



IJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8

Issue: III

Month of publication: March 2020

DOI:

www.ijraset.com

Call:  08813907089

E-mail ID: ijraset@gmail.com

Non-Motorised Transport: An Efficient Public Transport System for Urban Area

Priyank Trivedi¹, Prof. Jitendrasinh D. Raol², Prof. Krupa Dave³

^{1, 2, 3}Civil Engineering, LDRP-ITR, Gandhinagar

Abstract: *Transport infrastructure of any metropolitan city is the most important part of the public infrastructure. A growing number of Asian cities have high numbers of private vehicles making up the majority of city traffic. This has resulted in the negative impact in the form of traffic congestion, road safety, air pollution and climate change. Local governments and the central governments of country are taking measures to reduce these problems. Measures have been implemented, such as providing specific pathways for pedestrian only, limiting the speed of motorized vehicles. These modern modes of transport are seldom acknowledged by planners and policymakers for the betterment of overall transport infrastructures. Studies have shown that Non-motorised transports are having great potential in areas of low to medium public transport demand. Further research is necessary in order to exploit the potential benefits of same and tagged them as 'An efficient public transport medium'. This paper identifies key objectives and functionality of Non-motorised transport mediums with view to implementing them with in any metropolitan city.*

Keywords: *Non-motorised Transport, Transport Infrastructures, Public Transport, Private Vehicles*

I.INTRODUCTION

Non-motorised transport mainly includes cycling and walking. A cycling and walking strategy should begin by stating its sole own purpose. Main purpose is to promote these non-motorised modes of transport as an environmentally suitable feeder mode which integrate public transport of city so well that the overall users of public transport may increase. The choice of cycling and walking as feeder modes can increase the coverage are of city buses or other modes of transport to inaccessible areas. But the policy makers are not focusing the service and facilities for cyclists and pedestrians within metropolitan cities, which are mostly inadequate. Any medium of Public transport also does not provide a door-to-door service. So to focus the non-motorised medium as the feeder system between different modes of transport is essential. Commuters need to access the public transport station (e.g., bus stop, train station etc.) over some distance from their residence or from work space. Commuters are willing to swift towards the non-motorised transport feeder, if there are adequate infrastructure is provided. So implementation of Non-motorised transport medium as the newly developed feeder system between the public transports hubs may solve the discomfort facing by the regular commuters.

II.OBJECTIVES OF PROVIDING NON-MOTORISED TRANSPORT AS FEEDER MEDIUM

- A. To provide convenience to the regular commuters by providing first & last mile connectivity with availability of supporting non-motorised infrastructure (cycling tracks, walk ways etc.) at important junctions of city or at public transport hubs.
- B. To ensure the sustainability goals of efficient feeder services.
- C. For providing short loop services covering 2-3 kms route, not parallel to regular to regular routes.
- D. To reduce the overall pollution by shifting towards eco friendly transport system.

III.METHODOLOGY FOR INTEGRATION OF NON-MOTORISED TRANSPORT WITH PUBLIC TRANSPORT

The Methodology of integration for a non-motorised friendly infrastructure in a city must start by understanding the issue of the cyclists or cycle rickshaw pullers as well as the safety concerns of commuters who prefers waling. Non-Motorised Transport (NMT) planning needs to be carried out at the city level for the entire urban area in such a way that the various NMT improvements taken up at area level lead to an overall improvement in the attractiveness of the NMT. (2) A Non-motorized master plan (NMTMP) of metropolitan must includes the various components of NMT planning i.e. the NMT network plan for the city, infrastructure measures needed at corridor/area level for the overall network improvement and a phase-wise implementation plan for the proposed infrastructure and network plan. The entire planning process for preparation of the A Non-motorized master plan (NMTMP) of a city has been explained within the figure below.

