“Pedestrianisation Of Commercial Street Into A Successful Socio-Economic Realm” - A Case Of Predestination Walking Activity Recognition Of M.G.Marg, Gangtok, India.

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Abstract- Gangtok is the capital of Sikkim, the least popular state of India, situated in the lesser Himalayas. Gangtok was once a hamlet and a trading centre on the silk route. In 1975, as Sikkim became part of the Indian Union, Gangtok was made the capital. Gangtok today is a tourism hotspot at an altitude of 5500ft above sea level. Its economy is based on tourism. The city has seen a huge influx in number of tourists in the last few years. This lead to increase in number of vehicles in the city core, congesting in the transportation network. M.G. Marg was one of the heavily congested area of the city being a major commercial center. The major problem was off street parking which was primary reason of congestion. To solve the issue and enhance uninterrupted traffic flow, the government took initiative of introducing multilevel parking car parking in the designated spaces and pedestrianisation the central core. M.G.Marg being a major commercial street evolved as a great public space on pedestrianisation. It lead to a successful public realm. The paper intends to present the impact of pedestrian walking activity recognition on solving the issue of congestion in the main city core. Recognition of pedestrian activities not only helped decongest the transportation network but also boost business and enhance public participation. Toady M.G Marg is a tourist friendly commercial space which presents itself as a successful and happening public realm.

Keywords- pedestrianisation; central core; de-congest; commercial street; remodelling ; traffic-calming; network.

I. Introduction

Sikkim is a small state in the North Eastern region of the India. It is located on the lesser Himalayas, the state has an area of 7096 square kilometres. Sikkim has a typical geographical location, biological wealth, environmental settings and cultural diversity. The State is circled in the North by the Tibetan Autonomous region of China, Bhutan in the East, Nepal in the West and West Bengal in the South. Gangtok the capital and largest town of Sikkim, and is located in the South Eastern districts of the Sikkim. Gangtok is located on the either side of the ridge with elevation of 1600 meters. The ridge is running in the direction of South West to North East. Settlement pattern is affected by the physiographic character of ridge and due to this reason Gangtok has developed as a linear town. M.G.Marg or Mahatma Gandhi Marg located in the heart of Gangtok stretches to a length of 350 m and is the hub of almost all commercial activities of Gangtok. It is a popular tourist destination and displays healthy public realm. Gangtok have seen an increasing trend in tourist influx in last few decades with current level of 2,00,000 visitors per year. The length of the city is about 25 kilometres. The transportation network of the city is seen to cater about 10,000 vehicles entering or leaving on a typical working
day in Gangtok Municipal Area. In 2008, the North Eastern Council (NEC) under the Ministry of Development of North Eastern Region (Ministry of DONER), Govt. of India (GOI) undertook the project of “Upgradation and Remodelling of existing distribution system of MG Road and its surrounding areas, Gangtok.”

Some of the known advantages of pedestrianisation across the world are:

- **Increased safety for shoppers** and visitors, especially for the for green or social space, elderly and children.
- **Increased interest among tourists to visit the pedestrian** (“travel demand management” or TDM). only zones due to easier, safer, and more comfortable

**Pedestrian and its different meanings:**
There are different meanings regarding pedestrianisation. The simplest meaning of it is the removal of vehicular traffic from city streets. For example in Hong Kong, pedestrianisation is defined by the transport department as *“to restrict vehicle access to a street or area for exclusive use of pedestrians”*.  

II. Generally we can categorize the advantages of pedestrianisation in three groups:

- **Environmental impacts:** In terms of environmental objectives, pedestrianisation can help to alleviate and reduce air and noise pollution, as there would be a reduction in the number of cars and reliance on motor vehicles. Nowadays most of large cities are faced with air and sound pollution that it will make them unpleasant and dangerous for their residents. Pedestrianisation can promote walking as a transportation mode without any need to oil, so we can save fuel as well. Studies have shown that with pedestrianisation mode using public transportation such as bus and rail transportation have been increased. Usually when pedestrianisation is implemented, there can be more space on the streets not only for pedestrianisation but also present opportunities for planning of additional planting areas and improving street furniture and landscaping. All these would help to beautify the local street and create a better environment.

