A STUDY IMPACT TO NON-MOTORISED TRANSPORT IN TAMIL NADU

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Abstract

This paper deals with Investments in walking and bicycling are playing an increased role in establishing balanced transportation systems and supporting communities. As communities across the United States consider enhancements vibrant to their nonmotorized transportation networks, there is a growing desire by both transportation planners and decision-makers to evaluate the impacts of these investments. Many communities begin new infrastructure programs with pilot projects to evaluate their efficacy before implementation on a broader scale. Therefore, it is important to provide a technical resource on the methods available for communities to evaluate the different types of outcomes from nonmotorized transportation programs, including mode share changes, environmental benefits, increased accessibility, health benefits, and economic benefits.

INTRODUCTION

Non-Motorized Transport modes (NMT) include walking, bicycle and cycle rickshaw. Earlier days Cycle Rickshaw was a mode of most of middle class public transport. With the economic, social technological growth there is a drastic shift in mode of public transport. In India the urban road infrastructure is mainly favoring only the use of motorized vehicles. No
where in the country we can find a pedestrian friendly road infrastructure in India. The present situation itself is very pathetic and dangerous for non motorists on Indian roads. Now it’s the peak time to make some measure s and corrective actions to make our roads safer for now and future. From the statistic it can be understood that every month there is a 9/11 happening on Indian roads taking more live than that of a terrorist attack. UNEP Study on fatalities on urban roads tells the dirty picture of Indian Roads. The reason for this is the importance given in spending for motorized vehicles is not overlooked by the policies and officials.

Urban road infrastructure in India is biased in favour of motorised vehicles. This is on account of lack of a reaction to extremely high growth in motorized vehicles in urban India in the last two decades. While the population of India’s six major metropolises increased by about 1.9 times during 1981 to 2001, the number of motor vehicles went up by over 7.75 times during the same period (Ministry of Urban Development, 2007, pp. 1-2). From the population census of 2010, at least 35 per cent (27.76 million) urban households had a motorized two wheeler and 9.7 per cent (7.65 million) urban households had a motorized four-wheeler. While, on the whole, the registered motor vehicles increased by 2.4 times during 2002-2011 period or at the rate of 10.2 per cent per annum, in 19 metropolitan cities for which the two time point data is available, registered an increase at 8.8 per cent per annum in the decade (Transport Research Wing, 2012, pp. 3-4).

The Role of Non-motorized Transport

Non-motorized travel (particularly walking) plays a unique and important role in an efficient transportation system. Walking is a fundamental human activity that provides basic mobility and serve many other functions. Walking provides connections among various modes, destinations and activities. Buildings, parking lots, train stations, transit terminals and airports are all pedestrian environments that depend on walking and cycling for circulation and connections. Most motorized trips involve non-motorized links. Motorists walk from parked vehicles to destinations. Most transit trips involve non-motorized links, so walking and cycling conditions determine the functional area of transit service. Air travellers walk from vehicles to airports and within terminals. People walk for circulation at destinations. As a result, improving non-motorized conditions improves access by other modes. Non-motorized travel can provide many benefits. Walking and cycling are inexpensive for users
and reduce costs such as congestion, parking subsidies, energy consumption and pollution emissions. Communities designed for walking and cycling are compact (so many destinations are within convenient distance of each other), connected (with streets that allow direct travel), designed at a human scale, have attractive sidewalks and paths. This improves accessibility, affordability and community liveability. Conventional planning tends to undercount and undervalue non-motorized travel (Litman, 2003). Many travel surveys indicate that only 2-5% of travel is by walking and cycling, implying that non-motorized travel is unimportant. But such surveys often ignore short trips, non-work travel, and travel by children, recreational travel, and non-motorized links of motorized trips. For example, many travel surveys classify walk-drive-walk trips simply as automobile trips and bike-bus-walk trips as transit trips, even if the non-motorized links take place on public sidewalks, paths and roads. Non-motorized travel is typically three to six times greater than such surveys indicate (Rietveld 2000). Some experts conclude that increased walking and cycling can do little to solve transport problems because they only consider current commute trips that can shift completely to these modes (Comsis 1993; Apogee 1994), but other studies suggest that non-motorized travel can play a more important role by substituting for errand trips, supporting other modes and helping increase land use accessibility (Mackett 2000; Socialdata 2000; Cairns et al. 2004).

