Infrastructure Planning Proposal for Extended Area of Surat City: A Case Study of Sachin-Kansad

Jinal Hasmukhbhai Patel[1], Zarana H. Gandhi[2]

[1]*Post Graduate Student (Town and Country Planning), Department of Civil Engineering, Sarvajanik College of Engineering and Technology, Surat, Gujarat, India*
[2]*Assistant Professor, Department of Civil Engineering, Sarvajanik College of Engineering and Technology, Surat, Gujarat, India*

---***---

Abstract – *Infrastructure plays a very important role in the growth process of an economy and improving the well-being of community. It is known to be the backbone of any economy. Infrastructure development has been on the top of priority list for governments all over the world. There are two types of infrastructure, Physical infrastructure and Social infrastructure in which physical infrastructure directly supports economic growth and social infrastructure helps in improving the quality of living standards of the community. Due to population growth and rapid urbanization, pressure is increased on existing infrastructure. The main objective is to assess the existing condition of physical and social infrastructure in the extended area of Surat city, Sachin-Kansad with respect to service level benchmarks and other parameters of Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines and propose infrastructure planning for improvement and requirement of necessary infrastructure facilities. The primary survey would be needed to be done by public opinion and secondary data would be needed to be collected from the various authorities. The gap will be identified by comparing obtained existing data with the requirement as per guidelines and accordingly a planning proposal will be prepared.*

Key Words: **Physical Infrastructure, Social Infrastructure, Government Authorities, URDPFI, Surat City**

1. INTRODUCTION

India's rise in recent years is a most prominent development in the world economy. India has re-emerged as one of the fastest growing economies in the world. India's growth, particularly in manufacturing and services has boosted the sentiments both within country and abroad. According to many commentators, India could unleash its full potentials, provided it improves the infrastructure facilities, which are at present not sufficient to meet the growing demand of the economy. Failing to improve the country's infrastructure will slow down India's growth process. Therefore, Indian government's first priority is rising to the challenge of maintaining and managing high growth through investment in infrastructure sector among others.

1.1 Infrastructure

The term 'Infrastructure' seems to be of relatively recent origin. It has been derived from the French language in the 19th century, perhaps as early as 1875. The word 'Infrastructure' is a combination of two words 'infra' means below; 'structure' means form. Infrastructure is the system of public works in a country, state or region, including roads, utility lines and public buildings. Infrastructure is the basic facilities and services that are necessary for carrying out the economic activities and which help in the economic development of the country. Infrastructure contributes to economic development by increasing productivity and providing services which enhance the quality of life.

1.2 Importance of Infrastructure

The main reason why the development of infrastructure is considered so important is the fact that it is ubiquitous. However, infrastructure is known to be the backbone of any economy.
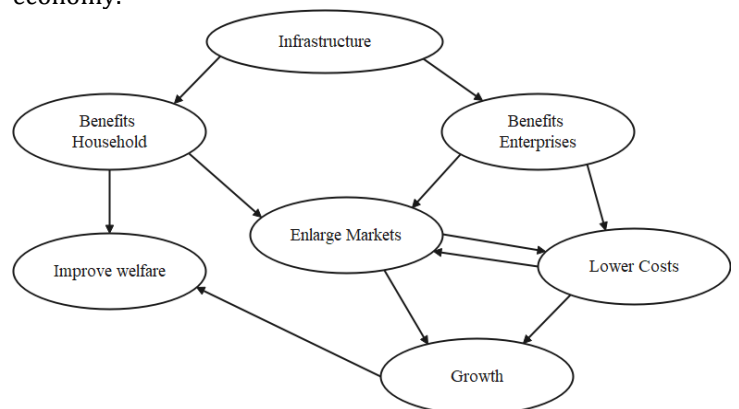

Fig -1: Importance of Infrastructure

The most critical significance of infrastructure and its impact on the economy are as below:

- The smooth functioning of the economy
- Development of agriculture
- Development of industry
- Promotion of investment
- Improvement in productivity

- Employee generation

1.3 Common Problems Associated with Building Infrastructure

- Scale and Time
- Capacity Planning
- Balanced Growth
- Regulatory Uncertainty
- Scarcity of Funds
- Ecological Issues

1.4 Types of Infrastructure

The URDPFI guidelines suggest the infrastructure planning norms for five categories, namely:
  I. Transportation Planning
 II. Physical Infrastructure
III. Social Infrastructure
 IV. Commercial Infrastructure
  V. Miscellaneous Infrastructure