- **Economical impacts:** About economical impact we should say that there are a number of impacts with pedestrianisation. First of all, for most large cities with heavy motor vehicle traffic, every year both the government and the private sector have to incur large economical losses in term of air pollution rated costs of lost productivity and medical expenses. With less motor vehicle traffic and less pollution after pedestrianisation, there can be a reduction in costs incurred. Physicians have issued various awareness and manifest about air pollution and its danger and many expenses have been spend to cure the diseases which are related to air pollution. So the less air pollution causes the less related medical expenses. The other economical impact of pedestrianisation is on the retail income in that district. The statistics say that after closing vehicle access in a district the rate of retail turnover usually have been increased. In addition it has been seen that not only the retailers’ benefits but also the role of rental income and occupancy rate is increased. The main reason is that pedestrian can shop and watch shop-windows easier and enjoys without any fear from vehicles. In some places where have pedestrianisation scheme people will welcome coffee shops and food retails so much.
• **Health impacts**: Health specialists suggest that adults should take part in physical activity for 30 minutes a day for at least 3 times a week. This can be done by walking, as it is a good exercise. Doing so results in a number of physical benefits, some examples are to prevent overweight, reduce the risks of heart diseases and strengthen bones.

### III. Types of pedestrianisation:

We can have three kinds of pedestrianisation:

1. **Full time pedestrian streets**: In this design arrival of vehicles into street is fully forbidden and usually services are in the back of street. In most cases only emergency service vehicles are allowed to enter.

2. **Part-time Pedestrian Streets**: Part-time pedestrian streets are those where vehicular access is allowed only in specific periods. There is no on-street parking spaces allowed but however loading bays are available.

3. **Traffic Calming Streets**: The third form of pedestrianisation is traffic calming streets. They serve to reduce the dominance and speed of road vehicles. There are no restrictions to vehicle access, but footpaths are widened and parking spaces are reduced. Various traffic calming measures are used to slow down the speed of vehicles. They include speed tables, narrower traffic lanes and use of different road textures and colours to remind drivers that they are within traffic calming zones.

Major project related to MG road in future cost RS 30.75 crore.

### PROJECT EVALUATION

The project evaluation was carried out in accordance with the following objectives:

i. Evaluation of Projects/Schemes to assess the impact and desired outcome

ii. Recommend mid-term correction of the project if any for optimum utilisation of fund.

iii. Give a measure of the cost of the project.

The analysis of the project parameters were done and the results are reported in this chapter under the following headings:

- Financial Evaluation
- Physical Evaluation
- Assistance provided by NEC (North-East council)
- Interaction with Local Public
- Interaction with the Officers of the Energy & Power Department
- Success and Impact
- Mid-term Correction/Critical Areas
- Benefit
- Opportunity Cost
- Guide Points

### IV. Data collection & Analysis-

This section presents the details of the data collection sites, procedure for data collection and the procedure for data analysis. The last part of this section presents the main findings of the study.

**Data Collection Sites**- A survey was conducted on the weekdays as well as on the weekends in the questionnaire form regarding the satisfactory level of public residing there permanently before this area became pedestrianised & after it became pedestrianised, purpose of visitors visiting MG
Marg was asked to the people present there, the questionnaire also contain the question regarding aesthetic essence & pedestrian really benefitted & is the social life have been impacted due to pedestrianisation of this area. The survey also include the merchant opinion regarding that they have benefitted due to pedestrianisation of the area.

