	**1408**	**1575**	**1256**
No injury	**197**	**186**	**195**
Death	**372**	**414**	**477**
Total injured	**1746**	**2037**	**1890**
Total accidents	**2123**	**2347**	**2270**



Road accident data.

Major Goals and Objectives for proposed land use in Development Plan.

The Land Use Plan – 2027 has been prepared based on major goals and objectives,

1. Determination of the extent and physical form of future urbanisable area on the basis of the population projection, trend of development (as observed in the ELU survey) and suitability of land for non-agriculture purposes.
2. Determination of proposed broad land-use zoning of the said urbanisable area
3. Framing proposals with due considerations to the circulation pattern and other traffic-transportation requirements
4. Establishment of standards or guidelines for framing proposals in-

respect of designation of sites for public amenities and in-respect of various other problems faced by the area.

5. In identifying the future urbanisable area on the basis of the projected population of 2021, the following constraints / guidelines have been considered.

- Existing and committed major work centres
- Physiography of the planning area
- Availability of water supply planning proposals of the draft development plan.
- Availability of transportationfacilities
- Availability of land for non-agricultural use and desirability

practicability of converting agricultural lands into non-agricultural lands.

6. Restructuring of land uses along MRTS and BRT corridors based on the studies and considering the inter relationships between the urban activities, environment and the image of the city .

PROPOSED LAND USE

RESIDENTIAL ZONE

The total residential area in the 1987 Development plan is 5070.58 ha. About 1140 ha can be available as future urbanizable zone from conversion of agriculture zone to residential zone this area consists mainly of Sangamwadi ,Lohegoan ,Pashan and Mundhawa area.

The projected population in 2007 and 2027 into sectors, the areas necessary for accommodating the population in each sector were determined thus delineating the boundaries of the residential zone in the Sector.

Residential Zone (R1) is the normal residential area where only residential and allied uses as permissible under the development control rules could be developed. In addition to the uses under R 1 zone, shopping and other commercial activities as prescribed under the development control rules, would be permissible on the lands in R2 zone i.e. the lands fronting on roads

of 9 m. and wider in the gaothan areas and 12m and wider in the remaining areas. Lands included in R1 and R2 zones have been washed yellow on the development plan.

1) EWS- Zone

This is an additional type of Residential Zone proposed in the Revised Draft Development Plan. The areas in this zone will be developed for public housing or sites and services for the economically weaker section population, and sites have been reserved for the Pune Municipal Corporation (PMC) as the Acquiring Authority. The development would be at a higher density as permissible of about 1200 person /hectare.

2) Slum Improvement Zone

Considering that 40% of population of city are staying in slums. In order to achieve the vision of slum free city detail survey are carried out by PMC and these slums have been demarcated on sites. This is an additional type of Residential Zone proposed in the Revised Draft Development Plan. These sites are proposed as Slum Improvement Zones, slums shall be rehabilitated on the same site. Slums on ecological sensitive areas like river banks ,nallas, hill top hill slopes can be rehabilitated on other sites. Slums on sites required for vital purposes the planning authority shall rehabilitated these slums on other sites .

4) Brick Kiln Zones

Brick kiln zones in the old city area has been shifted away from the city. The Brick kiln zone in the old DP area have been shown in Industrial zone with a provision of permitting residential use after payment of conversion charges.

Converting the agricultural zone to residential zone will generate the future urbanized area. 1120 hectares of land is converted into residential area which is planned on the basis of the population projection, and added in the development plan.

COMMERCIAL ZONE

Under the sanctioned Developed Plan the Commercial Zone comprised of the areas on which shop lines along roads were proposed, areas which were already functioning as markets and areas which were proposed for acquisition for the Agricultural Produce Market Yard, Timber Market etc. C-2 zone would comprise of areas where the whole-sale establishments and office complexes in Government and private sectors would be permissible.

Under the Development Control Rules the commercial zone has been considered under two types, C-1 and C-2. In the Revised Draft Development Plan, the C-1 zone has been proposed only for the area in Bhavani Peth where whole- sale and retail trade in grains etc, and godowns for storage of goods are existing. This area of C-1 zone has been shown in blue colour on the Revised Draft Development Plan.

1) **Cinemas & Drama Theatres:**

Cinemas and drama theatres are users allowed and in the residential zones R-1, R-2 as well as in the commercial zones C-1 and C-2, as per development control regulations, the sites of the existing cinemas and drama theatres have been shown as spot zones in order to ensure the retention of the existing amenity even in future on the respective sites.

2) **Industrial Zone:**

With an opportunity to create more industrial jobs some areas have been included in industrial zones since 1966 DP. Major industrial zones were located on Nagar road, Sholapur road, Satara road, Sinhagad road and Mundhawa village.

The regional plan states that the policy of the Government is to allow only non-polluting industries in the cities. This has also been a policy of the PMC.The permission for residential user in industrial zones is a step in that direction. PMC is also widely promoting the proposals of IT&ITES and BT users in this zone. Also for promotion of tourism and service industries an additional FSI upto 3 has been proposed.

