

A REVIEW ON URBAN GREEN COVER

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Abstract: Urban green cover is the integration of vegetation with permeable and reflective surfaces to minimize local temperatures and encourage evaporation from soil and plants into the urban environment. It is included the green space as a major part and the permeable pavements, green roof, green space on road side and median, green wall also cover the large area of the green cover. Green cover are important factors for to make city liveable and contribute for the sustainable urban environments. So, proper planning of urban green cover is important for the planning point of view. In Surat city there is only 3% tree cover which is very poor. This paper explains the significance and challenges of urban green cover based on literature carried out from several research paper and guidelines.

Keywords: Urban green cover, Benefits, Green Cover Components.

I. INTRODUCTION

‘Green cover’ refers to a broad range of strategies to integrate green, permeable and reflective surfaces into cities and towns, which are home to 89 percent of population. Urban surface temperatures can be 10°C to 20°C higher than in the air temperatures because buildings, roads and other hard surfaces absorb and store heat. High temperatures, due to climate change, will further intensify the impacts of urban heat. Public spaces play a major role in combating the effects of climate change, from moderating rising temperatures in cities to preventing flooding. [1]

Urban green cover can assist in mitigating the effects of increased temperatures and reduce the severity of flood events. Green cover may include bush land, private and community gardens, parks, greenways and corridors, street trees, and green roofs and walls. Green cover is an effective way to manage heat impacts in cities, store carbon, improve amenity and encourage walking and cycling. Increasing green cover in urban environments can be achieved in a number of ways, from protecting local green spaces and designing eco-friendly buildings, through to creating a green space network. The foundations of an urban environment such as the ‘traditional’ built infrastructure of roads and public utilities aren’t the sole basis of a successful, vibrant and resilient town or city. Green infrastructure, the living network of green spaces and environmental systems that surrounded, is equally necessary and should be woven into the core of urban design and planning.

II. COMPONENTS OF GREEN COVER

Urban green cover included major green space, Green Street and many others are put positive impact on an urban environment and reduce the pollution and improve the quality of life.

1. Green space

Green space is generally classified recreation use in master plan, as per URDPFI, 2015 guidelines green space can include three categories: 1) Recreational space, 2) Organized green, 3) Other common space (such as open space/ vacant land including forest cover, flood plains, and so on. in plain areas).

2. Green street

Green Streets means street tree planting with shade providing canopy, mass planting understorey, bio-swales and median planting, as well as permeable and/or light coloured, highly reflective surfaces on roads, pavements and car parks, planting on road side and road median.

3. Permeable pavements

Permeable pavements include gravels or unit paving systems with either cut outs allowing water to permeate through or porous pavers that allow water to filter through across the surface area of the paver.

4. Green roof or cool roof

Green roofs are roof surfaces that are partially or fully vegetated. Green roofs can be applied at a domestic or commercial scale

5. Green wall

Green walls are vegetated systems that are grown on the vertical facade of the building envelope. These vegetated systems can be grouped into two main categories: green facade and green wall.

III. LITERATURE RIVIEW

A literature review is documentation of state of the art. Here the scholarly literature is of articles, books, research papers, reports which relevant to urban green cover and its benefit.

Benefits of urban green cover

- Building heat absorption and radiation reduced
- Air purification
- Sound insulation
- Increased shade cover
- Decreased surface heat absorption and radiation
- Permeable pavements reduces surface temperatures, surface runoff and improves water quality
- Flora and fauna habitat.
- Social, community and health benefits

Seiferling, N. Naik, C. Ratti, and R. Proulx et al. (2017)[2] used an open source the city street image, which is now a lot (Google Street View). Demonstrate a multi-step approach computerized vision algorithm and quantifies the percentage of street image tree coverage high accuracy level. Then modelling the relationships between the neighbourhood streets of the city streets and able to extend this image representation and estimate the size of the tree in the city street pictures on a relatively high level for the whole city. Despite the high

resolution of the formula remote senses (e.g. airborne LIDAR) or intensive field research, the method provides a new variety of features the urban tree trunk, which measures the presence and spread of trees in the same point where citizens experience and see the urban landscape.

