

A LITERATURE BASED STUDY ON GREENWAY

Devesh M. Vyas¹, Himanshu J. Padhya², Palak S. Shah³

PG Student, Town and Country Planning, S.C.E.T., Surat, Gujarat, India¹

Associate Prof., PG In-charge, Town and Country Planning, S.C.E.T., Surat, Gujarat, India²

Adhoc Assistant Prof., S.C.E.T, Surat, India³

Abstract: *A suitable green way can assume a successful part in cleaning air, altering atmosphere, dispersing with commotion, decorating environment, and so forth. It is unnecessary for building a great human settlement and an elevated expectation society. Various studies demonstrated that expanding populace and improving urbanization procedures are converting more delicate green spaces into impermeable hard solid surfaces. Green space is important factor to make the city liveable and it contribute to the sustainable urban environment. So, the panning of green spaces are important. A number of study shows that there is no any scientific analysis for a particular location of a greenway. So, this literature research determines the benefits and needs of a greenway in urban area of the city.*

Keywords: *Air Quality Improvement, Greenway, Street Planting Compositions, Urban Green Space*

I. INTRODUCTION

A. Background

Urban green space is a part of the physical portion of the city which can contain particular capacities. In some cases, Green spaces performs aesthetic as well as recreational role. Be that as it may. As urban districts are expanding in late decades and urbanization surpassing constitution urban areas which have experienced distinctive issues like population increase, physical expansion of urban areas causelessly, and increment in ecological contamination, urban green space has found significant part on saving and adjusting urban environment and controlling air contamination.

B. Surat City Profile

Surat today is known for its booming textile manufacturing and world renowned diamond manufacturing. It is growing fast as people from all over the nation make to this historic city with a chequered past. Once known as Surya, the city is today the second largest in Gujarat, located on the banks of the Tapti River. The old city has narrow streets, old houses and around it the expanding cityscape is scattered in modern buildings and industrial areas. It is the textiles capital of the state, if not the country. Surat is now measured as a Mega City of India.

Zone No.	Zone Name	Total Area (Sq Km)	No of Open Space Area	Area of Open Space	% of Open Space
1	NZ	36.363	81	0.823	2.27
2	SWZ	111.912	255	1.886	1.69
3	SZ	61.764	113	0.708	1.15
4	EZ	37.525	97	0.51	1.09
5	SEZ	19.492	60	0.211	1.08
6	WZ	51.279	83	0.49	0.96
7	CZ	8.18	2	0.009983	0.122

(Source: Surat Municipal Corporation-2015)

It is seen in Surat that by SMC, a portion of the green spaces are changed over into the other land utilizes each year. As of late as indicated by Garden Department of SMC, there are 3.88% urban green space are existing.

As per the government, consistently there ought to be an augmentation of 15% in green space in the city territory. Nonetheless, it is not got so this has brought about natural outcomes: Expanded soil temperature, flimsiness in hydrological administration, nearby environmental change, and the loss of critical species, all of which adversely affect the biological environment and human settlement

II. CONCEPT OF GREENWAY

A **greenway** is "a strip of undeveloped land near an urban area, set aside for recreational use or environmental protection". A greenway, in this paper, is being thought of as a major corridor o any city with heavy vehicular traffic and pollution index having a linear strip of trees on both the sides along the road and on the median, of different species in order to serve the purpose of air quality improvement, and also act as a noise cancelling barrier for the homes that are roadside.

It does not always mean as a open space or a natural strip of land or an neglected railway track. It does not also mean that a greenway should be or must be natural or landscaped route. It can be a planned design as a part of a heavy vehicular traffic corridor and could be developed as a tool to reduce air and noise pollution. The roundabouts can be planned as symbols of beautification but it is not mandatory.

III. PROBLEM DEFINITION

A suitable green way can assume a successful part in cleaning air, altering atmosphere, dispersing with commotion, decorating environment, and so forth. It is unnecessary for building a great human settlement and an elevated expectation society. Various studies demonstrated that expanding populace and improving urbanization procedures are converting more delicate green spaces into impermeable hard solid surfaces. Green space is important factor to to make the city liveable and it contribute to the sustainable urban environment. So, the panning of green spaces are important. A number of study shows that there is no any scientific analysis for a particular location of a greenway. So, this research determines the optimal location to choose the proper space to create the greenway as a part of Chowk to Olpad corridor of Surat City.

IV. AIM

To study the literature based on greenway

V. OBJECTIVES OF STUDY

- To objectify and classify urban green space
- To define the factors for analysis

VI. BENEFITS OF GREENWAY

A.Environmental Benefits

1. Ecological Benefits:

- Greenway supply to metropolitan areas with organic public organizations covering from upkeep of biodiversity to the governor of metropolitan atmosphere.
- Therefore, sufficient woods ranch, plant life around metropolitan resident's household, organization of water bodies by powers can lighten the conditions

2. Pollution Control:

- Air and commotion contamination are basic marvels in urban regions. Emanations from processing plants, for example, SO₂ and NO₂ are extremely dangerous to human being and environment.

