CHAPTER 17

MULTI MODAL TRAFFIC INTEGRATION AT METRO STATIONS

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17.1 INTRODUCTION

The Metro Transport Network in Nagpur will cover a length of approximately 39 kms. It will be augmented through enhanced flexibility of criss-cross interchanges to other modes and reduce the travel time of commuters. While Metro provides a high capacity corridor to carry the passengers, the need for integration of with other secondary/intermediate transport modes is getting highlighted more than ever to ensure a seamless transfer. This concept is to provide at least first mile and last mile connectivity to the commuters with in their places of stay. According top priority to this issue, MoUD has laid down policy guidelines to include the need and provisioning of all public, IPT and private modes in the DPRs for the Metro Systems. (*Ref: MoUD (Urban Transport Wing) Advisory Circular no. K-14011/1/2007-UT-IV dated 30.08.2013*).

The share of various modes of secondary/ intermediary modes of travel is complex and debatable issue which is dependent on a large number of variables like available road width, penetration in the residential areas, Road condition, distance from the existing Metro Stations, availability of parking and lay out and availability of circulating areas at the Metro Stations, Business centre or markets & existing traffic densities. These factors relate with each other and evolve with development of new modal mix of transport, infrastructure and changes with the passage of time . Even though for a given urban transport scenario, optimal mode share may be determined from computer based models but actual **optimal mode share** is never achievable on the road due to dynamic nature of demand and supply of transport modes

17.2 PRESENT CONDITION OF TRANSPORT ON CITY ROADS

At present the various mode coming to Metro Stations comprise of State Transport buses, Midi/Mini buses, RTVs, Autos, Rickshaws, E- Rickshaws, Private cars, Two Wheelers and Bi-Cycles. These can be classified in three groups of transport modes namely, Public, IPT and Private.

In public transport group there are Mini City Buses (20 seaters), and large buses of State Transport (50 seaters) and Chartered Buses hired by schools and private offices. Buses form neighbouring states are no less in numbers. Generally the public transports in Nagpur comprises of the buses which are operated by the Maharashtra State Road Transport Corporation.

Auto rickshaws are also an important part of public transports at Nagpur. Earlier, there used to be six seater auto rickshaws but after the restriction laid on its usage by the High Court, only three seater auto rickshaws ply on the roads of Nagpur. After bus, it is these auto rickshaws which are the most important modes of public transport in Nagpur even though they are little expensive. Auto Rickshaw are Intermediate Public Transport (IPT) Modes. Another public transport at Nagpur which can be ranked third among all is the cabs or taxis that run on the streets of Nagpur. Though these are also less in number and the majority of them ply from airport and railways.

In the personalized transport modes, there are Bicycles, Two wheelers and Cars of all possible sizes.

A chaotic situation is observed when all the above mentioned transport vehicles are seen jostling to each other for space for moving forward. More pathetic conditions are seen at the Road Intersections.

The solutions lies in showcasing a workable arrangement of co-existence through identification of good points of each mode and then utilize the same to get the attention and embedding it in public psyche.

Because of high traffic and less capacity as well as length of the roads, average distance between two consecutive vehicles becomes very less. Such situation does not permit speed higher than 15-20 km/hr. This indicates that unless there is some solution to reduce this unmanageable mix of the vehicle fleet, real transport integration may not be possible. While the Road length on main & arterial Roads may not see significant increase and relieve the congestive/ chaotic/ slow moving road traffic, a divergent policy of linking commuters directly

through E-Rickshaw or Mini/Midi size feeder buses using the service/inner road length to supplement the main road traffic will impact the congestion and provide relief to the Metro commuters in reaching out to Metro Stations.

17.3 IMPACT OF BUS/CLUSTERS IN MODE SHARE

Primary reason for using personal vehicle (for buying vehicle) is **to save travel time** during journey. On the other hand, government has tried to increase number of public buses on the road in many different ways.

City bus service in Nagpur has never been consistent. First, it was MSRTC that withdrew the service citing losses as the main reason. This created room for NMC to run the service by roping in a private player. Central Government's changed norms regarding public transport in areas of urban local bodies selected under Jawaharlal Nehru National Urban Renewal Mission (JnNURM) proved a great help. With buses received from the Centre, NMC entered into an agreement with VNIL to operate city bus service. As per the agreement, NMC would get Rs 3,700 per bus per month as royalty. A fleet of new low-floor buses, increased number of frequency, new routes, and brand new service evoked a very good response from Nagpur residents. Within almost no time, Starbus service (as the city bus service is popularly known after the brand of buses) became the most widely used mode of public transport in the city.

However, as time passed, condition of buses deteriorated. Poor maintenance resulted in broken seats, broken handles, damaged wind-shields, mostly non-working digital signs, unclean and unhygienic passenger areas, non-rolling window panes. Of course, these are only major problems commuters have to put up with. 'Starbus' is driven by ill-trained persons, posing threat to plying of other vehicles and people on roads. At many places with heavy traffic throughout the day, it is very difficult for these drivers to man oeuvre wide buses safely.

Government has tried hard to popularize public bus by subsidizing the fare but could not bring higher (and middle) income group to use public bus simply because it is slow. BRT system was introduced with the intention of running public bus through dedicated pathway. But the overall impact has not provided synergy between the user & the Public Transport System in a seamless manner. Therefore objective of achieving optimal mode share remained elusive than reality.

17.4 BALANCING ACT OF METRO RAIL

After introduction of Metro Rail In the city, Traffic and Transportation scenario will significantly change. People will no longer afraid to travel a much longer distance. It is now possible to cover a length of 30-35 km below or within one hour time if main journey is made by metro rail. This is the fastest, safest and most reliable and comfortable mode now available in the city.