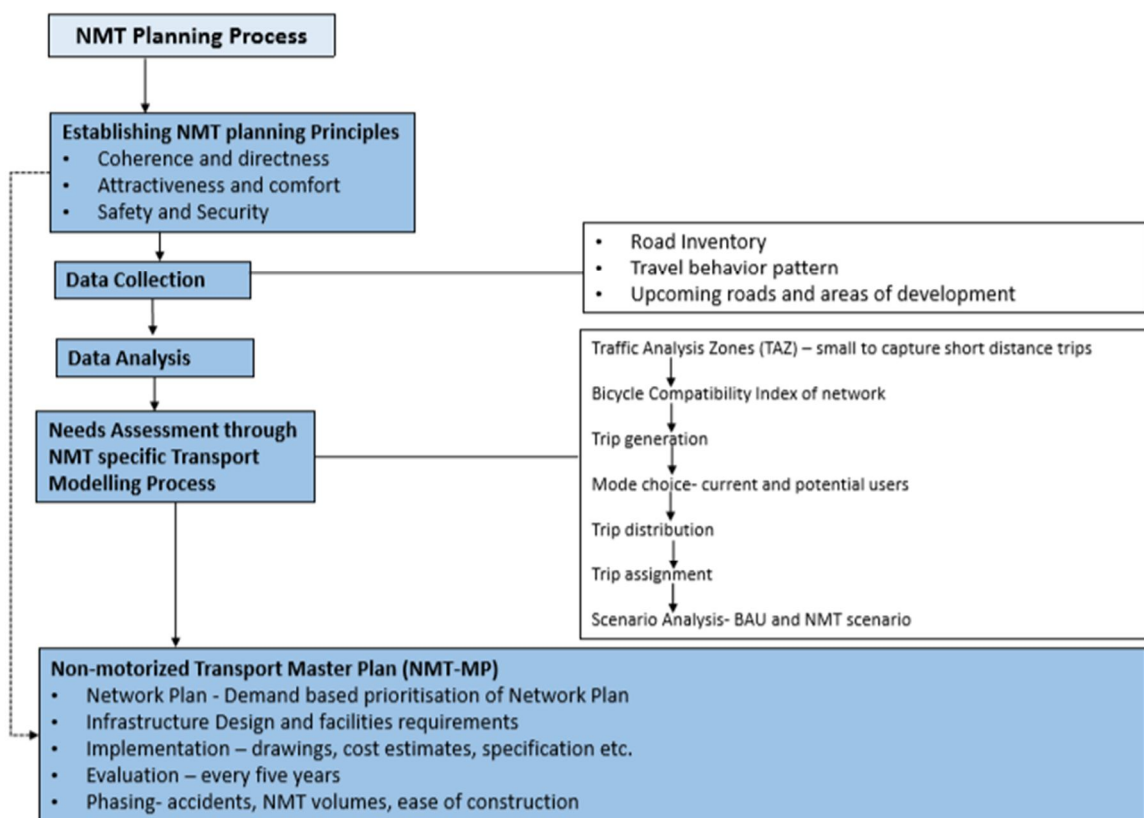


Figure 1. Outline for integration process of Non-motorised transport
(Source: Planning and Design Guideline for Cycle Infrastructure)

IV. IMPORTANT COMPONENTS TO BE CONSIDERED DURING INTEGRATION PROCESS

Different components have their particular effect on the actual integration process of transport systems. The components for the integration process have been selected to address issues related to the functioning and the improvement of current situation of Non-motorised modes. So the selected parameters/components are analysed critically on the basis of study and collected data. The final analysis of these components may provide the area on which the implementers have to focus while implementing the non-motorised modes. Following are the most important three parameters which have to be considered at the earliest stage of integration process.

A. Coherence And Directness Of Different Modes Of Transport

Cyclists and pedestrians use a given infrastructure only if it provides a continuous connection between their origin and destination of travel area. The entire network needs to be cohesive, to make a city Non-motorised medium friendly. This step may cause the lower the travel time, the higher the directness. For regular captive users, the directness offered by a Non-motorized Transport infrastructure should be higher than that offered by the Motorised Vehicle network. By overlapping NMT network on MV network and adding NMT only lanes, short cuts, etc. is the best way. Higher directness can be achieved not just within the NMT network but also on public transport corridors by using walking, cycles and rickshaws as feeders and providing parking and transfer infrastructure at stations to minimize delays of regular commuters.