The variety of potential economic benefits of bicycle and pedestrian infrastructure and programming investments include:

1 Commute cost savings for bicyclists and pedestrians;

2 Direct benefits to pedestrian, bicycle, and tourism-related businesses;

3. Indirect economic benefits due to changing consumer behaviour; and

4. Individual and societal cost savings associated with health and environmental benefits.

This information provides on the types of economic benefits realized from non-motorized transportation investments and a review of measurement and analysis techniques to evaluate them. This analysis also examines the different scales, at which researchers may focus their data collection and analysis, including: individual consumer behaviour; economic impacts within a non-motorized travel corridor; or community-wide economic impacts. The
goal of this report is to provide a technical resource for communities seeking to measure the economic impacts from pedestrian and bicycle transportation projects in the future.

REVIEW OF LITERATURE

**Fuzhong et al (2005)** analyze the environment characteristics and neighbourhood walking activity in older adults in USA. The study analyzed various aspect of walking; promotion of physical activity has been identified as one of the most important indicates healthy people in 2010. The study observed that walking is the most popular and commonly reported leisure time physical activity in USA. It highlights the Behaviour of Risk Factor Surveillance System (BRFSS) showed that walking was the most prevalent of all reported on leisure time physical activity. The author found that walking also been shown to be comparatively common among older adults. The recent (BRFSS) data on walking trends showed increase 3.5 per cent of US older adult in age 65. The study reveals that walking, either for leisure, exercise, or transport; generally takes place in outdoor, social setting for parks, shopping malls, trails, and neighbourhood Street. Walking also becomes a focus for public health intervention. The authors observed that walking both at the neighbourhood level and the resident level that specific hypothesis was neighbourhood with high level density of place, employment; high level house hold density greater number street intersection and green open space for recreation, would be positively associated with increase walking activity in neighbourhoods. The study explored the hypothesis that resident level geographical measure (GIS) neighbourhood environment to jointly influence walking activity at the resident level. These hypotheses were examined using data from community physical activity survey of older adults. The study used cross-sectional, cluster, multistage, sampling. The study concluded that promote physical activity of walking should emphasize the important role on environmental influence that facilitate opportunities and remove barriers for people more active.

**Jennifer Dill (2009)** analyzes the bicycle health related infrastructure in USA. The study examined while most active living has been on walking bicycling, may have a greater potential to the intensity level on bicycle commuting. Authors found that the most bicycle travel in the United States particularly among adults for recreation not daily travel. This is in contrast to bicycling in countries such as Netherland, Denmark, and Germany. The study highlight that to be provide insight on whether bicycling for everyday travel can help use to adult. The study recommended level of physical activity and role on public infrastructure,
particularly bicycle lanes, paths, and bicycle boulevards may play in encouraging this activity. This study selected using random sampling method, stratified by geography, sex, and frequency of bicycling. A majority of the participants, regular bicyclist and half of the participant use travel activity cycle 5 days in a week during summer and non-summer month. The study reveals that many type of innovative infrastructure to supportive bicycling installed by the city Portland include special traffic signal way for bicycle. The study concluded that walking is a daily physical activity necessary to all people encourage bicycling for everyday travel help to allowing more adult achieve active livings goal to everyone.

Francesca Racioppi et al (2005) analyze the walking, cycling on health benefits urban areas in India. The author found that reintroducing on walking, cycling as a part of daily life and contributing to more physically active lifestyle. The study highlights that reducing obesity, control for important disease such as coronary heart disease hypertension, and diabetes. The study reveals that in some countries of walking and cycling have declined sharply in recent decades. The authors gave example that in the average miles travelled per person per year on foot by bicycle declined by 24 per cent to 26 per cent respectively. It implies that cycling and walking to become realistic option distance and different destination work place, shops, schools, health care centre, leisure and other amenities. It is found that 20 per cent reduction in road traffic injuries involving cyclist, in spite of the overall increasing in cycling way. The study conclude that national and international policy priorities are becoming more supportive, and tools such as health impact assessment economic evaluation and value create an healthier environments.

