

Non-Motorized Transport-A Sustainable Way to Streamline Traffic Congestion in Commercial Areas

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Abstract—Growth in urban population and dynamic lifestyle of the masses has boomed the transportation network which leads to traffic congestions in most of the cities of the world. At the current pace of growth, there will be around 400 million vehicles in India by 2030 from 140 million in 2011 -- almost three times in about two decades which makes it an issue to be focused on. [1] Non-motorized modes of transport can play a remarkable role in catering to transport demand and in return ensure a sustainable transport system for India. This paper focuses on the use of NMT to counter traffic congestion in one of the commercial hubs of the Jaipur city- Malviya Nagar.

1. INTRODUCTION

The urban transportation situation in large cities in India is degrading at an alarming rate. The degradation is rapid in cities where there is a humongous intensification of automobiles. The transportation system is the most important of necessity among other factors that affect the lifestyle and sense of security in a city. Environment and security has a direct analogue with the transit system. The Urban transit system plays a key role in shaping development and living conditions.

The yardstick of urban governance depends on the quality of life the city offers. Due to insufficient and potent public transport system, a large number of private and various other modes have made their way into the market to appropriate the ever- increasing travel demands. Such a proliferation of transit systems results in acute congestion, unwarranted delays, severe accidents, high-energy exhaustion particularly of non-renewable resources, and intense pollution. (2) (3)

Non-motorized Transport (also referred as human-enabled transit) includes walk by foot, cycling and alternatives as cycle and auto-rickshaws, scooters and E-carts and physical disabilities travel modes. These ways of transport not only provide a sustainable and healthy

way of living with recreation [4] [5] but also is a mode of transit for small distances i.e. 7kms which comprises the maximum share of trips in cities [6]. The essential idea to reverse the tendency of more private conveyance use is to make walking and cycling inviting, together with enhancing public transport facilities.

Non-motorized transportation (NMT) meets the objectives of sustainability as it utilizes indigenously available resources which is non-polluting, safe, affordable, user-friendly and needs only a small fraction of the capital required for motorized transport. It is the preferred mode of transport for the poor in many cities, and in some way provides them a substantial amount of income, thereby having a very significant poverty impact. It is very critical for the economic functioning of the city. NMT can be incorporated into a policy package that should comprise of investments in NMT facilities and proper maintenance, public awareness campaigns, smart planning, improved ways of public transport and fines for the use of motorized private vehicles in the area.

This paper contains the issues and minimum points to establish that NMT can be a favorable recommendation to the users in the commercial area where there is significant congestion. This minimal pursuit would need to incorporate the provision of optimally segregated safe traffic infrastructure; routes without significant intersection and confrontations with motorized transit system; secure NMT parking to impede theft; and cost effective means of conveyance acquisition as there is the need for a secure and direct transport system. Hence, it is desirable that there should be a local level proposal plan that should be the basis both for planning infrastructure specifically for cycles, non-motor vehicles and for integrating cycling into traffic infrastructure and transit management planning.

2. THE GRAVITY AND MAGNITUDE OF THE TRANSPORTATION

Most of the traffic issues emanate from lack of traffic management, high-density pedestrian flow during peak hour, lack of basic amenities as a pedestrian footpath, cycle tracks, zebra crossing, pedestrian signal, the pedestrian separate path the pedestrian movement became unsafe and which leads to pedestrian and vehicular conjunction.

Ways to incorporate non-motorized transportation are [5][6]by improving sidewalks, paths, creating public bicycle lanes, parking and integration networks in transit with proper bicycle systems (cycle rental facilities automated to provide efficient flow for short, efficient urban trips). Further also developing pedestrian-oriented land use and building design and increase road and path connectivity, with special non-motorized shortcuts and also keeping in mind the security concerns of the users with proper law enforcement and encouragement programs.

The majority of non-motorized modes of transport systems are healthy, reliable and lay the groundwork for local community facilities. A dynamic deviation from non-public vehicle use to non-motorized transport, including improving convenience for the mobility impaired, has a significant role to play in using the existing transport network more efficiently and in turn delivering significant economic and environmental benefits to society, with appreciable health and lifestyle benefits for the individuals. A significant increase in non-motorized travel trends tends to improve community interactions (the quality of neighborly cohesion), sense of security and aesthetics. [7] [8]

The major constituents of a traffic strategy for NMT in commercial areas should include lucid provision for the rights, as well as responsibilities of the individuals, of pedestrians and cyclists in traffic law, formulation of a national public strategies for NMT as a framework for local transit plans, explicit implementation of local transport plans for NMT as part of the integral planning procedures of city municipal authorities, provisions of separate infrastructure where there is requirement of it (for safe traffic movement and for secure parking arrangement of vehicles). [9]These streamlined features in broader context help us provide many benefits besides just traffic mobility and combat congestion. A Simple transportation route can improve an individual's lives in many different ways among others, a child can get access to education, to economic activities, and health care services. . Proper pedestrian and cycle track cleaning, promising campaigns and information to include people using it and ensuring a sense of security for the users to facilitate it.