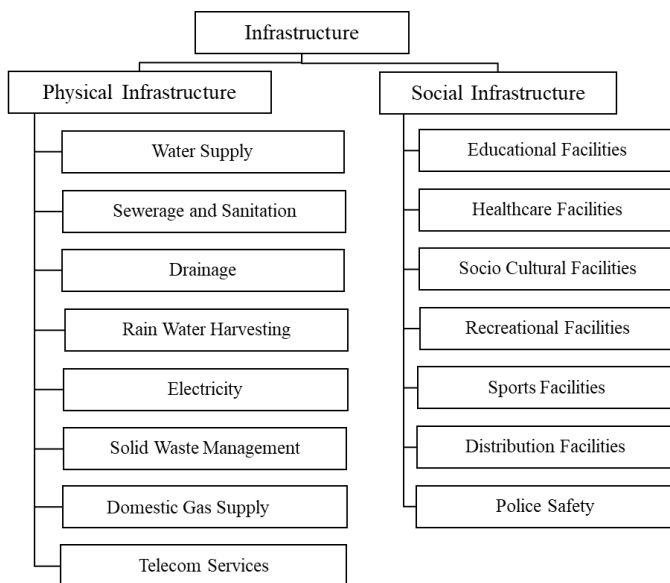Economists and urban planners have classified infrastructure mainly into two broad parts:

Fig -2: Types of Infrastructure

 I. Physical Infrastructure
Physical infrastructure development is an essential driving force for achieving rapid economic growth. Physical Infrastructure is directly concerned with the needs of such production sectors as agricultural, industry, trade, etc.

II. Social Infrastructure
The quality of life in any urban center depends upon the availability of and accessibility to quality social infrastructure. Social infrastructure can be defined as the

construction and maintenance of facilities that support all social services which are necessary for human development.

2. AIM

To evaluate and analyze existing infrastructure scenario of Sachin-Kansad as per guidelines or standards and propose Infrastructure planning proposal for improvement of relevant services.

2.1 Objectives

- To assess the existing provision of infrastructure in selected study area.
- Gap identification by comparing existing infrastructure facilities with guidelines or standards.
- To give recommendations and planning proposal for improvement of infrastructure service.

2.2 Justification of Study Area

- Surat city limits expanded after nearly 14 years, Sachin and Kansad have been merged into the city limit on 19th June, 2020 by the state government.
- Good services and better infrastructure will change the face of these areas.
- There is a huge opportunity for the real estate sector to tap in that new areas.
- The development of new real estate projects could not take place due to lack of basic infrastructure facilities.

2.3 Scope of Work

- The focus of study is analysis of existing infrastructure scenario and find out gap by comparing present provision of infrastructure with URDPFI Guidelines. To give proposal based on gap identification for improvement of infrastructure.
- This study is limited to Physical and Social Infrastructure.
- This study is not focused on Industrial Area.

3. STUDY AREA PROFILE

Surat is a city located on the western part of India in the state of Gujarat. It lies near the mouth of the Tapti River at the Gulf of Khambhat (Cambay). The Arabian Sea is to its west at a distance of about 22 kilometres along the Tapi and about 16 kilometres by road. The location of Surat is 21°15'N Latitude and 72°52'E Longitude. It is one of the most dynamic cities of India with one of the fastest growth rates due to immigration from various part of Gujarat and other states of India.

3.1 Study Area Profile- Sachin

Sachin is a Census Town (CT) city situated in Chorasi taluka of Surat district. Sachin is the 2nd biggest census town by area in the sub district. A ward is a local authority area, typically used for electoral purposes. There is only one ward in this census town which is Sachin Ward No 1 where elections are held every 5 years to elect representative of each ward.

