

# Identification of Factors Responsible for Urban Expansion of Surat

Krunal Rameshchandra Savani<sup>1</sup>, Bhasker Vijaykumar Bhatt<sup>2</sup>

<sup>1</sup> ME (Town & Country Planning); Sarvajanik College of Engineering & Technology, Surat

<sup>2</sup> PG In-charge (ME-TCP), Civil Engineering Department; Sarvajanik College of Engineering & Technology, Surat (Gujarat, India)

Corresponding Author: s.7897.krunal@gmail.com

**Abstract:** *In India, with an unprecedented population growth and migration, an increased urban population and urbanisation is unplanned. More and more towns and cities are booming with a change in the land use of outer fringe and to the immediate vicinity of the city. This dispersed development is an urban sprawl. It brings opportunities yet it is an undesirable type of city growth. It happens without following any planning in general. Surat city is experiencing tremendous growth since past few decades. Present study is focussed on Surat city sprawl. In 2006 when one of a major city limits expansions granted, area of SMC boundary jumped from 112 Sq.Km. to 326 Sq.Km accommodating a population 44, 62,002. Objectives of study are to identify factors affecting city limit expansion, to study demographic dynamics of Surat city and propose appropriate direction for future extension of Surat city. With the help of the past expansion data of city limit and factors (derived from expert opinion) affecting the expansion are identified.*

**Keywords:** *City limit expansion, Expansion, Land use, Surat, Urbanization, Urban sprawl*

## I. INTRODUCTION

Urban geography is the study of city areas regarding population concentration, infrastructure, economy and environmental impacts. The study of urban geography has demonstrated interest from a wide range of experts. The multidisciplinary gamut of the subject invokes the interest from the ecologist to urban planners and civil engineers, to sociologists, to administrators of activities and processes that take place in the urban ecosystems every day. Unplanned urban sprawl or expansion is considered as an undesirable type of urban growth. It is one of the main problems for town planners and administrators.

Before the year 2006, the city limit of Surat Municipal Corporation was 112 Sq. Km. which increased to 326 sq. Km. Large area need increased infrastructural facilities and civic amenities. At present, it is expected to double the administrative limits of Surat Municipal Corporation (SMC) under the Surat Urban Development Authority (SUDA) area. It is a big task to plan infrastructure and facilities to keep the pace of citizens with achieving a good level of quality of life. Proactive approach is necessary.

## II. OBJECTIVES

Following are the objectives of the present research work:

- To introduce the factors which can affect the city limits expansion;
- To study Demographic dynamics of Surat; and
- Identifying factors that are playing role for Surat city expansion.

## III. SURAT GROWTH AND URBAN SPRAWL

Urban growth is relative or absolute increase in the number of people who live in towns and cities. The pace of urban population growth depends on the natural rise of the urban inhabitants and the population gained by urban areas through both, net rural-urban migration and the reclassification of rural settlements into cities and towns. (UNICEF)

The 'horizontal spreading' or 'dispersed urbanisation' is the uncontrolled and disproportionate expansion of an urban area into the surrounding spaces, forming low-density, poorly planned patterns of development. Common in both high-income and low-income countries, urban sprawl is characterised by a scattered population living in separate residential areas, with long blocks and poor access, often overdependent on motorised transport and missing well-defined hubs of commercial activity. (UNICEF)

- It is envisaged that Surat will expand to the size of Ahmedabad;
- The city will have addition of 36 new villages carved out of four talukas of Surat district -added to the Surat Municipal Corporation (SMC) limits;
- After the merger, SMC's area will bloat to 461 Sq. Km. from the present 326 Sq. Km;
- However, the population will rise by just 70,000 persons. At present Surat population is about 46 lakh;
- Surat Municipal Corporation (SMC), which initially had planned for 84 villages of four talukas of Surat district for bringing within the city limits, has told the state government that it would be better if only 34 villages were brought under its jurisdiction;
- Surat city grows to the size of Ahmedabad, which is spread in an area of 465 Sq. Km. and is accommodating a population of 65 lakh people.
- Surat city will have an area of 461 sq. Km and a population of 55 lakh people, as SMC official's states.

