

# A Role of Green Infrastructure in Enhancing Quality of life: A Case study on Surat city

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## ABSTRACT

*Development of Green Infrastructure is the most important and major issue nowadays in many countries due to changes in climate condition. High quality environments have an important role to play in building competitive cities and regions and in contributing to quality of life for a people. There is a many evidence that green infrastructure can help to improve people's health and wellbeing in many other ways. As a case study, this paper is to improve quality of life and promote people for good impacts of green infrastructure in Surat city. Surat city is located in the western part of India in the state of Gujarat. As we all know Surat is the fastest developing urban city in India and it is India's eighth and Gujarat's second most populous city as per Census 2011. The primary objective of this paper is to review the green infrastructure in Surat city. Since, the facing issues of health problem, quality of life, air pollution and environment changes. This paper is a study of availability of green space, proper land-use for green space and requirement of more green infrastructure for improve the quality of life of people, environmental condition and aesthetic look of Surat city. And also encourage peoples to understand the benefits of the Green Infrastructure.*

**Keywords** –Green Infrastructure, Environmental condition, life quality, Urbanization, Land-Use

## 1. Introduction

Green Infrastructure is an interconnected network of natural areas and other open spaces that conserves natural ecosystem values and functions, sustains clean air and water, and provides a wide array of benefits and wildlife [1]. From the beginning of time, people have loved and enjoyed spending time in park, gardens, green corridors, and green spaces. There is currently far reaching and powerful proof that green spaces have effective beneficial outcomes on people's life quality. There is a great deal of powerful proof that green infrastructure can enhance people's health and prosperity in a wide range of ways. Putting resources into green infrastructure is practical in light of the fact that green infrastructure can convey numerous advantages without a moment's delay. It is additionally powerful in decreasing wellbeing imbalances [2].

Green Infrastructure can be made in numerous spots, covering natural and semi-natural areas in urban, rural and marine areas, as well as man-made elements, such as green roofs and ecoducts over motorways, and restored lands, such as wetlands and mangroves [3]. To get the employment, better lifestyle peoples are move from rural to urban areas is called urbanisation. Urbanisation is a rapid growth having major impact on green infrastructure in urban areas. Basically as an impact of urbanisation, the most of land-use are covered with various form of structure development like industrial establishment, high rise buildings, road networks, etc. due to urban growth there is a less availability of green infrastructure in urban areas. To improve the quality of life and making environment pollution free it is essential to use proper land-use for various green infrastructure. Surat city is one of the fastest development urban city of India due to urbanisation from Gujarat and other state.

## 2. History of Surat city

The city of Surat has glorious history that dates back to 300 BC. The origin of the city can be traced to the old Hindu town of Suryapur during 1500 – 1520 A.D., which was later colonized by the Brigus or the King from Sauvira on the banks of River Tapi. In 1759, The British rulers took its control from the Mughals till the beginning of the 20th century. The city is located on the River Tapi and has about 6 km long coastal belt along the Arabian Sea. Due to these reasons, the city emerged as an important trade centre and enjoyed prosperity through sea trade in the 16th, 17th and 18th centuries. Surat became the most important trade link between India and many other countries and was at the height of prosperity till the rise of Bombay port in the 17th and 18th centuries. Surat was also a flourishing centre for ship building activities. The whole coast of Tapi from Athwalines to Dumas was specially meant for ship builders who were usually Rassis. After the rise of the port at Bombay, Surat faced a severe blow and its ship building industry also declined. During the post-independence period, Surat has experienced considerable growth in industrial activities (especially textiles) along with trading activities. Concentration of these activities combined with residential developments has resulted in considerable expansion of the city limits[4].