3.2 Study Area Profile- Kansad

Kansad Municipality (M) town is situated in district Surat, Gujarat. Total geographical area of Kansad municipality is 7 Sq. Km. Population density of the city is 4,058 persons per Sq.Km. There are 7 wards in the city, among them Kansad Ward No 06 is the most populous ward with population of 7,296 and Kansad Ward No 01 is the least populous ward with population of 1,759.
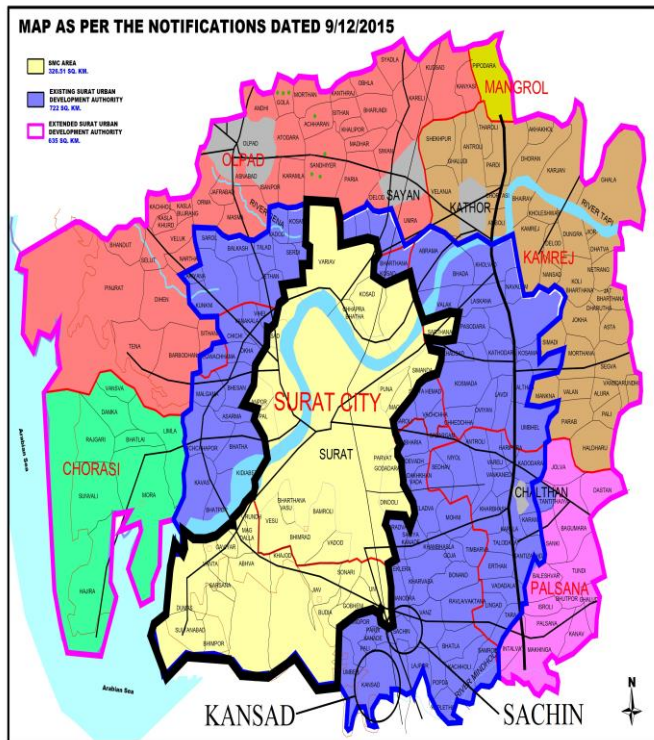

Fig -3 Location of Study Area: Sachin-Kansad

4. POPULATION PROJECTION

Future population is forecasted for both study area- Sachin and Kansad for the next 3 decades using Arithmetic Increase Method.

Table -1: Population Projection

Sr. No.	Area	Forecasted Population		
		2021	2031	2041
1.	Sachin	36,422	44,742	53,062
2.	Kansad	36,820	45,313	53,806

5. DATA COLLECTION

The data of existing Physical and Social Infrastructure of Sachin-Kansad was collected through household survey and field survey.

5.1 Data Collection of Physical Infrastructure

For the data of physical infrastructure, questionnaire was prepared as well as sample size found out for the household survey. From that survey, data of existing physical infrastructure facilities like, water supply, sewage & sanitation, solid waste collection, electricity, gas supply were identified.

5.2 Data Collection of Social Infrastructure

The data of existing social infrastructure facilities was collected from Sachin and Kansad Nagarpalika which are shown as below:

Table -2: Existing Social Infrastructure Facilities

Sr. No.	Social Infrastructure		Existing Facilities	
			Sachin	Kansad
1.	Education Facilities	Pre-Primary School	4	9
		Primary School	6	9
		Senior Secondary School	6	0
		College	0	0
2.	Health care Facilities	Dispensary	12	14
		Maternity Centre	7	2
		Multi-Speciality Hospital	3	0
		Speciality Hospital	0	1
3.	Socio-Cultural Facilities	Community Hall	1	2
		Post Office	1	2
4.	Open Space Facilities	Housing Area Park	0	1
5.	Sports Facilities	Residential Unit Play Area	0	0
		Neighborhoods Play Area	0	0
6.	Distribution Services	Petrol/Diesel Filling Centre	2	0
		CNG Pump	0	0

		Milk Distribution	1	1
7.	Police Defense	Police Station	1	1
		Fire Station	0	0

6. GAP IDENTIFICATION

The gap identified by comparing existing infrastructure facilities with URDPFI Guidelines or standards. For the development of any area, check on availability of infrastructure facilities is sufficient or not so that by doing gap analysis we can find additional requirements of infrastructure of extended area of Surat city, Sachin-Kansad.

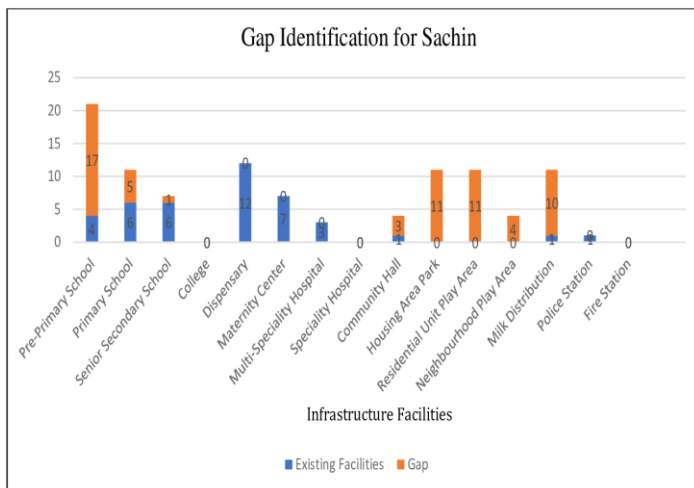Here, below chart 1 & 2 represents the gap analysis of Sachin and Kansad respectively.