In conformity with the broad policies and directives laid down by the State Govt. residential use in addition to IT & ITES users has been made permissible subject to the payment of conversion charges to P.M.C.

3) Zones for the Timber Industries

This zone is located in the central congested parts of the city. There are number of timber industries and wholesale business in steel. Such activities have to deal with heavy and bulky materials, usually transported by means of heavy trucks, railway goods wagons, bullock carts etc. The lack of adequate space results into accidents, low speeds, reduced road capacities due to vehicles waiting for loading and unloading, thereby resulting in frequent traffic jams, longer detention periods of the vehicles etc.

To overcome these problems, land has been reserved for timber industries in Bibvewadi. The acquiring authority for this reservation is Pune Municipal Corporation PMC.The area has been included in the industrial zone in Sector II and has been shown in violet colour and verged in red lines on the Revised Draft Development Plan.

B) HILL TOPS AND HILL SLOPES

As per the 1987 DP, contour survey was carried out and lands which had gradients of 1 in 5 or steeper were considered as hill slopes and the lands which had enclosed by such slopes as hill tops. This zone was earmarked by fixing up this gradient on the basis of the available contour maps and nomenclature, as Hill top hill slope zone. Shown washed in olive green colour on the revised draft development Plan.

Ensuring the preparation of the Draft Development Plan detailed control surveys were carried out by PMC from Private surveys and the boundary of Hill Top and Hill slopes was finalized. The lands owned by Forest Department has been shown washed in bottle green colour on the Revised Draft Development Plan and included under " Recreational Zone".

C) RECREATIONAL ZONE

Pune is considered to be among the one of the most polluted cities in India. With a view to address these situations, sites have been reserved in sufficient nos like Children's Play-Ground, Play- Ground, Parks, Gardens.

Children's Playgrounds have been provided extensively in all the sectors.

The **Playgrounds** have been distributed suitably to enable the residents to them easily. These Playgrounds would provide the facility for all the residents and would be restricted only to the school going children as in the case of playgrounds attached to schools.

Parks have been provided to include such areas which enjoy or have potential to be developed as placed of scenic beauty, and hence some of the sites are extensive in area. **Gardens** have been distributed in different localities, for balancing the environment and the green cover.

With a view to enhancing their environmental value by conservation and development of the natural features like rivers and nallas a buffer zone is proposed as **Green belt**. Green belt can be developed as gardens or jogging tracks etc.

Sites have been proposed as riverfront development, to be developed along the river front in Aundh and water sports at Swargate.

The standard for recreational purpose is prescribed at 0.1 hectare per 1000 population for the congested parts of the city in Sector I. The short-fall in Sector –I has been made good by providing additional areas in the outer sectors. Since large space would be available for reservation on the hill slopes and hill top areas, it has been decided to provide 40 % of the standard in the lower developable areas and the balance in such higher areas. Also sites have been reserved for Children's Playgrounds/ Playgrounds/ Parks on open spaces of sanctioned layout.

D) UTILITY SERVICES

1) Crematoriums and burial ground.

It has been observed that some of the existing cremation and burial grounds are not conveniently located from some of the developed areas or areas. Additional sites have been reserved in the draft Development Plan with a view to make this facility available within reasonable distance from all parts of the city.

2) Water Supply:-

The Pune Municipal Corporation area is 147.53 sq km consisting of City, Pune and Khadki Cantonments respectively. The three areas will have to be considered not in isolation, but as one Urban Agglomeration for the purpose of ascertaining the water supply demand and planning for its provision.

The Major source of water supply is Khadakwasala dam. At present the water supply in Pune Municipal Corporation area is done by Pune Municipal Corporation, areas in the Pune and Khadkhi Cantonments are served by the Cantonment Board. Pune Municipal Corporation's water works are situated on Pune- Sinhgad Road near Parvati, Cantonment area,Khadki-Holkar,bridge Wagholi WTP, Vadgoan near Sinhagad road , Warje Malwadi WTP, Warje WTP.

There are High level Reservoirs for water supply distribution in the city, on Parvati, SNDT. hill, Chaturshringi, Ramtekdi,Thackercy hill, Bibwewadi.

New sites have been reserved for Water works, in the draft Development Plan.

3) Sewerage System:

At present there are sewerage treatment plants located at Bhairoba, Tanajiwadi, Bopodi, Erandawane, Naidu, Vittalwadi, Mundhawa, Baner, Kharadi, Kalyaninagar, Vishrantwadi mental hospital.

New sites have been reserved for Sewage works in the draft Development Plan.

4) Supply of electricity:

The Maharashtra State Electricity Board, a Government of Maharashtra Undertaking, provides electricity supply to the Pune Municipal Corporation area. As per the requirements of MSEB land has been reserved for MSEB. The acquiring authority for sites reserved for MSEB is MSEB.