## IV. CAUSES OF URBAN GROWTH

These are the general causes of urban growth which can affect any of the city for expansion. For exploration, reference of

factorstaken from Basudev Bhatta’s book “Analysis of Urban Growth and Sprawl from Remote Sensing Data”.

Table 1 Causes of urban growth

Sr.	Causes of urban growth	Sr.	Causes of urban growth
1	Population growth	14	Public regulation
2	Independence of decision	15	Transportation
3	Economic growth	16	Road width
4	Industrialisation	17	Single-family home
5	Speculation	18	Nucleus family
6	Expectations of land appreciation	19	Credit and capital market
7	Land hunger attitude	20	Government developmental policies
8	Legal disputes	21	Lack of proper planning policies
9	Physical geography	22	Failure to enforce planning policies
10	Development and property tax	23	Country-living desire
11	Living and property cost	24	Housing investment
12	Lack of affordable housing	25	Large lot size
13	Demand for more living space		

(Source: B. Bhatta, analysis of urban growth and sprawl from remote sensing data)

**V. STUDY AREA**

Surat is a port city situated on the banks of the Tapi River. Suratis emerging as a fastest rising city with a decadal progress rate of 83.34% as reported in the Census of India, 2011. Also Surat is the second largest city of the state cooperative more than 44.62 Lakh population and eighth largest city in the country (Registrar General & Census Commissioner, 2011).

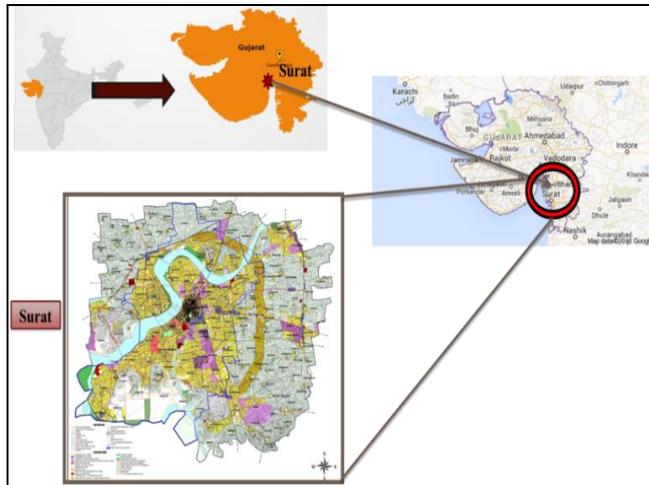


Figure 1 Location of Surat city

**VI. URBAN EXPANSION SCENARIO OF SURAT CITY**

The table below is showing details of Surat city year wise expansion and its extent.

Table 2 Expansion of city limits, 1963-2006

Year	Area (Sq. Km.)	Times Increased (Base 1963)
1963	21.93	1.00
1971	33.78	1.54
1975	55.56	2.53
1986	111.16	5.07
1994	112.27	5.12
2006	326.11	14.87

(Source: Surat Municipal Corporation Website)

The Population of Surat city keeps on increasing decade by decade and city has expanded accordingly accommodating the rise in the population. One of a major expansion was observed in the year of 2006 where area increased from 112 Sq.Km. to 326 Sq.Km.