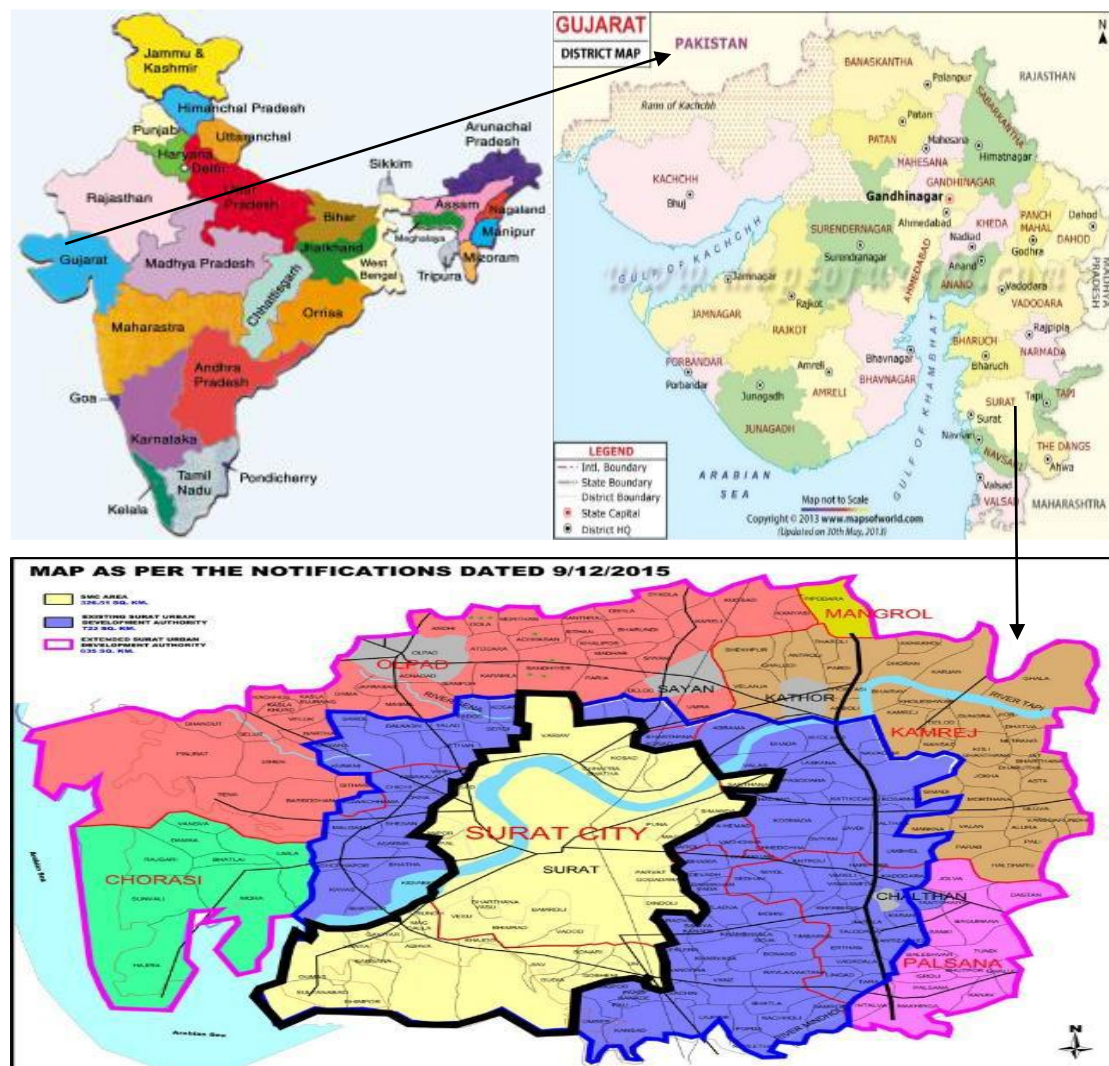


Fig. 1 Location of Surat City

Another story about naming of the town reveals that the Tapi river at surat was used as one of the major ports for exports and also for Muslim pilgrimage (Haj) to Mecca. In Farsi/Persian languages, this was recognized as “Bunder-e-Khubsurat”, meaning a beautiful port. The word “SURAT” seems to have derived from this popular phraseology. Long before Surat came in t prominence,Rander was the principal commercial centre, south of Broach. It was ancient town where Arabs and kafa came and settled in 11<sup>th</sup>/12<sup>th</sup> century. They over powered jain population and became rulers. Trading with Malacca, china, Sumatra, etc., spices, silk, musk and porcelain was the major business. As prosperity of Rander declined in 16<sup>th</sup> century, on account of raids by Portuguese, surat began to assume importance[4].