3. Bio-Diversity and Nature Conservation:

- Greenways have capacities to insure place propagation protection of trees, soil and drinking water purities.
- They give optical improvement, regular change and connection with the normal realm
- A practical method of greenway is imperative for support of natural fragments, with picturesque roads and utilization of vegetal types accustomed to nearby situation with low running cost, self-sufficient and manageable.

B.Economic and Aesthetic Benefits

1. Energy Savings:

- Using plant life to reduce the vitality expenses of cooling structures has been increasingly professed as a economically savvy purpose behind increasing green space and vegetation planting in mild atmospheric urban conditions.
- Plants boost air diffusion, provide shadow and they evapotranspire. This provides a cooling effect and reduces the air temperature.

C.Social and Psychological Benefits

1. Recreation and Wellbeing:

- People fulfil the greater part of leisure requires inside region where they reside.
- Greenway contribute as a closure asset for undoing; give avid warmness.

2. People Health:

- People who have similar habitat, the stress reduced rapidly when distinguished with entities who presented to environment, there anxiety level increases.
- Upgrades in air clarification because of greenway confidently touch physical happiness with such obvious rewards as reduction in respiratory infections.

D.Characteristics of Greenway

- Metropolitan traffic corridor greenways, generally made as a development design of a major traffic corridor

- Recreational greenways, those which are made for the purpose of recreation by redesigning neglected rail tracks or making a track along the bank of the river, both sides if possible.
- Cost-effectively important strips, typically alongside waterbodies to deliver for flora and fauna relocation and species trading, environmental study and recreational purposes
- Picturesque and Significant courses, usually alongside a path, freeway or watercourse

VII. LITERATURE REVIEW

A.Title : Does Urban Forestry have a Quantitative Effect on ambient air quality in an urban environment?

Year of Publish : 2015

Author : P .J. Irga, Burchett, F .R. Torpy

The current project examined whether higher concentrations of urban forestry might be associated with quantifiable effects on ambient air pollutant levels, whilst accounting for the predominant source of localized spatial variations in pollutant concentrations, namely vehicular traffic. Monthly air samples for one year were taken from eleven sites in central Sydney, Australia. The sample sites exhibited a range of different traffic density, population usage, and greenspace/urban forest density conditions.

Carbon dioxide (CO₂), carbon monoxide (CO), total volatile organic compounds (TVOCs), nitric oxide (NO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), total suspended particulate matter (TSP), suspended particles <10 mm in diameter (PM₁₀) and particulate matter <2.5 mm (PM_{2.5}), were recorded, using portable devices.

It was found that air samples taken from sites with less greenspace frequently had high concentrations of all fractions of aerosolized particulates than other sites, whilst sites with high proximal greenspace had lower particulates, even when vehicular traffic was taken into account. No observable trends in concentrations of NO, TVOC and SO₂ were observed, as recorded levels were generally very low across all sampled areas.

The findings indicate, first, that within the urban areas of a city, localized differences in air pollutant loads occur. Secondly, we conclude that urban areas with proportionally higher concentrations of urban forestry may experience better air quality with regards to reduced ambient particulate matter; however conclusions about other air pollutants are yet to be elucidated.

B.Title : Street planting compositions : the public and expert perspectives

Year of Publish : 2014

Author : Noriah Othman, Masbiha Mat Isa, Noralizawati Mohamed, Ramly Hasan

Street planting composition refers to all kinds of plants that grow along streets and neighborhood areas. Located in the public right-of-way, they provide cooling shade, cleaner air and more beautiful urban streetscape

3 objectives are as follows:

- To identify typical species, characteristics and condition of street trees in the study area.
- To investigate people's opinions on preferences, values and problems of street trees in study area.
- To investigate the reasons for people's assessment and preferences in selected types of street trees species in study area.

The reliability statistics measurements were carried out using Cronbach's Alpha for each category. Cronbach's Alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. It is considered to be a measure of scale reliability.

For this study, the plantings were categorized into four main categories which are the roundabout, island, roadside and road divider planting area. The Alpha value is 0.75 for roundabout planting area, 0.66 for island planting area, 0.86 for roadside planting area and 0.72 for road divider planting area. Then for each scene, the mean of the ratings were calculated and results from the roundabout and roadside were selected due to their highest alpha value in the planting area category.

VIII. CONCLUDING REMARKS

- Greenway is theoretically holds much significance when it comes to improving air quality and reducing air and noise pollution when designed on a major traffic corridor of a city
- Street planting compositions and Plant species holds so much significance in the success of a greenway and getting optimum results

ACKNOWLEDGEMENT

The authors convey deep sense of gratitude towards Dr. Vaishali Mungurwadi, Principle, Sarvajanik College of Engineering and Technology (S.C.E.T), and Head & Prof. (Dr.) Pratima A. Patel, Sarvajanik College of Engineering and Technology (S.C.E.T) for their consistent support and motivation.

REFERENCES

- [01] P. J. Irga, M. D. Burchett, and F. R. Torpy, "Does urban forestry have a quantitative effect on ambient air quality in an urban environment?," *Atmos. Environ.*, vol. 120, pp. 173–181, 2015.
- [02] N. Othman, M. M. Isa, N. Mohamed, and R. Hasan, "Street Planting Compositions: The Public and Expert Perspectives," *Procedia - Soc. Behav. Sci.*, vol. 170, pp. 350–358, 2015.