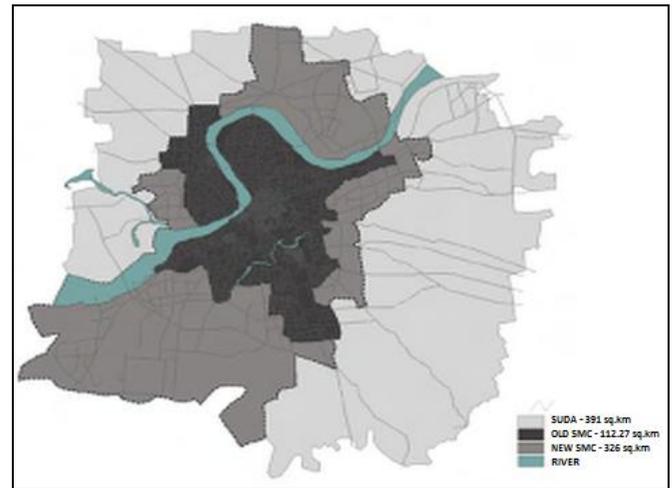


Figure 2 Spatial growth of Surat city

Figure shows the spatial growth of Surat city. The SMC is encompassed within SUDA area. The figure shows the old SMC boundary, the new region added to the old SMC and river Tapi.

**VII. DATA COLLECTION AND ANALYSIS**

Primary data is collect through questionnairesurvey. Thecontent of the questionnaire kept so as to explore views over 25 factors identified as major causes for city expansion in general. The responds were received on a scale of 5-Likert showing importance of each factor in case of Surat city limit expansion. Respondents from ‘Town Planning’, ‘Town Development’

departments of Surat Municipal Corporation provided views as experts in the subject matter. The mass of sample was limited as such matter is not dealt by people in general.

A reliability test became necessary after collecting the responses. Cronbach's alpha test is a gauge of internal constancy and shows how closely related a set of items are as a collection. It is considered to be a gauge of scale dependability. The reliability coefficient of 0.70 or higher is considered "acceptable" in most research situation. For the collected data, value of Cronbach's Alpha obtained was 0.788 which is more than 0.70. It indicates that the data composed from the questionnaire survey is acceptable for further analysis.

#### A. Weighted analysis results

The weighted analysis of the expert review is showing the ten major factors for the urban area expansion in Surat case as shown in table below. Ten factors getting values higher than 70% of importance are identified.

Table 3 Result of weighted analysis

Sr.	Parameters	Weighted analysis
1	Economic growth	83.85%
2	Population growth	82.31%
3	Lack of proper planning policies	81.54%
4	Industrialisation	79.23%
5	Development and property tax	76.15%
6	Failure to enforce planning policies	75.38%
7	Lack of affordable housing	73.85%
8	Road width	73.08%
9	Expectations of land appreciation	72.31%
10	Demand for more living space	72.31%

#### VIII. CONCLUDING REMARKS

The weighted analysis of expert review suggested major factors commonly considered as reason for the Surat city expansion. For future Surat Municipal Corporation expansion, an analysis shall be performed for Surat city limit with a focus on these ten factors.

#### ACKNOWLEDGEMENTS

The Authors thanks to the Surat Municipal Corporation for providing useful data required to conduct this study. The authors are indebted to *Dr. Vaishali Mungurwadi*, Principal, SCET and *Prof. Dharmesh K. Bhagat*, Head, Civil Engg. Dept. for their constant inspirations.

#### REFERENCES

- i. Retrieved from [epaperbeta.timesofindia.com/Article](http://epaperbeta.timesofindia.com/Article).
- ii. Retrieved from *About Surat - The City of Diamonds and Silk* [<http://www.trinnitydevelopers.com/about-surat.html>].
- iii. Retrieved from *Population growth, area and density (Election Ward Wise)* [<http://www.suratmunicipal.gov.in/content/city/stmt19.shtml>].
- iv. Retrieved from [www.suratmunicipal.org](http://www.suratmunicipal.org).
- v. *B.Bhatta. (2010). Causes and consequences of urban growth and sprawl. In Analysis of urban growth and sprawl from remote sensing data. Springer-Verlag Berlin Heidelberg.*
- vi. *Bhatt, H. (2014, november 27). Retrieved from Times of India: timesofindia.indiatimes.com*
- vii. *Bhatta, B. (n.d.). Analysis of Urban Growth and Sprawl from Remote Sensing Data.*
- viii. *UNICEF. (2012). Retrieved from The state of the world's children: www.unicef.org*