CHAPTER 18

CONCLUSIONS

18.0 Bangalore metropolis, the silicon valley of India, has experienced phenomenal growth in population in the last two decades. Its population has increased from 2.92 million in 1981 to 5.67 million in 2001. With its present population of about 6 million, Bangalore is one of the fastest growing urban agglomeration of the country. Bangalore, however, still lacks an efficient public mass transport system. As a result, the number of motor vehicles has increased from 1.17 million in 1981 to 1.56 million in 2001. This large population of motor vehicles is causing extreme congestion on the city roads, slowing down of average speeds, fuel wastage, environmental pollution and an un-acceptable level of road accidents. On an average, about 21 road accidents occur every day, resulting in two persons killed and 19 injured.

18.1 Detailed traffic studies carried out for Bangalore have indicated that at least two corridors in this city — an East-West Corridor and a North-South Corridor — will be carrying peak hour peak direction traffic (phpdt) to the extent of 20,000 passengers in 2007. Road buses can optimally carry a maximum of 10,000 phpdt. Provision of a metro rail system in Bangalore city has, therefore, become an inescapable necessity.

18.2 Metro rail systems are superior to buses because they provide much higher carrying capacity, require only 1/5th energy per passenger km compared to road-based systems, cause no air pollution, occupy no road space if underground and only about 2 metre width of the road if elevated, carry the same amount of traffic as 7 lanes of bus traffic or 25 lanes of private motor cars, are more reliable, comfortable and safer than road-based systems and reduce journey time by anything between 50% and 75% depending on the road conditions. In view of this position, Bangalore Metro should not be delayed any further. An exercise has been carried out to assess the cost of delay in taking up Bangalore Metro project. This exercise indicates that each day's delay in taking up the project would escalate its cost by Rs. 47 lakhs a heavy price to pay for delaying decisions.

18.3 Experience of implementing Delhi Metro project has shown that a Special Purpose Vehicle (SPV), vested with adequate powers, is an effective organisational arrangement to implement and subsequently operate and maintain a metro rail project. An SPV should, therefore, be set up for Bangalore Metro and registered under the Companies Act, 1956. This SPV should be patterned on the lines of Delhi Metro Rail Corporation Ltd. (DMRC), with equal Equity participation by the State and the Central Governments and may be named as 'Bangalore Metro Rail Corporation Ltd.' (BMRC). It will have equal number of Directors on its Board from these two Governments. While the Managing Director of BMRC should be the nominee of the State Government, its Chairman should be the Secretary, Ministry of Urban Development & Poverty Alleviation, as the nominee of the Central

Government to ensure full involvement and support of the Central Government in the project. In order to avoid delays usually associated with bureaucratic process of decision making, the Board of Directors (BOD) of BMRC should be vested with full powers needed to implement the project. The BOD, in turn, should delegate adequate powers to the Managing Director to enable him to take all decisions in day to day matters.

18.4 For the successful implementation of Bangalore Metro project, it is essential that the Managing Director of BMRC should be very carefully chosen. The Managing Director should be a technocrat of proven track record and impeccable integrity. He should be preferably with a railway background since metro projects are with rail-based complex technology. A metro rail background with experience in underground and elevated construction would be most desirable. If the project is to be completed as scheduled and without any time or cost over-run, it would be necessary to allow the Managing Director to function without any bureaucratic or political interference. For ensuring accountability the tenure of the MD should be at least 5 years.

18.5 On receipt of the Detailed Project Report, following advance action would need to be taken urgently for implementing the Bangalore Metro project:

- Approval and acceptance of the Detailed Project Report by Karnataka State Government and the Central Government and both Governments committing to the investment decision.

- Signing of an MOU between Karnataka State Government and the Central Government for firming up arrangements for equity, interest free subordinate debt and other related items pertaining to this project. A draft for the MOU is already with the Governments.

- Setting up of a Special Purpose Vehicle (BMRC) for implementing the project and posting of its Managing Director.

- Providing legal cover for construction as well as operation and maintenance stages of the project.

- The two Governments to jointly decide on the financing of the debt portion of the project and also to the time frame for completing the project.

18.6 An implementation plan for Bangalore Metro project has been discussed in Chapter 14 of this Report. If the actions listed in the above para are taken promptly by the two Governments, it should be possible to start physical work on this project in the financial year 2003-04 itself. The first 7 km long section from Baiyappanahalli to Cricket Stadium of the East-West Corridor of the project can be commissioned for traffic within three years and the remaining portion of this Corridor as well as the North-South Corridor in the next two years.

18.7 Procurement of rolling stock is generally the most critical activity in metro commissioning. Energy efficient, light weight and reliable rolling stock are required to be made available in time for starting integrated trials before commercial opening. Imported rolling stock are generally very expensive. It is strongly recommended that the rolling stocks required for the Bangalore Metro project are procured from M/s BEML, which agency will have the required facilities and capability for indigenous manufacture on account of the transfer of technology that would take place during the manufacture of metro coaches for Delhi.

18.8 For successful implementation of any metro project, which by its very nature is highly technical and complex, huge in size and to be executed in difficult urban environments, there should be a political will and commitment. The decision making process has to be fast and the implementing agency must have the required work culture, commitment to targets, commitments to safety, quality and cost consciousness. Any time overrun will have disastrous consequences by way of serious cost overruns.

18.9 Metro projects are highly capital intensive. On account of the high costs involved and the need to maintain a fare structure within the affordable reach of ordinary citizens, metro projects are not ordinarily financially viable. But considering the overwhelming economic gains to the society and the fact that cities with a population of more than five million cannot just survive without an efficient metro system, we strongly recommend the Bangalore Metro system to be taken up for implementation in the financial year 2003-2004 itself.

18.10 Capital cost of Bangalore Metro project at April, 2003 prices has been estimated at Rs. 3970 crores. Taking the element of escalation into account during construction period, its completion cost comes to Rs. 4379 crores. The interest during construction on loan for this project comes to Rs. 610 crores. Thus the completion cost of the project including escalation and IDC is Rs. 4989 crores. Taking into account surety of Rs.494 crores (equivalent to 8.5% of interest on loan during construction period), assumed in Chapter 15 on financing options the completion cost will get reduced to Rs. 4495 crores on which FIRR + EIRR have been worked out. The FIRR of the project is 3.16% and EIRR is 22.3 %.

18.11 This DPR is for first phase only. Bangalore being one of the fastest growing urban agglomerations of the country will need a bigger metro network. The two corridors proposed in phase I will require to be extended and two more corridors will need to be provided within the next 10 years. It is recommended that the State Government should get a Master Plan prepared for Bangalore Metro so that all future constructions can be taken up as per this Master Plan.

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