C) Public & Semi Public Use (PSP):

Lands owned by Government or other public authority or Institution, educational institutions and under existing use for some or the other public purpose have been zoned as **Public and Semi-public Zone.** Users allowed in PSP Zone has been specified in development control regulation. Such sites have been coloured in pink colour in the development plan.

Under this category, sites are also reserve for public purposes and social amenities such as Primary schools, high schools, school for handicapped and spastic, Municipal Purposes, telephones, police chowki, library,community hall, planetorium, etc. These sites have been coloured in pink colour with red bound in the development Plan.

D) Fire brigade

Adequate number of sites for Fire-Brigade stations has been provided in different parts of the city at suitable locations to enable the firefighting squad to speed off from the stations in different directions within the shortest time. The facility has been provided, as required under the standards, at 1 station for 2 lakh populations within 3 km radius. In addition to the existing sites, few more sites have been designated in the Proposed Land Use Plan.

E) Traffic and Transportation

As per guidelines given by the National Urban Transport Policy (NUTP) the proposed development plan is focus on mobility of people rather

than vehicles and accordingly give priority to pedestrians, Non-Motorized Transport (NMT), all modes of public transport and IPT." The major objective of the development plan is to transform the current urban transport system into a safe, convenient and efficient transportation system.

The existing roads are shown without any colour and the new proposed roads are shown in red verge colour in the development plan. HCMTR shown in 1987 DP has been continued as it and shown in grey colour with red bound .This route would be developed to operate the rapid bus transport system initially and converted progressively later to operate the higher capacity systems, such as the trollys, trams, monorail and finally the rail based rapid transit system.

The detail project report for the study was submitted by DMRC Delhi and IIT-Mumbai.

The study recommended a high capacity rapid transit system on six alignments.

The following alignments were finalized for the Metro:

Line 1 : Agricultural College to Nigdi via Pune Mumbai Rd elevated of 16 km length

Line 2 : Agricultural College to warje Via JM and Karve Rd elevated of 8.7 km length

Line 3 : Agricultural College to Swargate and Katraj via Shivaji Rd elevated of 7 km and Underground of 5 km length

Line 4 : Agricultural College to Wagholi via Bund Garden Rd elevated of 16 km length

Line 5 : Agricultural College to Hinjewadi via Aundh elevated of 17.5 km length

Line 6 : Agricultural College to Hadapsar via Mhatre Bridge elevated of 16 km length

New sites are reserved for Parking, bus terminus, PMT Depot, PMT parking, Vehicle depot, MRTC/ST bus stop,Interchange, Metro station, these sites are shown in grey colour bound in red verge on the development plan.

11) Colour Code

The sites for different amenities as described so far, have been shown on the Revised Development Plan bounded by red verge, to denote reservation. and washed in the following colours for the respective amenities:-

Purpose	Colour code
Educational facilities	Pink
Health facilities.	Pink
Recreational facilities.	Green
Commercial Zone ,Vegetable Market	Blue
Fire Brigade	Burnt Sienna
Civic & Cultural Centres	Pink
Public & Semi Public.	Pink
Traffic and Transportation	Grey
Public utilities.	Burnt Sienna
Economical weaker Section, Housing for dishoused,Slum Improvement .	Yellow-ochre
Forest	Bottle green.
Industrial	Violet

MAJOR STRATEGIES IN DEVELOPMENT PLAN.

8) Social Amenities and Infrastructure

Social infrastructure are the facilities indicated in the Development Plan generally planned in terms of population norms, together, these include Social

Infrastructure facilities pertaining to Health, Education, Sports Facilities, Socio-cultural activities, Communications, Security and Safety, and Other Community Facilities pertaining to Recreation, Religious activities, Social Congregations and Community Events, Cremation/ Burial Grounds etc.

a) Educational facilities.

Keeping in view the fast changing national and global economic scenario,the employment and education/educational requirements are also undergoing a rapid change involving the Development of new professional and vocational avenues for specialized education.

- The educational institution premises may be permitted to function in two shifts.
- Coaching centres, computer-training institutes, physical education centres etc. would also be allowed in residential plots
- Requirement of schools and Training centres for mentally/physically challenged with differential development norms are proposed.
- Incentive FAR have been proposed to educational institutions also seats will be reserved for economically backward class students. Students shall be availed with hostel facility by provision of additional FSI for hostel facilities along periphery of 500 m from educational institutions 10% seats shall be reserved for economically backward class students.

b) Health facilities.

In order to meet the requirements of health related infrastructure, the following broad strategies are proposed:

- Shortfall in the availability of health facilities is proposed to be met through reserving for hospital,dispensary and trauma hospitals and also enhancement in FAR for various levels of health facilities.

c) Communications facilities-Post/Telegraph/Telephone

No specific site reservation to be kept in the plan, these users are permitted in all use / zones / under mixed use as per requirement except on

hills park and recreational use zone.

d) Security- Police

For maintenance of proper law and order, the security force must keep pace with the growth and development of an area.Sites have been reserved for police station and police chowkhi.

e) Safety-Fire stations

Fire services have to play pivotal role and be fully prepared in protecting people from fire hazards, building collapses, road accidents and other unforeseen emergencies etc. Sites have been reserved for Fire stations as per planning norms.

f) Cremation ground/burial ground

In proposed urban extension new burial grounds/ crematorium/ cremation grounds etc. are planned.

g) Socio-Cultural and Community Facilities

Socio-cultural activities such as auditorium, music, dance & drama centre/ meditation & spiritual centre etc. Exhibition –cum-Fair Ground have been reserved.