Dinesh Mohan et al (2003) study to analyze three wheeled auto rickshaw drivers in Delhi. The authors found that three-wheeled scooter rickshaw (TSR) play an important role as Para-transit modes in the public transport of people in most cities in India. The study found that 86185 three wheeled scooter rickshaw registered in Delhi in 2001. The estimate shows that the population of Delhi increased by 20 per cent between 1996 and 2001 but three wheeled scooter rickshaw increased by only 7 per cent. The study examine the better understanding of the situation from both perspectives the commuters from three wheel scooter rickshaw drivers. The aim of study to move towards development of policies that will benefit both parties and make livable in Delhi. It observed that there is a clears need for establishment of designated parking waiting areas for three wheel scooter rickshaw at convenient location all over the city. The study suggests that encourage public transport use
as one can easily get to ones destination from end point if in a hurry or it is raining etc. Therefore three wheel scooter rickshaw should be encouraged much possible in Indian urban areas.

Dinesh Mohan et al (1999) analyze the sustainable transport linkage on environmental issue public and non-motorized transport safety in India. The study examine sustainable transport system must provide mobility and accessibility, to all urban resident in safe environmental friendly transport. The author found that if a large proportion of population, cannot afford to use of non-motorized transport private vehicle or public buses have to either walk or ride bicycle to work. The study reveals that safe infrastructure for bicyclist on pedestrian, need segregation of road space similarly to reduce pollution may at time conflict those need for reduction in road accident. The author observed that safety of public transport is based on economic criteria, trip time, Involved, convenience, comfort, and safety on non-motorized mode. It highlight the study an amount to one million bicycle trips a day in Delhi a wide variety of vehicle type including bicycle, and human and animal drawn vehicles share the same road space in Delhi. The study concludes that use of public transport and also walking bicycling trips, there should be encouraged by transport way is very easy and environmental safety way to involve all.

Vasconcellos (2001) argues that transport is not an end in itself. The ‘end’ has to be the equitable appropriation of space and the corresponding access to social and economic life. It is quite clear that road infrastructure in India completely ignores facilities for pedestrians and bicyclists, and hence is not equitable. The National Urban Transport Policy (NUTP) 2007 has also acknowledged that there is a need for bringing about a more equitable allocation of road space with people, rather than vehicles. This inherent inequity in distribution of road space has also resulted in a rampant growth in number of accidents. As per Transport Research Wing & Ministry of Road and Transport (2011), 497,686 accidents occurred on Indian roads in 2011 alone, of which 24.4 per cent were fatal accidents in which 142,485 persons were killed. Accident severity3 has increased from 20.8 in 2002 to 28.6 persons.

Non-Motorised Transport is a sustainable mode of transport (Massink et al., 2011). This is primarily due to the reduced external costs and higher value of benefits (Litman, 2007; Sinnett et al., 2011). The range of benefits of Non-Motorised Transport is also wider than the benefits that can be obtained through motorised transport, especially on an individual level (Pucher and Buehler, 2010).
Whether the Non-Motorised Transport mode is used for only a part of the entire journey or for the whole journey, it helps reduce the number of motorised trips and distance. Hence, reducing motorised trips is an important element in lowering the amount of non-renewable resources used and the external costs that are generated by motorised transport trips (Pucher and Buehler, 2010; Murguía, 2004; Elvik, 1999) However, despite the various benefits and the value NMT has for both people and the environment, it is often not prioritized (Hüging et al., 2014). This is partly due to the conventional focus on motorised transport modes in policy and practice (Macmillian, 2014; Litman, 2007). Another important issue that hinders the implementation of NMT projects is the lack of adequate tools to assess these types of projects (Hüging et al., 2014; Sinnett et al., 2011, Litman, 2007). Due to the lack of information regarding the potential impact that NMT projects or single NMT measures can have, decision makers often overlook them in favour of initiatives that come with more information and/or evidence (Litman, 2007; Pucher and Buehler, 2010). Motorised transport projects generally are easier to cost and the benefits thereof are normally easier to quantify both ex-ante and ex-post to the implementation. All these factors have contributed to NMT projects being overlooked and undervalued in developing countries (Pucher and Buehler, 2010; Litman, 2007).