3. STUDY AREA

Jaipur is considered by many urban experts to be one of the best-planned cities in India. The city was established in 1729 by Maharaja Jai Singh. In the 19th century, the city started

growing rapidly and became more prosperous; by 1900 Jaipur had a population of 160,000. The royal heritage of Jaipur lies in its architecture and culture. Naturally with growing urban culture in the city, it led to advent commercial pockets in the areas.

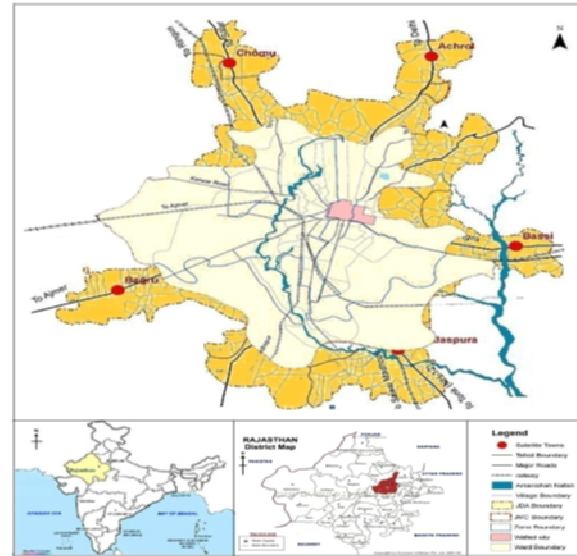


Figure 1 India, Rajasthan and Jaipur map

In this paper, the focus is on Gaurav Tower (GT) & WTP area which faces extreme traffic congestion as it is one of the main commercial hubs of Jaipur. The problem is more severe during weekends and the peak hours (during the morning and evening time) of the weekdays. Various strategies opted by the traffic management authorities have not yet able solve this congestion problem due to other predominant issues in the area such as on-road parking, informal sector etc. Jaipur City, being the capital of the state Rajasthan of the India, is the only metropolitan city and also the major tourist destination of the state since last decade, due to growth in urban population, automobiles are increasing at a reckless rate in the city. The increased socio-economic lifestyle of the residents, the availability of easy financing for automobiles, lack of adequate public transport system, the growing need to use own transport for daily activities and lack of sense of security have resulted in the steep growth of vehicle ownership in the city. The average annual growth rate of automobiles in Jaipur is around 13% [10].

Malviya Nagar, Jaipur since the 90s has witnessed a remarkable growth in the commercial sector. Gaurav Tower, a first mega shopping mall of the city was established in this area and till now it is the major source of attraction for the people of Jaipur. Various commercial centers like Fort Anandam, Crystal Court and World Trade Park were also established with the course of time and have become the main reason for traffic congestion. [4] [8]

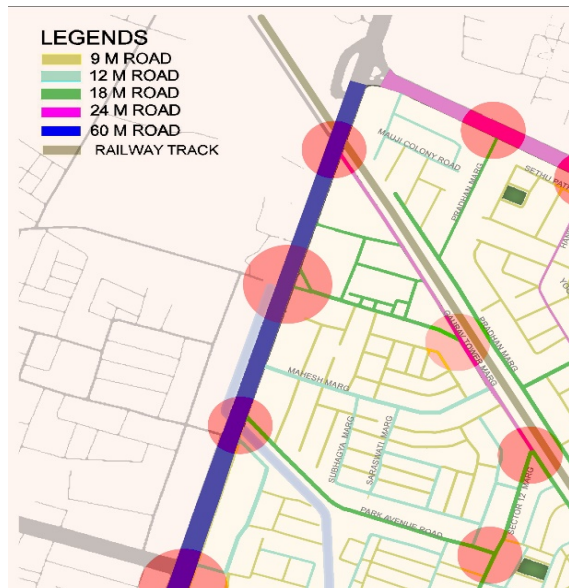


Figure 2 Shows the roads where major traffic congestion occurs.

which force the users to park their vehicles on the roads and footpaths. As per the data provided by traffic police stationed, more than 50,000 people visit the GT Market area or nearby area. The parking capacities of most of the commercial buildings like Crystal Court, Gaurav Tower & WTP are deficit, the effect of which can be seen in the area. People park their cars in the allotted footpaths and pedestrian facilities obstructing proper flow of the users.