The Planning Norms, Standards and Development Controls for other facilities such as Old age homes, Night Shelters, Religious, etc. have also included in the development control rules.

In order to facilitate International exhibitions, Social and , Cultural recreational programs exhibitions & Public meetings, Multi purpose grounds have been reserved. To enhances and to attract tourism, site have been reserved for science center & Planetorium near Pune University. To provide facilities for the handicapped & spastic students, sites have been reserved for Spastic & Handicapped Rehabilitation center. To motivate the young generation by educating them in various fields. Sites have been reserved for youth guidance Center and Youth Training Center. This facility shall be easily available mainly to the poor and backward class. Passengers coming

from different states, places, have been provided with temporary shelters, during their short waiting period before further journey Sites have been reserved for night shelters.

9) Physical Infratructure

- The Master Plan envisages an integrated approach that packages mutually supportive infrastructure components i.e. water- sewerage-drainage for recycling, harvesting and optimal use of water; solid waste- sewerage-power for power generation, etc.
- Innovative techniques for the use of alternative technologies like solar energy, recycling, etc., are also to be encouraged.
- Technical feasibility of rehabilitation/ augmentation network of sewerage, watersupply and drainage is required on priority for old built up areas and the areas identified for redevelopment.
- Management of solid waste involves waste generation, segregation and storage; waste collection; waste transfer/ transportation; treatment, recycle, reuse, recovery; and disposal.

1) Economic development strategies

The major changes in the economic structure are due to liberalization of the economy, entry of multinational companies in the consumer sector, improved telecommunication system, increased per capita income and the purchasing power of the people.

- Commercial activities is envisaged.
- There are commercial zones, central business district, community centre,vegetable markets, civic and cultural reservations proposed in the revised 1987 Development Plan.
- Incentives in form of FSI has been provided to IT&ITES and Financial institutions.

Sites have been identified in various sectors and have been reserved for special commercial zone, business hub. The main aim to reserve sites for purpose is to motivate, commercial activity. Users like Office complex, Shopping mall, Business outlet shall be allowed. Also Parking spaces,

Godowns, central open spaces shall also be developed in business hub. Also considering the day to day needs and also motivating small commercial users special commercial zone is provided in Hadapsar & Business hub provided in TPSch in Hadapsar.

2) Environment strategies

Creation of a sustainable physical and social environment for improving quality of life is one of the major objectives of the plan**.**

* Management of Natural Resources and the related environment infrastructure
* Conservation and Development of the Natural features with a view to enhancing their environmental value
* Development and preservation of open spaces, greens and landscape/ recreational areas.

River protection is done by check on encroachment in the river bed. River protection have also been done by providing green belt as buffer along river and nalla banks. So as to protect and preserve the biodiversity life/ species. Sites have been reserved for the river front development along the river side. These stretches can be developed as boat club, with water sports activity, jogging tracks, cafeteria with large recreational spaces.

Sites have been reserved for parks, amusement parks,gardens, nalla gardens, etc. Sites have also reserved for sports activities like playgrounds, children playgrounds, stadiums etc

5) Conservation of Heritage buildings and Tourism.

Built heritage of Pune needs to be protected, nourished and nurtured by all citizens and passed on to the coming generations.

- Framing of policies for promotion of conservation of the civic and urban heritage, architecturally significant historical landmarks, living monuments, memorials and historical gardens, riverfront, city wall,

gates, bridges, vistas etc.

- Listing of Heritage Buildings based on the following criteria:
  (a) The age of the building;
  (b) Its special value for architectural or cultural reasons or historical periods
  (c) Its relevance to history
  (d) Its association with a well-known character or event.
  (e) Its value as part of a group of buildings
  (f) The uniqueness of the building or any object or structures fixed to the building or forming part of the land and comprised within the curtilage of the building.
- Prepare guidelines for development, redevelopment, additions alterations, repairs, renovations and reuse of the heritage buildings.
- Implementing programmes for education and awareness.

HERITAGE ZONES

Heritage Zone is an area, which has significant concentration, linkage,or continuity of buildings, structures, groups or complexes united historically or aesthetically by plan or physical development. 100m wide belt along the shaniwar wada has been identified as Heritage Zones.

Heritage walk has been proposed from Shaniwarwada to Vishrambag wada. Sites can be developed for gardens, playgrounds, parking in plots in restricted area around Shaniwarwada.

