9. Mobility Plan Investment Program

9.1 Investment Requirements & Funding Options

Accurate estimation of urban transportation expenditure is a difficult task as the transportation infrastructure for urban area is implemented by various agencies such as Local Planning Authorities/ Development Authorities, Urban local bodies, NHAI/State Highways/PWDs, Traffic Police etc.

According to the Eleventh Five Year Plan Working Group Estimates, the total financial requirements for 1 – 4 million cities are forecasted to be approximately Rs. 930 crores/ city. This excludes the cost for modern buses.

The comprehensive traffic and transport study conducted by Span Consultants in 2003 for Pune City have indicated a total funding requirement of 488.32 crores for Pune City.

Based on the CMP elements discussed in the previous sections the consultants have estimated approximate cost estimate for implementing the elements of CMP. Summary of the costs is presented in **Table 9.1**. From the above table, it is evident that the approximate capital cost for complying the CMP for Pune City is Rupees 19,300 Crores. At least 60% of the total investment will be required for developing public/mass transit systems. Including the land acquisition cost, the total expected approximate investment accounts about 22,700 Crores (**Table 9.2**). The estimated investment of the urban transport sector is phased from 2008 to 2030, with five phases 2008- 2010, 2010- 2015, 2015-2020, 2020- 25 and 2015-2030. The first phase focus mainly on traffic management measures, BRT / augmenting public transport, etc. Other long term projects are phased according to the demand estimated by the model. The proposed investment work program for CMP is presented in **Table 9.3**. There is a need to rigorously evaluate all such proposals and compel a complete and thorough evaluation of other technological alternatives (Alternate Analysis).

Table 9.2 Total Investment including land acquisition

No.	Item	Rs. In Crores
1	Capital Cost	19300
2	Land Acquisition Cost	3400
3	**Total Cost (rounded off)**	**22700**

Table 9.1: Summary of suggested CMP based Transport Investment Program

All costs in Rs. In Crores

No	Item	Total Quantity	Unit	Unit Rate	Cost	2008- 2010		2010 – 2015		2015 - 2020		2020 - 2025		2025 - 2030	
						Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost
1	Bus Augmentation	1750		0.5	875	1750	875								0
2	BRT	151.6	Km	12.0	1819.00	151.6	1819				0		0		0
3A	Metro	11.5	Km	140.0	1610.00					11.5	1610		0		0
3B	Metro (underground)	2.5	Km	280.0	700.00					2.5	700				0
4	Monorail	66	Km	70.0	4620.00		0	19.8	1386	19.8	1386	26.4	1848		0
5	Inland water		LS		550.00				0		550.00		0		0
6	Pedestrian Subways	60	No.	5.0	300.00	18	90	12	60	12	60	12	60	6	30
7	Footpaths	500	Km.	0.5	250.00	500	250		0		0		0		0
8	Pedestrian Plaza		LS		50.00		50.00		0		0		0		0
9	Bridges	25000	Sq.m	12000	30.00	25000	30		0		0		0		0
10	Outer Ring Road	169.73	Km	-	6065.00		0	169.73	6065		0		0		0
11	Flyovers /Underpass	24	Lane Km	4.0	96.00		0	24	96		0		0		0
12	Road & Shoulder Improvement	400	Lane Km	2.0	800.00	400	800		0		0		0		0
14	ITS		LS		100.00				40		20		20		20
15	Junction Improvements	50	No.	0.25	12.50	50	12.5		0		0		0		0
16	Parking Structures	20	No.	5.0	100.00		0	12	60	8	40		0		0