B. Attractiveness and Comfort

Non-motorized transport mediums are quite slower than other modes so users spend more time with surrounding infrastructure. As users are sensitive to microenvironments on the streets and this may affect their route choice or decision to walk or cycle. To make the NMT network attractive policy makers have to plan some activities such as cycle parking, small hawkers spaces or kiosks and street furniture such as trees, fountains, planters, seating, plazas, etc. to break the single monotony of stretch and introduce visually appealing and spatially attractive elements more apt to the scale of NMT users instead of stark, monotonous, long, barren walls.

C. Safety and Security

NMT users are most vulnerable in the case of crashes, for some cases it causes life of commuter. In common practice of increasing safety of cyclist and pedestrian is to segregate them from motorized vehicles in time and space. For regular users, segregation by time is not a viable option as the journey between work and home is undertaken at almost the same time as other (motorized) modes (especially for shorter trips). So the most effective option would be provide separate tracks or paths to user along the road network.

V. CONTRIBUTION OF NON-MOTORISED TRANSPORT TO SOCIO-ECONOMIC DEVELOPMENT, SAFETY AND ENVIRONMENTAL PROTECTION

Good walking and cycling opportunities are a key part of any sustainable transport and planning strategy, and provide an overall improvement of the quality of life (3). Overall sustainable development benefits of NMT are:

A. Environmental

- 1) Improvement of Air quality
- 2) Reduction of carbon emission by public transport
- 3) No emission of greenhouse gas, or no local air pollutants done by the effective use of Non-motorised transport
- 4) Every increase in NMT leads to a direct decrease in overall emissions
- 5) Noise reduction due to lower use of motorised vehicles

B. Social and Safety

- 1) The most important advantage is the reduction of congestion of urban traffic
- 2) Health benefits due to exercise. For example, cycling for 30 minutes a day reduces the chance of cardiovascular diseases and diabetes by 50% (4).
- 3) Social equality and poverty reduction: cheap, fast and reliable transport opportunities, and public space development directed towards all segments of society (5)
- 4) Safety: increase in bicycle use is often accompanied by a reduction in cycling accidents and an increase in safety in public areas (6)

C. Economic

- 1) NMT, particularly cycling, is easy, flexible, cheap and fast medium and requires zero use of any kind of fuel
- 2) More attractive cities for tourists and residents which includes any kind of motorised vehicle free zones
- 3) Reduced travel times due to segregated traffic flow
- 4) Energy security due to lower vehicle energy use at every level

VI. CONCLUSION

NMT users are most vulnerable in the case of crashes, for some cases it causes life of commuter. In common practice of increasing safety of cyclist and pedestrian is to segregate them from motorized vehicles in time and space for particular urban areas. For regular users, segregation by time is not a viable option as the journey between work and home is undertaken at almost the same time as other (motorized) modes (especially for shorter trips). So the most effective option would be provide separate tracks or paths to user along the road network for particular urban areas. Thus well planned integration of Non-motorised transport modes can change overall attitude towards public transportation and results in solution of many urban transport problems. Based on the overall study, well planned and integrated Non motorised transport may potentially tagged as 'An efficient public transport medium'.

REFERENCE

- [1] Adjei, E., 2010. Multi-modal urban transport: Integrating non-motorized and bus transport. MA Thesis, International Institute for Geo-Information Science and Earth Observation Enschede, the Netherlands
- [2] Transportation Research & Injury Prevention Program Indian Institute of Technology, Delhi, Shakti Sustainable Energy Foundation, Planning and Design Guideline for Cycle Infrastructure: Project report
- [3] Penalosa, E. (2004) socially and environmentally sustainable transport. Presentation
- [4] Witting, R. J. Rijnsburger, D. Wijnen, A. Pettinga (2006). Cycling, a smart way of moving. Second edition, January 2006.
- [5] ICE (Interface for Cycling Expertise, 2000), The significance of non-motorised transport for developing countries. Strategies for policy development.
- [6] Witting, R., T. Godefrooij (Eds.) (2009) Cycling-inclusive Policy Development: a Handbook.



10.22214/IJRASET



45.98



IMPACT FACTOR:
7.129



IMPACT FACTOR:
7.429



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089  (24*7 Support on Whatsapp)