The port of surat enjoyed great prosperity in 16<sup>th</sup>,17<sup>th</sup>and 18<sup>th</sup> centuries. With rise of Bombay, it ceased to be a port of importance. Subsequent to Muhammad sahib-ud-din Ghori, the next mention of surat is in 1347 A.D., in connection with the rebellion of Gujarat during the region of Muhammad Tughlak (1325 to 1351). In 1373A.D.,the emperor Firoz Tughlak(1351to 1388) is said to have built a fort at surat to protect the town against Bhils. During 15<sup>th</sup> century, Muzzafar shah was governor of surat.In about 1496 to 1521, a rich Hindu trader called gopi settled in surat and he attracted other rich traders in the city. He built large houses, a garden and a small lake. (Gopipura, Ranichakla,etc.are named after him). Portuguese chronicles describe mallik Gopi as Governer of Surat. In 1512, shortly before Barbosu was in Gujarat, surat is said to have been burnt by the Portuguese. Annoyed by the destruction of Surat, the Ahmedabad king gave order for building of a strong castle.(1546). In 1559-60 A.D. Changiz khan came up to surat and Portuguese sent him back. In 1572 A.D. surat fell into the hands of Mirza, then in the rebellion against the emperor Akbar. In January 1573 Akbar marched on tosurat and after a vigorous siege of about six weeks, the fort surrendered. At the time of this conquest, Surat district comprised of 993 towns or villages and yielded annual tax revenue of Rs.0.4 million.

Surat is one of the cleanest city of India and is also known by several other names like "THE SILK CITY", "THE DIAMOND CITY", "THE GREEN CITY", etc. It has the most vibrant present and an equally varied heritage of the past. It is the city where the British first land in India. The Dutch and the Portuguese also established there business centers in Surat, the remnants of which are still preserved in the modern day Surat. In past this was a glorious port with ships of more than 84 countries anchored in its harbour at any time. Still today, Surat continues the same tradition as people from all around the country flock in for business and jobs. Surat has practically zero percent unemployment rate and jobs are easier to get here due to very fast development of various industries in and around Surat City[4].

### **3. Growth of Surat city**

Here in these maps year wise land use growth pattern of surat city is shown. From these maps we can see that from 1985 to 2015 there is a big change in land use pattern of city. Due to these big change nowadays in current situation there is no sufficient land is available for Green space. And main factors are responsible for this situations are migration of people to surat, lack of land availability, improper use of land,etc. due to urbanization people are move from rural area to surat city. The main reason of migration is lack of job opportunities, poor educational facilities, lack of medical attention, more hospital and doctors, perception of exciting city life,etc.