No	Item	Total Quantity	Unit	Unit Rate	Cost	2008- 2010		2010 – 2015		2015 - 2020		2020 - 2025		2025 - 2030	
						Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost
17	Traffic Management measures (Signage and Marking)	600	Km	0.2	120.00	180	36	120	24	120	24	120	24	60	12
18	Truck terminals	5	No.	1.5	7.50		0	5	7.5		0		0		0
19	RAAS & RMMS		LS		4.00		0		4.00		0		0		0
20	Airport Connectivity (monorail)	15	Km	70.0	1050.00		0	15.0	1050		0		0		0
21	Inter modal Transfer Stations	4	No.	8.0	32.00		0	0	0	2.4	19.2	1.6	12.8		0
22	Station Area Improvements		LS		10.00		10.00		0		0		0		0
Total (rounded off)					**19300**		**4000**		**8800**		**4400**		**2000**		**100**
%					**100%**		**21%**		**46%**		**23%**		**10%**		**1%**

Note: Basis for unit rates is presented in Appendix 9.2 - Table 9.2.1

Table 9.3 Proposed Investment Work Program for CMP

Sl. No.	Item	2008	2010	2015	2020	2025	2030
1	Bus Augmentation						
2	BRT						
3A	Metro						
3B	Metro (underground)						
4	Monorail						
5	Inland water						
6	Pedestrian Subways						
7	Footpaths						
8	Pedestrian Plaza						
9	Bridges						
10	Outer Ring Road						
11	Flyovers /Underpass						
12	Road & Shoulder Improvement						
14	ITS						
15	Junction Improvements						
16	Parking Structures						
17	Traffic Management						
18	Truck terminals						
19	RAAS & RMMS						
20	Airport Connectivity (monorail)						
21	Intermodal Transfer Stations						
22	Station Area Improvements						

9.2 Funding Needs

To meet the transport needs of the future, investment requirements will increase to levels three to four times higher in real terms from the present levels. The financing of this level will be a massive task. While the government will continue to be a major source of funds for infrastructure, internal generation of resources by the sector itself will have to increase. Pricing of transport services and reduction in the costs will have to play a much bigger role than in the past. A larger role of the private sector is also visualized. In a maze of subsidies and social service obligations public sector transport has lost the importance of commercial operations. Urban transport Policy of the Ministry of Urban development clearly indicates the areas and levels of possible government support in 'planning to implementation of urban transport components'. There are certain areas of urban transport components that different stakeholders can participate so that the required funding and responsibilities can be shared with suitable coordination and regulation mechanism. Considering the funding pattern, legal aspects, implementation capacity, return potential, risks associated etc., urban transport components can be grouped for implementation.

Projects in the study area can be implemented by:

- Local bodies
- Local bodies with the fund support of State and Central governments
- Local bodies with the fund/technical support of multilateral funding agencies
- State or Central governments
- Local bodies with the support of private participation
- Private participation

9.2.1 Implementation Mechanism

The possible areas of the urban transport projects for various implementation agencies are presented in **Table 9.4**. Low capital intensive with moderate technical requirements and high social responsibility projects can be taken up by ULBs. High capital intensive and more technical required projects like MRTS, LRTS, and structural projects shall be through the co-operation of State and Central governments on SPV format (eg; Metro in Delhi). Projects with overlapping responsibilities but with high return potentials with less risk and less gestation period shall be through private sector by BOT/Annuity formats. Private sector participation will be in the areas of high profitability with less/medium risks. Hence it is necessary to identify the appropriate areas for different types of private sector participation for implementing urban transport components.

Private sector involvement in urban transport component can be the following forms:

- Projects with social responsibility on sponsorship pattern (eg: improvement and maintenance of junctions).
- Annuity format of BOT projects which have less return potentials and high capital intensive (eg: Development and maintenance City Roads in Trivandrum City).
- Commercial projects BOT projects (eg: Coimbatore Bypass in Tamil Nadu, Bridge connecting Wellington Island and Mattancherry in Kochi in Kerala).
- PPP for urban bus services: The PPP model for Indore city bus operation is one such example.