Mei, Yingdan, Diane Hite, and Brent Sohngen et al. (2017)[3] In this paper, study on the influence of urban tree cover on house values, estimate the demand of urban tree cover in urban area and also calculating the effect of forest loss in California. For study two methods are used Lagrange Multiplier Robust test and Spatial Lag Model. In the first stage model is for estimates the benefits of the urban tree cover, price of house is influenced by the neighbouring house price and neighbouring house prices may be correlated with the percentage of urban tree cover in the parcel.

Joseph Jones et al. (2016)[4] explained Vertical green space is important now a day, because it increases the quality of life and improve the eco-system and urban environment. It can also help in improve people's mental health and psychology, increase biodiversity, improve air quality, and modifying temperature. In urban area there are increasing the pollution so green space gives the prime importance. In developing cities, the reserved space for green space are often turned over for housing or other purpose because of these the cities are convert into built-up district. Today vertical green space could be in the form of greenery on residential building, balconies, commercial buildings, walls etc. the benefits of vertical green spaces are the reducing the temperature, increasing the urban area's bio-diversity and also improving the air quality, it also looks aesthetically pleasant, and most important it is the best solution for increasing the urban green spaces in highly dense area.

Biao Zhang, Gao-di Xie, Na Li, Shuo Wang et al. (2015)[5] study on roles played by the green space due to the rapid urbanization. Now a day the effect of urban green space on storm water runoff increasingly attracted attentions due to the climate change condition. The study was conducted in Beijing, China in this study the investigation of spatial-temporal changes of urban green space and estimate the effect of rainwater runoff reduction based on an empirical model. Because of the urban green space, the volume of rainwater runoff is controlled. The runoff reduction rate was continuously decreased from 2000 to 2010 due to changes in the effect of urban green space. In Beijing green spaces were considerably decreased by 2000 to 2010 about 199km² at the expense of agriculture land. Runoff reduction capacity in the city varies with the landscape pattern change in urban green space. A variation in the landscape pattern indicates the potential for water logging risk reduction through urban green space management in the city. For managing the urban green space city managers should focus on the green space in rainwater regulations and on scientific management of urban green space.

Report on Status of Tree Cover in Urban Areas of Gujarat (2011)[6] concluded that in Surat city there is only 3% of tree green cover which is much lesser than the World Health Organization criteria of the 9 sq.m per person.

In this report tree cover status of the all municipal corporation is done. Above table show the percentage of the tree cover with respect to total geographical area of the particular municipal corporation. Surat having only 3% tree cover which is much less than that of the all other municipalities. It is not match with the standard that is suggested in the GTPUD Act that the all TP scheme planned with having the minimum of 5% green space provision.

OUTCOME

Urban green cover is important now days because of the rapid urbanization and building the concrete forest. It helps in the improvement of the urban environment and bio-diversity. In Gujarat, Surat having less tree cover compare to other city. Surat need to improve the percentage of the green cover by planting the more trees in the urban area to increase the per capita green space up to the WHO standard 9 sq. m per person.

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REFERENCES

- [01] NSW State Government and Office of Environment and Heritage, “Urban Green Cover in NSW: Technical Guidelines,” p. 63, 2015.
- [02] Seiferling, N. Naik, C. Ratti, and R. Proulx, “Green streets – Quantifying and mapping urban trees with street-level imagery and computer vision,” *Landsc. Urban Plan.*, vol. 165, no. July 2016, pp. 93–101, 2017.
- [03] Y. Mei, D. Hite, and B. Sohngen, “Demand for urban tree cover: A two-stage hedonic price analysis in California,” *For. Policy Econ.*, vol. 83, no. February, pp. 29–35, 2017.
- [04] L. Walls and N. Hien, “Do cities need vertical greenery?,” pp. 1–4, 2017.
- [05] B. Zhang, G. Xie, N. Li, and S. Wang, “Landscape and Urban Planning Effect of urban green space changes on the role of rainwater runoff reduction in Beijing , China,” vol. 140, pp. 8–16, 2015.
- [06] M. Corporations, *Status of Tree Cover in Urban Areas of Gujarat*. 2011.