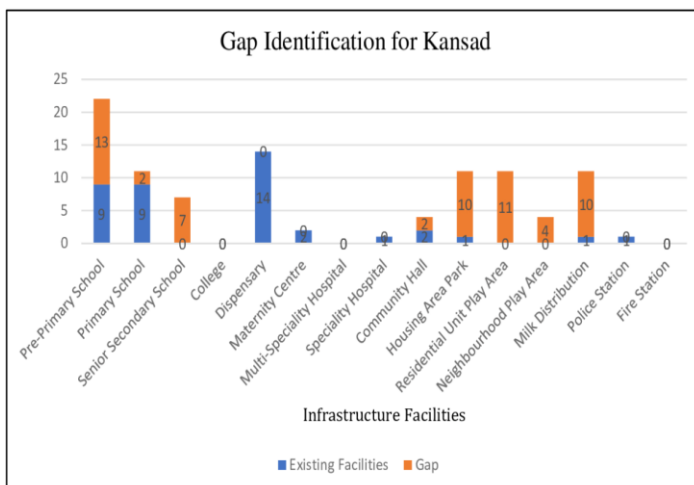
Chart -1: Gap Identification for Sachin

Chart -2: Gap Identification for Kansad

7. RESULT ANALYSIS

Some of the important findings are as listed below:

- As per the chart 1 & 2, there is an acute requirement of educational facilities like pre-primary school, primary school, senior secondary school as per URDPFI guidelines.
- As compare with guidelines, there is no gap obtained for health-care facilities in both Sachin & Kansad.
- There is one and two Community hall in Sachin and Kansad respectively which is not sufficient as per guidelines.
- There is scarcity of gardens and playgrounds in both area.
- There is one police station in Sachin which is sufficient as per norms.
- As per guidelines, there is not sufficient milk distribution facilities in both area.

8. RECOMMENDATION

- Population Projection up to 2041 helped to know future need and based on that development is started on early stages.
- As per survey, there is scarcity of water supply in Sachin-Kansad of Surat city. Available water quality is very poor and received quantity is not sufficient per capita per day. Therefore, provide water treatment plant as well as Elevated Storage Reservoir for fulfil the future requirements.
- Sufficient land should be provided in land use of selected study area to meet the future demand of physical and social infrastructure.
- The existing gap in infrastructure facilities can be fulfilled by providing required infrastructure.

REFERENCES

[1] Ministry of Urban Development, "Urban and Regional Development Plans Formulation and Implementation Guidelines", vol. 1, January 2015, http://moud.gov.in.

[2] Dipal F. Chaudhari and Bhasker Vijaykumar Bhatt, "An Assessment of Social Infrastructure in West Zone of Surat City", Journal of Emerging Technologies and Innovative Research, vol. 4, April 2017, pp. 305-309.

[3] Anita Kumari and A.K. Sharma, "Physical & Social Infrastructure in India & Its Relationship with Economic Development", World Development Perspectives-Elsevier, March 2017, pp. 30-33, doi: 10.1016/j.wdp.2017.02.005.

[4] United Nation, "Department of Economic and Social Affairs",https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html.

[5] United Nations, "World Population Prospects", https://population.un.org/wpp/.

[6] Surat Urban Development Authority, "Development Plan-2035",

https://www.sudaonline.org/wpcontent/uploads/2017/03/SUDA-DP-2035-report-final-22.02.2017.pdf

[7] Surat Municipal Corporation, "Introduction of Surat City", https://www.suratmunicipal.gov.in/TheCity/Introduction

[8] Census of India, "Population of Kansad", https://www.censusindia.co.in/towns/kansad-population-surat-gujarat-802633

[9] Census of India, "Population of Sachin", https://www.censusindia.co.in/towns/sachin-population-surat-gujarat-802633

[10] Prabir De., "Infrastructure Development in India", International Infrastructure Development in East Asia – Towards Balanced Regional Development and Integration, pp. 105-130.

[11] Namratha Reddy, "Bytes Economic Infrastructure – Intro, Types, Significance", https://www.toppr.com/bytes/economic-infrastructure/, 2018.