10) Traffic & Transportation

The broad aim of this would be to ensure safe and economical commuting between place of origin and destination, convenient and quick access to all areas for all sections of the society, reduction of pollution and congestion, energy efficiency and conservation, safety for all sections of the road and transport users and, towards meeting these objectives, providing a

significant increase in efficient rapid public transport systems and facilities with a corresponding reduction in individual private transport usage. This is in addition to pedestrianisation and properly planed use of non-mechanised transport systems in specific areas.

Access provisions for the physical challenged should be made from the street to overcome curb heights, rain water gratings etc. Parking spaces close to the entrance should be reserved for physically challenged.

- Planning of new road network in such a manner as to prevent possibilities of future congestion by modifying road sections to accommodate road side parking, and space for widening, expansion and provision of grade separators, etc.
- Developing an integrated relationship between the road, rail and metro-system to provide for seamless multi-modal transport.

a) Urban roads

The proposed roads are classified taking into account the land use pattern and road system hierarchy with recommended right of ways as follows:

1. National Highways

- The right of way of national highway is 60m.

2. Arterial Roads

- The inter city roads having width more than 30m.
- These roads can be provided for public mass rapid transport system which may include BRT.
- Cycle tracks are also considered to be developed along these roads.

3. Sub-Arterial Roads

- The inter-city roads having width more than 15m upto 30m
- These roads connect major arterial roads, and intend to collect traffic from local streets within residential units.

4. Local roads

- These are the all roads less than 15m with dominant function is to provide local connectivity within the same neighbourhood unit.
- These roads can be developed for pedestrian and bicycle friendly with road design to keep the speed within limits.

New missing links are being proposed, development of major arterials in the outer-city area, capacity augmentation of these roads are also considered. New bridges/bypass, flyovers, subways have been developed and also proposed. Subways/ foot over bridges should be provided at appropriate locations at grade separator for safe and smooth passage of pedestrians etc.

In order to minimize traffic congestion and increase speed with reduction in travel time three new tunnels have been proposed.

1)From tulsibaug wale colony to Pul- Deshpande Udyan Sinhagad Rd.

2) Gokhale nagar Mafco to Panchavati, Pashan.

3) Sutardhara Kothrud to Panchwati Pashan.

b) Mass transport system

1) Commuter rails/LRTS/ Metro

The following alignments were finalized for the Metro:

Line 1: Agricultural College to Nigdi via Pune Mumbai Rd elevated of 16 km length

Line 2: Agricultural College to warje Via JM and Karve Rd elevated of 8.7 km length

Line 3: Agricultural College to Swargate and Katraj via Shivaji Rd elevated of 7 km and Underground of 5 km length

Line 4: Agricultural College to Vagholi via Bund Garden Rd elevated of 16 km length

Line 5: Agricultural College to Hinjewadi via Aundh elevated of 17.5 km length

Line 6: Agricultural College to Hadapsar via Mhatre Bridge elevated of 16 km length

2) High Capacity Mass Transportation Route.

- HCMTR route is proposed along 34 km out of which HCMTR route of 24m wide proposed.
- The route is proposed to be used only for operating the mass transportation system.
- This route would be developed to operate the rapid bus transport and rail based rapid transit system.

3) Public Transport

- The main motive of BRTs is to wean people from private vehicles to public transport.
- Major Connecting routes feed the spine routes of BRT in terms of passengers.New routes for BRTS has been proposed.
- Fleet augumentation of public transport
- Increase the speed and capacity of the public transportation system by way of dedicated public transport corridors.

c) Bus Terminals

There are four major bus terminals in Pune namely Shivaji nagar, Pune Railway station, Swargate and Pune Municipal Corporation.

- Access roads leading to these bus terminals are proposed to be widened and free from encroachment by hawkers, shop keepers and parked vehicles.
- Facilities with in bus terminals in terms of bus bays, boarding alighting platforms and circulation can be provided.
- New Bus Terminals have been proposed at Bibwewadi, Parvati, Pashan, Yerawada, Sangamwadi, Lohegoan, Mula road.

d) Rail

- The Pune station is the major railway junction in the city.All national and intercity trains are attracting passengers from this junction.
- There are also other railway stations at Khadki, Shivajinagar and Hadapsar.

e) Truck terminals

- The truck terminals have been already proposed in the Development Plan of the 23 villages at Kharadi, Baner.
- Truck terminals sites can be identified on the periphery of city along the ring road under consideration.
- Heavy traffic for transport of freight shall not be permitted to enter the city during day time.

f) Intermediate public transport (IPT)

- Rickshaw stands are being provided on major traffic junctions, townships, neighbourhoods, hospitals, bus stands, railway stations airport etc.

g) Inland water facilities

- Mutha river can be used for navigation from Rajaram bridge Karvenagar to Kharadi i.e total length of 16 km.
- The water level in the river shall be maintained for navigation also beautification is proposed along the river bank.

h) Traffic improvements

Traffic management can be achieved to ensure that the hierarchy of road operates as effectively and safely.

i) Junction improvements

- Junctions are widened so as to ease vehicular movement.
- The turning radius is also increased to improve visibility.