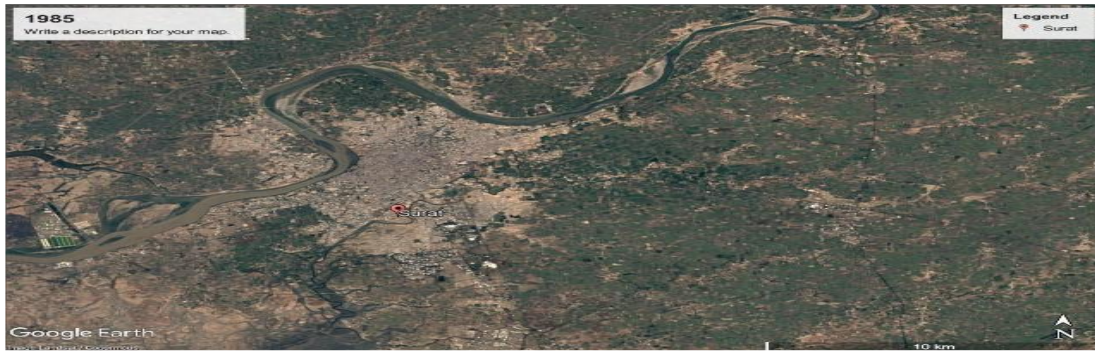


Fig.1 Land use map of Surat city in 1985



Fig.2 Land use map of Surat city in 1995

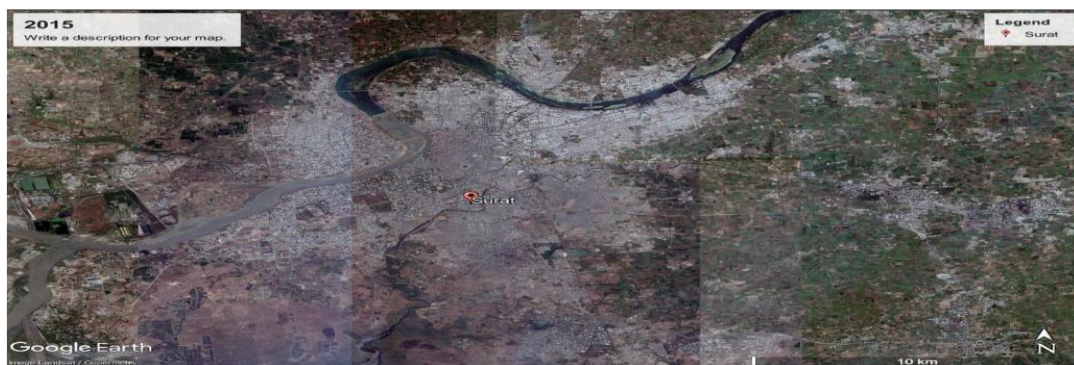


Fig.3 Land use map of Surat city in 2015

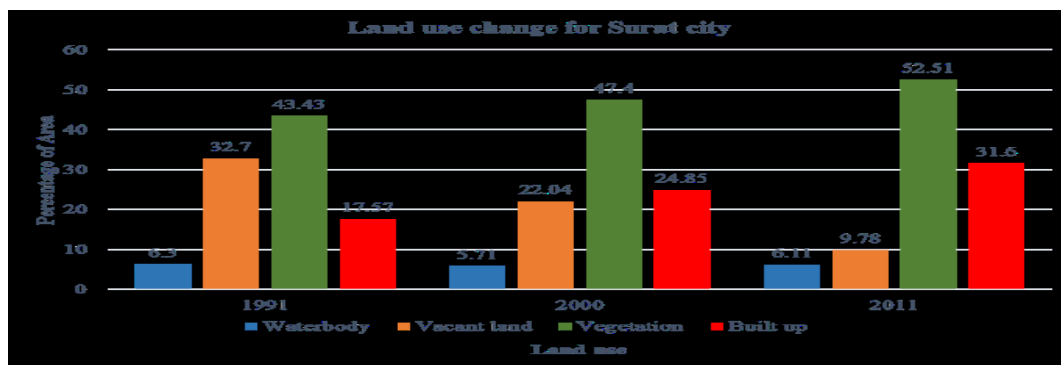


Fig.4 Land use chart of Surat city

Due to migration of people in surat city the growth pattern is change of the city. So the impact of urbanization most of land are covered with built ua area. Rapid population growth will lead to an increased demand for housing, which can in turn lead to housing shortage. So demand of hosing is more ane supply is less. Because of these people are constructing more buildings, mall, school, hospitals and other structure so there no enough

green space are left. And because of this unhardeous change and un proper use of land people are facing many problem due to lack of green infrastructure like, air pollution, phycial and mental health, water scarsity, heat of land, climate changes,etc.

#### 4. Importance of Green Infrastructure

Green infrastructure is an important component of sustainable urban communities. Green infrastructure helps maintain ecosystem services in different ways, (a) Air quality regulation: Potential of ecosystems to capture and remove air pollutants in the lower atmosphere. (b) Erosion protection: Potential of ecosystem to retain soil and to prevent erosion and landslides.(c) Maintenance of soil structure and quality: The role ecosystem play in sustaining the soil's biological activity, physical structure, composition, diversity and productivity.(d) Water purification: The role of biota in biochemical and physicochemical processes involved in the removal of wastes and pollutants from the aquatic environment. (E) Climate regulation: The influence ecosystems have on global climate by regulating greenhouse and climate active gases from the atmosphere[5].

#### 5. Recommendation

For the improvement of city's envionmental condition, people's mental and physical health, cleanliness of air, quality of life, green infrastructure is most important component for surat city. So for inncrease more green infrastructurein city, city have to develope more green space - grow more trees in cities, develope more parks, gardens, green corridors, develope water bodies like:lake, development of seashore,etc. people also have to accept green building concept.



Fig. 5 Raghuvir shell apartment, surat  
(concept of green building)



Fig. 6 Raghuvir shell sliver stone apartment,surat  
(concept of green building)

#### 6. Conclusion:

From the many research discoveries that, it very well may be oytlined that Green Infrastructure gives numerous advantages towards network and may conquer the negative impacts on nature. Ecological characteristics joined with visual quality traits with appropriate consideration and support will add to the higher fulfillment among the loading occupants and guests in this manner. Improved the personal satisfaction in the urban region. For future research, other green infrastructure credits were recommended to be cover by different analysis, for example, on

theopenness, diversity, amenities, and area qualities for better comprehension on green infrastructure segments itself.

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