The increase in registered automobiles and non-availability of proper parking space on limited road space has led to overcrowding on roads which leads to parking on footpaths.

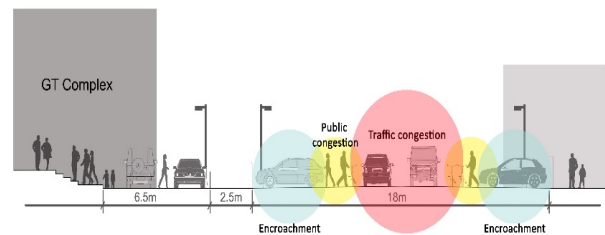


Figure 4 Section of the road in GT area

The main reason for traffic congestion in the GT Market area is maximum traffic volume, illegal encroachments on road, on-road parking, illegal auto drop and pick up points and street hawkers that affects the Existing NMT facilities.

4.2 Informal Sector:

The roadside vendors though they have a temporary built-up they occupy the roadside parking spaces, pedestrian walkways, carriageways. Also, it was identified in the study area that people who visit these vendors park their vehicle on the roads which lead to bottlenecking of the road section in that particular area. The informal sector has been a major problem.



Figure 3 Shows the traffic movement in GT Market area.

4. 4. ANALYSIS

The survey and study that was carried out in WTP and GT market area, a brief analysis has been done on the factors that were noticed causing obstructions in the traffic flow and traffic congestions.

4.1 Parking issues

As most of the commercial buildings in the area either don't provide spaces for parking or they provide insufficient spaces



Figure 5 Informal sectors

4.3 Misuse of resources

The pedestrian pathways (NMT facilities) available on the site are used as local dumping lots, parking spaces and obstruction by poorly planted trees or electric poles. Even further the street hawkers place their shops and further degrade the quality of the footpaths.



Figure 6 Poor management of footpaths

5. INFERENCES AND SUGGESTIONS

From the analysis of the issues, to combat the congestion and improve air quality, it is being suggested that having fully pedestrian roads with basic NMT facilities such as cycle tracks and provision of E-cart and golf cart to provide assistance to the users in front Crystal Court and restricting motor vehicles during peak hours i.e. 6 PM to 10 PM in front of the GT area.

Inclusion of provision for cyclists and pedestrians in new road NMT inclusive transit infrastructure design which should focus on management of traffic that improves and facilitates the movement of users rather than of motorized vehicles in the congestion zone, train the traffic personnel to enforce NMT in traffic priorities, as well as in prevention of accidents and maneuvers. [11]



Figure 7 Ideal NMT incorporated road section. [12]

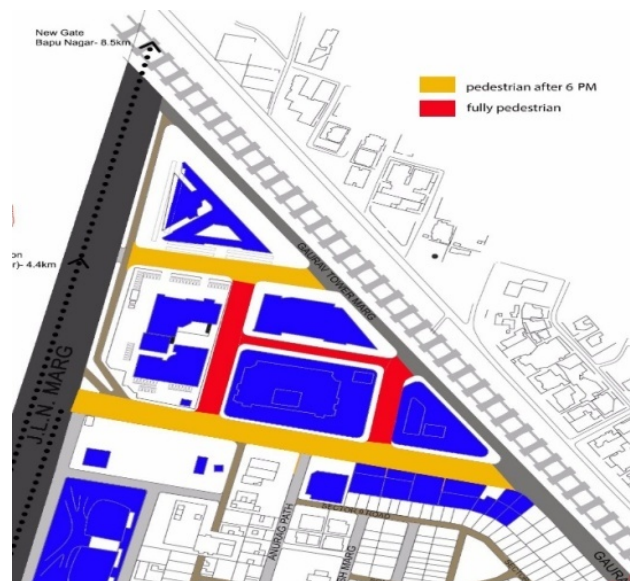


Figure 8 Proposed plan at the areas to facilitate NMT

6. CONCLUSION

It was inferred from the study that strict actions should be taken against unauthorized parking and regulation of informal activities which are obstructing the existing NMT facilities. The further non-motorized vehicle should be mandatory to be used in front of GT area. The analysis and review indicated that non-motorized transit modes can play a major role in catering to the transit demand, battling congestion and improving air quality. Despite the growing commercial affluence and increased usage of motor vehicles in the area, the dependence on non-motorized transportation modes is required to combat the traffic volume and for better and sustainable environment. It should also incorporate provisions for NMT in malviya Nagar road fund policy statutes and also for the development of small-scale funds for finance for bicycles for people who can't afford the services.

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