- Islands have been proposed which will help traffic move in an orderly pattern.
- Proper storm water drains to be provided to reduce water logging at junctions.

j) Traffic Segregation

- To reduce accident risk and increase level of service central medians are to be provided on mobility corridors.
- Bicyclists and pedestrians are more efficient users of scarce road space than private motor vehicles, helping to combat congestion.
- Bicycling and walking are the most efficient and environmentally sustainable means of making short trips.

k) Parking (Off-street / On-street)

- Easier access of work places to and from such parking spaces can encourage the use of sustainable transport systems like BRT, Metro etc.
- On-street and off-street parking areas are to be designated through design and signage.
- Park and ride facilities for bicycle users with convenient interchange can be provided.
- Underground parking facilities can be created under the open spaces without disturbing the green areas on the surface and surrounding environment.

l) Road Information System

- Proper signages to be shown with street furniture.

m) Intelligent Transport System

- Installation of Automatic Traffic Control devices at the junctions which will be synchronized with the other junctions in the near by areas is proposed.
- Intelligent transport system users can obtain real-time dynamic traffic information online, various kinds of road events, like traffic block,

construction, signal break, disaster, accidents, sites to identify waterlogging on roads etc.

n) NMT management

- Continuous and safe NMT lanes with adequate crossings are essential throughout the city.
- Ample parking facilities for NMTs are provided at all MRTS stations.
- Cycle tracks can be developed on Arterial and Sub arterial roads.
- New cycle tracks are also proposed along the Mutha right bank canal also from race course to Hadapsar.
- Cycle tracks would be proposed with landscaping, cycle stands, water drinking facilities,toilet facilities etc.

o) Pedestrian friendly city

- Major work centres, where large number of pedestrian networks emerge and culminate should have enhanced facilities for the pedestrians.
- Pedestrian networks affect spaces in a very distinctive way. Establishment of pedestrian networks in any area reveals its vitality.
- Where grade separated facilities cannot be provided at-grade facilities such as zebra crossings, striping, pedestrian flashing signals etc would be provided.
- To encourage and cater to walking trips footpaths must be installed on all roads without any exception.
- Pedestrian zones with sky walk have been identified.

p) Road signages and safety

- Safety of road users shall be one of the prime consideration while planning / designing of road network and infrastructure.

- Markings of zebra crossing,lanes,parking lanes, traffic signages are to be provided on roads.
- Road signs are classified into three categories: Mandatory/Regulatory signs, Cautionary/Warning signs, and informatory signs.

11) Housing strategies.

Housing has a strong spatial relationship to employment, social services and other urban activities. the policy for development of housing could act as major tool for influencing the efficiency and equity of urban areas, besides its direct role in the provision of shelter.

Based on the projected population of 33.56 lakh by 2027(old limit PMC), the estimated additional housing stock required will be around 6.58 lakh dwelling units.

A large number of areas are old and are characterized by poor structural condition of buildings, sub-optimal utilisation of land space, congestion, poor urban form, inadequate infrastructure services, lack of community facilities, etc. The housing stock in both planned and unplanned areas can be enhanced through various approaches.

- Redevelopment of core area in city
- Cluster development
- Land reserved for economical weaker section, housing for the dishoused.
- Encouragement for generating affordable housing stock by giving incentives in development control rules.
- Redevelopment of existing MHADA colonies
- Provision of premium FSI
- Densification along MRTS corridor/influence zone
- Promotion of Integrated development of townships

Housing for the slums

- Land reserved for economical weaker section, housing for the dishoused and slum improvement.
- Policies for redevelopment/rehabilitation of existing slums through SRA,Appendix-T.
- Housing Development for rehabilitation of slums under BSUP, RAY.etc.

Implementation of Development Plan

Total Cost of the Plan

A Development Plan is supposed to entail all proposals of reservations and roads which need to be provided to cater to the needs of citizens. The reservation have been worked out based on the projected population of 2017 and the land use and Zoning proposals have been worked out based on the projected population of 2027. Acquiring the sites under proposed reservations and roads and development of the same for the designated purpose is essential so as to benefit the end user, that is the citizens.

The Cost required for acquisition has been worked out by referring to the values of land that is land cost, as mentioned in the Ready Reckoner 2011. The Cost of development is worked out by taking into consideration the cost that is incurred on developing site eg- Road, Building, Bridge, Tunnel, Garden, Play Ground etc. as in the year 2010-2011. Those proposals which have been earmarked on Government lands would require no cost to acquire but only certain cost to develop. For the proposals which have been earmarked specifically for different Authorities on their demand, both the cost of acquisition and development will be borne by the concerned Authority and as a result there will be absolutely no load on the PMC.

FINANCIAL FEASIBILITY ANALYSIS OF THE IMPLEMENTATION OF THE DRAFT DEVELOPMENT PLAN.