Some of the factual data which is taken from the comprehensive mobility plan of Gangtok like the **Total trips – 90379** for the Gangtok and out of which **Walk trips are 38475 that is 42.57 % of total**. According to primary survey conducted by DDF Consultants Pvt.Ltd. Origin Destination Characteristics- (MG Marg)

According the comprehensive mobility plan of Gangtok  % share in total trips originating from Lower MG Marg zone - 17.7 % and % Share in total trips destination at lower MG Marg zone – 12.9 % respectively. M.G. Marg is a long stretch of open mall lined up with glittering shops and restaurants where locals and tourists take leisure stroll, while New Market area is an extension of the M.G. Marg.

**V. Major Works**

- **Remodelling of Power Supply**

  The assistance provided by NEC for Upgradation and Remodelling of existing distribution system of MG Road and its surrounding areas, Gangtok at a cost of Rs. 451 lakh has helped the Government of Sikkim in meeting the needs of the project. The implementation of this project has not only reduced the pressure of the growing load handled by existing old distribution system but also has helped to enhance the beauty of MG Marg thus increasing the tourist attraction in the state.

<table>
<thead>
<tr>
<th>Total samples collected</th>
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<tbody>
<tr>
<td>Merchant opinion</td>
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<tr>
<td>Public opinion</td>
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<tr>
<td>(permanent residents )</td>
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<tr>
<td>Tourist opinion</td>
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**SUCCESS AND IMPACT :** The project approved by NEC has met its success as evident after seeing the happiness and satisfaction of the Energy & Power Department officers as the public as well as the tourists who gather in the area have appreciated the good work done by the Department with the assistance of the North Eastern Council. The implementation of the project has created a very good social impact with rise in tourists visiting the state.

**MID-TERM CORRECTIONS/Critical AREAS :** The mid-term corrections are an integral part of project implementation if the corrections are technically sound and financially viable. In case of this project under evaluation there is no scope for mid-term correction since the physical works have been completed at site. During the site visit no critical areas where immediate improvement is required could be brought out.

**BENEFITS :** The benefits accruing from the project are difficult to be quantified without any baseline drawn from the pre project and post project scenario. However it was gathered that the upgradation and remodelling of the distribution system of MG Road and its surrounding areas with financial assistance from the NEC has contributed greatly towards better functioning of the
distribution system and public benefits besides adding immensely towards beautification of the area. This is evident from the rush of tourist to the area to have some photographs with modified beautification project on the background to carry a memory with them. This has also helped in spreading the message of tourism far and wide.

**COST** : The project up gradation and Remodelling of existing distribution system of MG Road and its surrounding areas was approved by the NEC at a cost of Rs 451 lakh. The project could be completed without escalation. Since the project was approved when cost price index was at a much lower level, it was beneficial for the NEC as well as the State Government not only from the point of view of early public benefits but also from the consideration of positive financial advantages.

- **DRAINAGE**

  Streets should use appropriate Sustainable Urban Drainage Systems (SUDS) techniques as relevant to the context in order to minimise Environmental impacts.

**Sustainable Urban Drainage Systems**

The term Sustainable Urban Drainage Systems covers the whole range of sustainable approaches to surface water drainage management. To realise the greatest improvement

*Figure 11: Image after the remodelling of M.G. Street, Gangtok.*

in water quality amenity and biodiversity and flood risk management, these components should be used in combination, sometimes referred to as the SUDS Management Train, as described in *The SUDS Manual*. SUDS are more sustainable than conventional drainage methods because they:

- Manage run-off flow rates, using infiltration and the retention of storm water;
- Protect or enhance the water quality;
- Sympathetic to the environmental setting and the needs of the local community;
- Provide a habitat for wildlife in urban watercourses;
- Encourage natural groundwater recharge (where appropriate); and
- Can assist in reduction or removal of drainage network constraints.

They do this by:

- Dealing with run-off close to where the rain falls (source control);
- Managing pollution at its source; and
- Protecting water resources from pollution created by accidental spills or other sources.