In Delhi, in 1980's average passenger trip length was 7-8 km in 1990-2000 average trip length was 8-10 km. After 2000, average trip length started increasing and in 2012-13 it was 15-16 km. It is expected this trip length will increase to 17-18 km after Phase III lines become operational from 2016 and after Phase IV in 2021 trip length may be about 20 km. This shows that the city gets expanded in terms of residential locations and work centers as metro network increases. In a recent survey conducted by one of the most circulated newspaper (Times of India) citizens have expressed maximum satisfaction for DMRC services. Nevertheless, city roads are more congested and the situation is getting worse every day. The benefit of time saving due to metro is very much diluted because of the problem of reaching the metro station and then to the platform to catch the metro.

For Nagpur also, average trip length will be around 7 kms. Hence Metro will definitely help in providing a balancing act.

17.5 TRANSPORT INTEGRATION BY DMRC

If we mean that transport integration is smooth transition from one mode (road based) to the other (metro rail) then it is important that the road based mode should reach the metro station in time, at regular interval so that passenger need not walk long distance to enter the station.

Several measures at Metro may be undertaken for smooth transition for the passengers using metro. Stations are designed user friendly, ambience is kept clean, cold and attractive. User needs like Snack bars, ATMs are available at many stations. Elevator and lift is provided at every station to avoid climbing through stair case. Parking facility, Feeder Bus & Bus stops are three most significant services given by DMRC. In addition, pilot projects for E- Rickshaws and cycle shelters have also been taken up.

The feeder buses, E- Rickshaws & cycle shelters would be expanded based on user demands, service ability and patronage.

The extent of need for above modes depends on the type of stations viz. Interchange Stations, stations with extensive Property Development/ close to Business Centers/ Activity Hubs, stations located on the road medians.

The need for provisioning bus stops/parking areas also differ in case of elevated/underground stations and at the terminal stations.

17.6 METRO FEEDER BUS SERVICE

In Delhi, up to Phase III DMRC will have a total of 236 stations out of which 21 are interchange stations. Many stations are with extensive property development near activity hubs or business centres and that are located on road medians or under the road. To cater to these stations, DMRC has so far deployed 117 feeder buses with a sitting capacity of 18 passengers and total capacity of 30 passengers. The present sanctioned routes are 98 which cover roughly 73 metro stations.

Additional 400 feeder buses have already been ordered through two selected bus operators and these midi buses will have a sitting capacity of 26 and total capacity of 50. The present peak ridership is 59,000 per day and monthly average of 50000 per day. The maximum revenue so far is 4.6 Lakhs per day with a monthly average revenue 4.6 Lakhs per day. It is expected that with additional buses the peak ridership per day will touch around 3.5 lakhs per day.
For the stabling and maintenance of these buses a total of 8 feeder bus depots have been planned to keep the ideal run to the minimum and provide safe stabling and upkeep.

Existing Feeder Buses

New Feeder Buses Being Introduced

Fig. 17.2 - Modal of Feeder Buses

However, feeder bus service facility is still not attained perfection. Bus conditions are not good to travel; service headway is long as it is handled by private operators who would like to wait to fetch more passengers. Services at some routes are very irregular as not many passengers are available during non-peak hours. Passengers have to bank upon auto rickshaws. At some stations entry and exit gates are blocked by waiting buses, rickshaw pullers and vendors. This is irritating and some action is required.

Purchasing only one ticket for a complete journey by using any one or more transport mode is still a dream in India because of multiple ownership/agency control or lack of will to implement such system. In Europe, USA this system is working very well and almost eliminated unhealthy competition. True transport integration will be possible when such system will be operational in Indian cities

17.7 WAY FORWARD

In view of above deliberations in back ground, along with planning for Metro Rail System in any city, there is a need for providing a transportation system which is seamlessly integrated across all modes and provides first mile as well as last mile connectivity. It is also necessary that various public transportation modes including Inter-mediate Public Transport (IPT) and feeder buses etc. work together in order to facilitate increase in ridership to the Metro system and provide ease of using the Metro system by the public at large.

Therefore, there is a need for doing more scientific study exclusively for this. To achieve this goal, Metro Rail Stations influenced zone need to be defined which can be taken as approximately 5 kms for the motorized traffic and 1.5 km. for pedestrian/cyclists. Detailed Study is required to be done in this influenced zone of a Metro station for following aspects mainly:

i) Availability and review of existing public and IPT facilities, in terms of motorized and non-motorised mode with main consideration of the streets/roads adjoining literally to the stations and also to examine adequacy of availability of pedestrians/cycle paths in the influenced zone.
ii) Analysis and identification of gaps between supply and demand in terms of feeder facilities and other requirements for better first and last mile connectivity.

iii) Proposal for introduction/enhancement of feeder buses and cycle/pedestrians tracks, bike sharing arrangement for each Metro station to be finalised.
iv) Proposal for better integration of Metro station with other mode of transport, such as relocation of existing bus stop, introduction of new bus stop, bus base etc.
v) Cost of the requirements namely road widening including roads for pedestrian/cycle paths, feeder buses based on the outcome of the study.

The detailed study and requirement for providing first mile as well as last mile connectivity to the Metro users will be carried out separately and the same should be in place before the commercial operation of the Metro services for the benefit of the users as well as for better ridership and the financial viability of the project.

Since, it is envisaged that detailed study for provision of feeder buses, public bike sharing and pedestrianisation in the influence zone of metro stations will be done and put in place by the time commercial operation of the Metro services, a lump-sum cost of @ 2% of Total Cost of all items except Land has been considered sufficient and included in the project cost of proposed Metro Rail System of Nagpur Metro. If at any stage more feeder services etc. will be required, same can be augmented by concerned City transportation authorities.