**Objective of the study**

The study objectives on non-motorized transport impact

The study examine benefits of non-motorised transport in Tamil Nadu

**A Development Leaving Behind the Non-Motorized Transport**  (NMT)

Despite the perceived increased usage of personal vehicles in Indian Cities, there is still a considerable share of the population that commutes by walking and cycling. About 56-72 per cent of the daily trips are short trips13 - below 5km trip length - in most of the medium and large cities in India, offering a huge potential for bicycle use. Bicycle use varies from 9-18 per cent in large cities to 13-21 per cent in medium and small cities14. Bicycle ownership is very high in all Indian cities. Most of the cycling population belongs to lower income categories that either cannot afford to use public transport or cannot find suitable public transport on the routes they want to travel on. Hence, reason for NMT infrastructure improvement should not be only the increasing of a clean and carbon-free transport mode
share in the city, but also the dependence on cycling for the livelihood of many people. In 2006, the NUTP laid huge emphasis on the need for increasing the modal share of non-motorized and other low-carbon modes of transport in cities. But despite this policy, the strong car-, fuel-, and road lobbies being highly influential, continue to dominate the urban transport scenario where more cars and two-wheelers get added to roads daily. Most of the traditional city level planning documents emphasized on public transport and did not incorporate components that include NMT, as a result of which cyclists and pedestrians have been completely neglected in the overall process of city development. This perception of bicycles as a poor man’s travel mode hindered the acceptability of programs such as bike sharing. However, it is changing, and some cities like Delhi, Ahmadabad, Bangalore, Nanded and Visakhapatnam have started to introduce bicycles on rent or special NMT programs. Indeed, it first needs good and safe infrastructures for people to get attracted by the idea of using bicycles more regularly. NMT also needs awareness raising and campaigning to promote bicycling use in order to raise attractiveness (Marion Hoyez, 2014).

**Importance of Non-Motorized Transport (NMT)**

NMT i.e. walk, cycle and cycle rickshaw are green modes of transport that belong to the low carbon path, do not consume energy or cause pollution, provide social equity and in addition provides employment. With increasing urban sprawl, non-motorized transport is losing its earlier importance. The resulting long trip lengths have made cycling difficult. Further, non-motorized modes are exposed to risk of accidents as they share a common right of way with motorized vehicles. However, non-motorized modes are environment friendly and have to be given their due place in the transport network of a city. The problems being faced by them would have to be mitigated. Government of India, through financial measures, would support all efforts in this direction.

**Walk** - walk is the most universal form of commuting. All trips, especially PT trips, begin and end with walk. Walking is critical for success of PT: Walking will reduce vehicle use for short distance commuting: For weaker sections of society walk is the only choice: Walking enhances urbanity, lifestyle, and health. Walk facilities should be designed and managed to accommodate a wide range of uses. People walk alone and in groups, walk pets, push strollers and carts, run, skate, bicycle, stop to gaze and talk, play and eat on sidewalks and paths. Footpaths serve as both travel-ways and stopping areas. Walking is a zero-emission mode of transport that needs to be the primary focus of a sustainable habitat.
Cycling - After walk, cycle is the second most important mode of transport for urban poor. Cycling should be encouraged because reach and effectiveness of PT can be improved. Cycling contributes to improving air quality and mitigating climate change, noise reduction and improved physical health and more health hazards (GOI, 2014).

**Figure 1.1: percentage of households having bicycle in India**

![Percentage of Households having Bicycles in India](image)

Source: census of India 2011

It is clear from figure 3.3: that households having bicycle in both rural to urban 43.7 per cent in total India level in 2001. It had increased dominant position with 44.8 per cent in 2011. In rural area bicycle occupied 42.8 per cent in 2001, in followed by 46.2 per cent in corresponding period. The bicycle like having urban areas occupied 41.9 per cent in 2001, and 46 per cent in respectively corresponding period.

**BENEFITS OF USING NMT**

Better planning leads to better (more integrated) put system and NMT-Facilities, which result in better accessibility, conservation of energy and improved of the traffic flow for causing of traffic congestion and by using the NMT services for the Shorter distance it leads to the travel time saving and improving the saving in fuel consumption and improves in atmosphere in less air pollution and helps lead to the improving of the health of individual and also saves
the environment by reducing the consumption of fossil fuels. With the increase in vehicular growth, commuter’s value of time, tendency to fast modes of travel, NMT in spite of its health benefits has been put away from regular travel mode. But in most of countries NMT has developed tends to be retrofitted to existing infrastructure, and to concentrate on minimizing the disturbance that it causes to the flow of motorized traffic. For various reasons, people are now trending to walk, bicycle.