Table 9.4: Possible areas of urban transport projects for various Implementation agencies

Urban transport components	Potential Role Players /Agencies						
	ULB	State	Central Govt.	Multilateral Funding Agencies	Private Sector Sponsorship	Private Sector(Annuity)	Private Sector (BOT)
i. Urban Roads							
1.Intra-city road network(Capacity augmentation , new links)		●	●	●			
2.inter city roads (Bypasses, Development of major arterials in the outer city area		●	●	●			●
3.corridor development for major arterials within city						●	●
4. Flyovers .ROB/RUB, Underpasses, Pedestrian subways etc		●	●	●			

Urban transport components	Potential Role Players /Agencies						
	ULB	State	Central Govt.	Multilateral Funding Agencies	Private Sector Sponsorship	Private Sector(Annuity)	Private Sector (BOT)
ii Traffic Improvements							
1. Junction Improvements	●	●	●	●	●		
2. Parking (On-street)	●				●		
3. parking (Off-street)							●
4. Road Information System	●			●			●
5. Bus stops	●						●
iii Road safety							
1. Signage	●	●		●			
2. Training and Education		●	●	●			
3. Accident information system	●	●					
4. Trauma care facilities		●	●	●			
5. Management of accident prone areas	●	●	●				
6 Street lighting	●					●	
iv. Mass transport system							
1 MRTS/LRTS	●	●	●				
2.BRTS	●	●	●				
3.Bus Transport system (Intra-city)	●	●					●
4 Bus Transport system (Inter-city)		●					●
5 Inland water transport		●					●
6 Intermodel transfer facilities		●					●
v. IPT							
1 Regulations (licensing, parking, routing etc)	●						
2.Terminals	●			●			●
vi. Non-Motorised Vehicles							
1 Regulations (licensing, parking, routing etc)							
2.Terminals							
vii. Pedestrian facilities							
1. footpaths	●	●		●			
2 pedestrian Zones	●	●					
3. Pedestrian Crossing facilities	●	●					
viii. Urban Transport Planning & Operation Data							
1. Urban Road Information System			●			●	
2. Data Collection			●			●	
3. Collection& Management			●			●	
4. Planning & research activities		●	●	●			
ix. Road side Environment							
1. Drains	●	●				●	
2. Regulation Of Advertisement/Billboards/posters	●						

Urban transport components	Potential Role Players /Agencies						
	ULB	State	Central Govt.	Multilateral Funding Agencies	Private Sector Sponsorship	Private Sector(Annuity)	Private Sector (BOT)
3. Management of open spaces	●						
x. Terminals							
1. Rail			●				●
2. Bus(Inter-city/Intra-city/Tourist etc)	●	●					
3. IPT	●						
4.Circulation pattern	●						

The possible implementation mechanism is presented in Figure 9.1. The Corporation/ the Central and State government / Multilateral Funding Agencies will continue to be a major source of funds for infrastructure (about 65% of the capital cost). The funding can be through budgetary support, JNNURM funds, etc. It is found that about 35% of the investment can be undertaken through various forms of private participation, such as BoT, Annuity, sponcership, etc. Projects with overlapping responsibilities but with high return potentials with less risk are considered by private sector by BOT/Annuity formats.

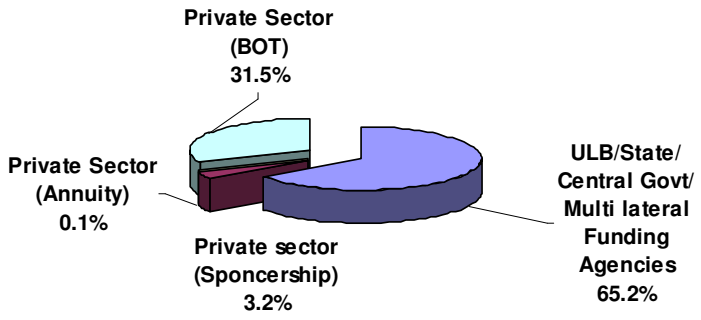

Figure 9.1 Possible Implementation Mechanisms