As is seen from the statements, the total cost of the Draft Development Plan is Rs. 25,806.07 Crores.. A detailed cost of acquisition & development of reservations, roads, tunnels, flyovers, buildings etc. has been worked out. Adequate deductions were then made for provisions made in the Development Control Regulation, such as Accommodation Reservation, TDR, Amenity Spaces use of FSI of reservation & Development TDR, mechanism of PPP and BOT etc.

The present sources of income of PMC and the once suggested newly were considered. This includes, Development charges and Premium charges, Premium FSI, Central Government finding and other grants for projects, funding under DPDC. The same were considered for a period of Ten Years. The total provision in PMC Annual Budget was worked out as Rs. 3570.96 crores over a period of ten years. This implies that every year a provision of Rs.357.96 crores has to be made in the PMC budget to meet the cost of acquisition and development of amenities proposed in the Development Plan.

FINANCIAL FEASIBILITY ANALYSIS OF IMPLEMENTATION OF DEVELOPMENT PLAN

(I) SCHEDULE OF EXPENDITURE

SR.NO.	DESCRIPTION	RS IN CR	REMARKS
1	RESERVATION SITE ACQUISITION	6739.08	
2	RESERVATION SITE DEVELOPMENT	8652.99	
3	ROAD ACQUISITION	6870.67	
4	ROAD DEVELOPMENT	2770.34	
5	DEVELOPMENT OF TUNNELS, BRIDGES & FLYOVERS	773.00	
	TOTAL COST	**25806.07**	
LESS	COST OF RESERVATIONS TO BE DEVELOPED **UNDER APPNDX. R** OF DC RULE.	2141	AS PER PROVISIONS IN DCR
LESS	COST OF ACQUISITION OF RESERVATIONS THROUGH **TDR, AMENITY SPACES & FSI**	4684.86	R7 COMPONENT EXCLUDED
LESS	COST OF DEVELOPMENT OF ROADS & RESERVATIONS THROUGH **DEVELOPMENTAL TDR**	1142.33	
LESS	COST OF ACQUISITION OF ROADS U/S **N2.3 AND TDR**	5496.53	
LESS	COST OF DEVELOPMENT OF RESERVATION THROUGH MECHANISM OF **PPP AND BOT** 5%	369.75	R7 COMPONENT EXCLUDED
	TOTAL COST SAVING	**13834.48**	
	NET EXPENDITURE	**11971.59**	

(II) SCHEDULE OF REVENUE

SR.NO.	DESCRIPTION	AV.PER YEAR RS.IN CR	PERIOD OF IMPLEMENTATION	TOTAL REVENUE RS. IN CR
1	DEVELOPMENT CHARGES & PREMIUM CHARGES	285.71	10	2857.09
2	PREMIUM FSI	250.83	10	2508.30
3	CENTRAL GOVERNMENT FUNDING & OTHER GRANTS FOR PROJECTS	10.00	10	100.00
4	GRANT OF STATE GOVT. UNDER DPDC AT 23.33% OF THE TOTAL DEVELOPMENT COST & OTHER GRANTS			2935.24
5	PROVISION IN ANNUAL BUDGET OF PMC		10	3570.96
			TOTAL REVENUE	**11971.59**

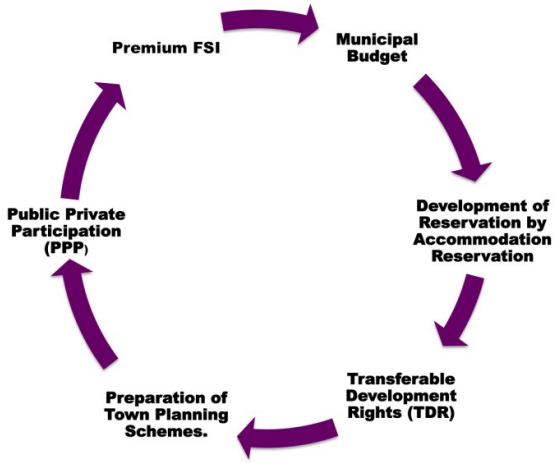
PHASE I (FIRST 4 YEARS)				
LANDUSE	**NO**	**AREA (Hectare)**	**LAND COST (Rs. Crore)**	**DEV COST (Rs. Crore)**
Commercial	36	16.55	216.99	293.5
Education	48	29.53	216.53	575.47
Health	22	15.26	163.3	384.42
Other	31	44.98	168.62	418.6
PG,CPG,MPG etc	96	71.84	555.79	205.56
Public Housing	21	43.66	322.19	1155.18
Garden and Parks Etc.	35	110.18	491.32	205.93
Services	24	12.35	100.32	94.68
Traffic & transportation	47	27.95	149.45	218.22
Total	360	372.3	2384.51	3551.56