Surface water should be dealt with as close as possible to where it falls as rain (source control) and the use of two or more SUDS components can be used for the optimal solution to: (i) Manage rainfall to mimic natural drainage by:

- Reducing runoff rates;
- Reducing additional runoff volumes and frequencies; and
• Encouraging natural groundwater recharge.

(ii) Minimise impacts on quantity and quality of runoff by:
• Reducing pollution and protecting the quality of receiving waters;
• Preventing direct discharge of spillage; and
• Reducing the volume of surface waste runoff to sewers

(iii) Maximise amenity and biodiversity opportunity

• Contributing to the amenity and aesthetic value of the development; and
• Providing habitat for wildlife and biodiversity.
VI. Images of MG Marg

Daytime picture of MG Marg, Gangtok, Sikkim

Nightview of the shopping arcade and activity of MG Marg, Gangtok

Map showing the MG Marg, Gangtok, Sikkim

An old picture of the MG Marg, Gangtok, Sikkim

Photo source: Chultim Denzongpa
Link: sikhiblogspot.in/2016/02/old-photographs-of-gangtok.htmlm

VII. Data analysis procedure
As the collection of data was done on the sample basis so it was analyzed in context to questions w.r.t percentage of responses.
Survey analysis–
Response of the merchant regarding the benefitted due to pedestrianisation is as 82 % say its positive response and 14 % says its negative response where as 4 % merchants have no idea.

Most of the visitors who come to mg road are daily visitors followed by tourist that is 32 % and least are the people who come for public event that is only 12 %.

As from the survey it was analysed that children from the age of 0-6 year are found least that is only 4 % where as the people from age group 6 – 15( years) & 15 – 25 (years) are found almost in equal percentage that is 33 % & 32 % respectively

It was a survey in the public about their satisfaction level regarding this area before it became pedestrianise and after the responses are as 76 % people were not satisfied before its pedestrianised and after it become pedestrianised 86 % people where satisfied.
Response of visitors regarding the aesthetic essence of the area is as 86% says it has improved due to pedestrianisation where as 6% visitors says can’t say any thing about aesthetic essence.

Pedestrians stay benefitted due to pedestrianisation response from are as 88% say yes ,where as 6% say no and in the same way 6% can’t say any thing.

Regarding the impact on social life 84 % of the public response that it has impacted the social life, where as 7 % of the people says it hasn’t impacted social life and 9 % people responses that the can’t say any thing regarding impact on social life.

VIII. Conclusion

• As pedestrianisation of this area has shown great success from various point of views so this model can be replicated to various other places in India with similar topography , similar tourist character and similar central area to decongest the central core of tourist cities.

• Increased interest among tourists to visit the pedestrian only zones due to easier, safer, and more comfortable movement.

• Increased sales and benefit for the merchants due to increase in visitors, as pedestrians require far less space than cars.

• Lower pollution levels (both air and noise) at pedestrian only zones.

• More independent movement and active play amongst the children.

• Less land taken for parking and roads – more land available for green or social space.

• Discouragement of private car and other motorized vehicles - (“travel demand management” or TDM).
EXISTING LAYOUT

EXISTING LAYOUT

EXISTING LAYOUT

EXISTING LAYOUT

LAYOUT after the Street Lights and fire hydrants were added

LAYOUT after fire hydrants were added and the proposed building line have been mended

LAYOUT after the solar street lighting system been installed
References-


2. Environmental initiatives of the state government (1994-2016)


5. ITDPI Guidelines for Indian Street Vendors

6. Advait Jani & Christopher Kost “Footpath Design” A guide to creating footpaths that are safe, comfortable, and easy to use by ITDP, November, 2013

7. Amitava Sarkar “Analysing the Urban Quality of Upper Bazaar: A Key Public Realm in Hamirpur,


10. Evaluation of NEC funded projects in Sikkim, “Upgradation and Remodelling of existing distribution system of MG Road and its surrounding areas, Gangtok”, July 2010


14. India”, Centre for Urban Equity & Cardiff University - 2014