**IMPACT OF NON MOTORISED**

**ENERGY CONSERVATION**

Consumption of natural resources, such as petroleum, can impose various external costs, include macroeconomic impacts and national security risks from dependence on imported petroleum, environmental damages, climate change impacts, and the loss of resources available for future generations. Put another way, resource conservation can provide various benefits to society. The external costs of petroleum consumption are estimated to be 1–4¢ per vehicle-mile for an average automobile (NRC, 2001). These impacts tend to be higher for short trips, due to cold starts, and under congested, urban travel conditions. *Estimated Benefits:* Energy conservation benefits of a shift from driving to walking or cycling are estimated to average 5¢ per urban peak mile, 4¢ per urban off-peak mile, and 3¢ per rural mile.

**POLLUTION REDUCTION**

Walking and bicycling produce no air pollution. Per mile emission reductions are large because they usually replace short, cold-start trips for which internal combustion engines have high emission rates, so each 1% of automobile travel replaced by walking or cycling decreases motor vehicle emissions by 2% to 4% (Komanoff and Roelofs, 1993). *Estimated Benefits:* Automobile air pollution costs are estimated to average 1¢ to 12¢ per automobile mile, with relatively high values under congested urban conditions (Small and Kazimi, 1995; McCubbin and Delucchi, 1996). Many monetized estimates include only a limited portion of total air pollution costs (for example, many ignore particulate pollution and air toxics), so a relatively high value is appropriate. A conservative estimate is 10¢ per mile for urban-peak driving, 5¢ for urban off-peak and 1¢ for rural driving. SQW (2007) estimates that shifting from automobile to cycling provides air pollution emission reductions valued at 11.1British
Pence per car kilometre in major cities and Pence in rural areas. 5.8 pence for petrol cars and 32.2 pence for diesel cars in an urban area, and 2.1 pence for petrol cars and 2.0 pence per kilometre for diesel cars in rural areas. Table 5 summarizes these results.


Vision

Chennai will be a city with a general sense of well-being through the development of quality and dignified environment where people are encouraged to walk and cycle; equitable allocation of public space and infrastructure; and access to opportunities and mobility for all residents.

Goals

The Corporation of Chennai (COC) aims to increase the use of cycling and walking by creating a safe and pleasant NMT network of footpaths, cycle tracks, greenways, and other facilities to serve all citizens in the COC area. The designs of Chennai streets will be consistent with best practices in pedestrian-oriented, multi-modal street design. They will also incorporate appropriate environmental planning and water management techniques. Together, these measures will achieve the following:

1. Improved access and mobility for all residents.

2. Social and economic empowerment through the provision of improved low-cost mobility.

3. Gender equity through the provision of NMT facilities that are safe for women to use.

4. Social inclusion in creating NMT facilities that follow principles of universal designed are usable to the greatest extent possible by everyone, regardless of his or her age, ability, or status in life.

5. Reduced local and global environmental impacts of COC’s transport system through expanded use of zero pollution modes.

6. A changed culture that accepts the use of cycling and walking as Acceptable and apparitional means to move around in the city.
7. Participation of local residents, businesses, and other stakeholders in the preparation of designs and standards in order to foster the community’s active use and sense of ownership of these spaces (GOTN, 2014).

Conclusions

The study conclude that most create more aweranes to the government for the people and the every one our society. Using non-motoried vehicle and avoiding personalized motorised vehicle and followed by vehicle sharing system. A well-functioning road infrastructure must fulfill the requirements of all road users. In the context of the present socio-economic realities pedestrians cannot be ignored from the urban landscape. It is true that all the investment plan focus more on cars but congestion seems to worsen along with lesser pedestrians. Given that there is not much space available to expand existing roads. Future mobility needs are best met by increasing the capacity of the existing road network. This can only be achieved by encouraging modes which are more efficient in terms of space utilization. If pedestrian paths are constructed together with dedicated public transport corridors, will ease of congestion on roads as well as it will make the travel safer. To achieve the sustainability goals of the transport sector, it is necessary to promote use of NMT in Hyderabad. Cost for developing NMT infrastructure would be less than 1 million per km for Cyberabad region for a stretch of 56 kilometers, approximate cost is Rs 47 million. A single project, Hyderabad Metro is expected to spend 150 billion just for a stretch of 72 km. if atleast 0.5% of amount is spend the same length NMT infrastructure could be developed. So, hereafter for any infrastructure development it should be made as a policy that 1 % is to be kept for NMT. Always every Urban Local Body (ULB) need to have a policy for green commutation to promote NMT, Plan for implementing the policy with proper fund allocation and monitoring the service levels regularly.

Reference


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