PHASE II (NEXT 3 YEARS)				
Landuse	**NO**	**AREA (Hectare)**	**LAND COST (Rs. Crore)**	**DEV COST (Rs. Crore)**
Commercial	28	11.13	118.1	198.72
Education	31.67	31.67	258.31	631.58
Health	10	3.2	32.28	74.84
Other	44	21.54	165.61	335
PG,CPG,MPG etc	65	62.12	386.84	111.95
Public Housing	19	56.02	240.54	1015.28
Garden and Parks Etc.	27	133.85	1045.01	180.61
Services	15	11.47	53.66	84.42
Traffic & transportation	55	30.95	194.13	201.01
Total	294.67	361.95	2494.48	2833.41

PHASE III (NEXT 3 YEARS)				
Landuse	**NO**	**AREA (Hectare)**	**LAND COST (Rs. Crore)**	**DEV COST (Rs. Crore)**
Commercial	26	13.62	59.55	183.69
Education	15	15	69.68	248.54
Health	8	4.78	42.65	99.28
Other	20	34.66	64.83	113.28
PG,CPG,MPG etc	58	68.21	541.79	118.37
Public Housing	20	71.53	540.1	1205.56
Garden and Parks Etc.	24	98.12	405.18	130.59
Services	12	5.63	57.95	76.8
Traffic & transportation	27	10.62	78.36	91.91
Total	**210**	**322.17**	**1860.09**	**2268.02**

PHASE (I+II+III) (TOTAL 10 YEARS)				
Landuse	**NO**	**AREA (Hectare)**	**LAND COST (Rs. Crore)**	**DEV COST (Rs. Crore)**
Commercial	90	41.3	394.64	675.91
Education	94.67	76.2	544.52	1455.59
Health	40	23.24	238.23	558.54
Other	95	101.18	399.06	866.88
PG,CPG,MPG etc	219	202.17	1484.42	435.88
Public Housing	60	171.21	1102.83	3376.02
Garden and Parks Etc.	86	342.15	1941.51	517.13
Services	51	29.45	211.93	255.9
Traffic & transportation	129	69.52	421.94	511.14
Total	**864.67**	**1056.42**	**6739.08**	**8652.99**

Financial Implications and different modes of effective implementation of plan



Modes of effective implementation of Plan

The Development Plan consists of proposals in respect of various social amenities, sites for public purposes and for Government and semi government departments, etc. Due to constraints of funds, the development of infrastructure at each site cannot be the sole responsible of the Planning Authority.

Different modes for effective implementation of plan

Govt. has made various enabling provisions in the Town Planning Act for implementation of various proposals in Development Plan. Besides, there are various schemes introduced by the Govt. to help the municipal corporation to take initiative in implementing the Dev. Plan proposals

A) Municipal Finance

B) Levy of Development Charges as per MR&TP Act 1966

C) Funding under Government Grants and JNNURM Projects

D) Development of reservation under Accommodation Reservation

E) Transferable Development Rights (TDR)

F) Developmental TDR

G) Levy of premium for additional benefit as per dc rules

G-1) Premium FSI

H) Preparation of Town Planning Schemes

I) Public private participation in implementation (PPP)

J) Development of Road by Private Parties in lieu of Credit Notes

OTHER FISCAL PROPOSALS:

With a view to augment the financial resources of the Corporation, in order to execute the Development Plan more efficiently, the Planning Authority would take actions as under:-

1) Land Revenues

a) N. A. Tax

b) Stamp Duty

2) Profession Tax

3) Entertainment Tax

4) Road Tax

5) Petrol Cess

6) Road User Charges

7) General Tax

8) Grant for Central / State Government for major projects in the City

9) FINANCIAL ASSISTANCE FROM THE GOVERNMENT FOR OTHER PROJECTS:

10) PARTICIPATION OF SOCIAL ORGANIZATIONS & INDIVIDUALS

RECOMMENDATIONS FOR IMPLEMENTATION

1) With a view to ensure speedy implementation of development plan, it is thought to make an important recommendation on the lines of Maharashtra Housing and Area Development Act 1976. It is recommended to modify section 31 of the Maharashtra Regional and Town Planning Act 1966 by including " On the day of publication of notification indicating the sanction of development plan by the state government, all the lands under roads and reservations shall vest absolutely with the planning Authority, free from all encumberances.

2) URBAN TRANSPORTATION DEVELOPMENT FUND

Infrastructure development for efficient functioning of transport system is a capital-intensive process and a substantial financial burden would have to be shouldered by the government. The state government or the local bodies do not have the required resources for financing such developments, thus resulting in an indefinite delaying the projects. The Central Government in the National Urban Transport Policy (NUTP) has recommended levy of direct taxes that would be credited to the account of the 'Urban Transport Fund' and used exclusively to meet the urban transportation needs.

NUTP has further specified that such direct taxes could be in the form of a supplement to the petrol and diesel taxes, betterment charges on landowners or even in the form of employment tax on employers. Such provisions will also result in making private vehicular transport more expensive and result in a shift towards use of public transport systems.

This will enable the implementation of proposals in the Revised Draft Development Plan. This will also ensure positive effects on the travel pattern, control on the use of private modes of transport, reduction in congestion and accidents on roads and making journeys of the common man more comfortable and enjoyable.