Identification of Social Infrastructure Needs in the South-East Zone of Surat City

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Abstract: Social infrastructure includes services and structures that help in fulfilling social needs of the citizen. Social infrastructure includes educational infrastructure, healthcare infrastructure, recreational infrastructure, social/cultural infrastructure, safety and distribution services. Social infrastructure help to enhance national economic growth as well as the efficiency of community. On the other hand, sustainability in infrastructure is a system that facilitates a territory or community for living over a more extended run considering the future needs. Social infrastructure having adequate quantity and quality is a prime consideration for the social sustenance of any community. Thus, social sustainability should be given equal focus as economic and environmental aspects. Social sustainability is especially crucial for new settlements as they demand local services like schools, healthcare, shops, public transport, cultural facilities at an early stage to create a sense of shared history, to meet other residents and to create their own local projects. The paper examines aspects of social infrastructure and sustainability in a study are of South East Zone (administrative decentralized zone) in Surat. The city located in Gujarat, India is a rapidly growing one and has its presence recognized globally for several aspects. The paper also discusses existing social infrastructure scenario in the study area and attempts to identify gaps in the light of URDPFI guidelines regarding the provision of various social facilities.

Index Terms – Quality of life, Social Infrastructure, Surat, Sustainability, Urban Development.
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I. INTRODUCTION

Infrastructure may be considered as a fundamental physical as well as organizational structure providing facilities to serve a society. Infrastructure is a necessary requirement of society for economic as well as social development of the nation. In a broader sense, infrastructure may be categorized as physical and virtual infrastructure. Physical infrastructure includes for various services as well as social components where in the services include for water supply, sewage, storm water, power supply, solid waste management and transportation through various modes. The social infrastructure are services and facilities that help in meeting social requirements of citizens. The most acceptable aspects of social infrastructure in the different literature includes for: health-care facilities, education facilities, distribution services, police and fire services, cultural facilities, recreational facilities and open spaces. Current paper studies the status of existing scenario of these social infrastructure components in an area and proposes for the course of future requirements.

II. THE METHODOLOGY OF THE STUDY

For the purpose of the present study, a detailed literature review was carried out by referring articles from national as well as international journals/conferences and reports published by various organizations in recent past. The study area was decided by the discussion with personnel from the Surat Municipal Corporation. The data were collected by the authors with the help of Surat Municipal Corporation. The current availability of social infrastructure in various categories was examined, and the gaps were identified considering the URDPFI guidelines, 2015. Gaps in the provision of various social facilities were derived for the design year of 2041 with intermittent decadal requirements with the base year of 2011 using population projection.

III. SUSTAINABLE COMMUNITY AND SOCIAL INFRASTRUCTURE

Sustainable development should have a balanced role in the economic, social as well as environmental aspects. A sustainable community should be vibrant and healthy (Wickham Development Requirements Infrastructure). Such community can be achieved by providing a high quality-built environment having the easy accessibility of local services that ensure fulfilment of daily needs of citizens. It also supports health, cultural and social well-being of people within the community.

Public health is a vital characteristic of a sustainable community. According to the World Health Organization, the primary factor influencing the health of people is their way of life having weightage of about 50%. Therefore, to ensure high-quality life for urban citizens, provision of social infrastructure with effective planning within the urban settlement is must (Stein, 2017).

Recreational and green space majorly contributes to the physical as well as the mental well-being of the community. Green infrastructure can be referred as an approach to the planning of natural and semi-natural with other environmental features to provide a wide range of ecosystem services (Davies, 2017). Recreational infrastructure varies as per the different recreational needs of the community. Green space includes gardens, playgrounds, community parks, and neighbourhood parks. Public participation and opinion should be included in the planning of such infrastructure to meet their needs.

Distribution services such as milk distribution, petrol and CNG pumps and Fire and Emergency services also play a significant role in day to day life of citizens. The provision of such services should be given due consideration while planning for a sustainable community. The locations and accessibility of such services are of prime importance. They should be planned uniformly over the entire territory, and their congestion should be avoided.

Social sustainability is another significant term in the rapidly urbanizing world. Social sustainability may be defined as "a process for creating sustainable, successful places that promote wellbeing, by understanding what people need from the places they live and work. Social sustainability combines the design of the physical realm with the design of the social world – infrastructure to support social and cultural life, social amenities, systems for citizen engagement and space for people and places to evolve". (Social Drivers for Sustainable Development [Beyond 2015 Brief No. 4], 2014). Social sustainability is especially crucial for new towns and communities because they demand local

services like schools, healthcare, shops, public transport, cultural facilities at an early stage to create a sense of shared history, to meet other residents and also to create their own local projects.

IV. STUDY AREA PROFILE AND DATA COLLECTION

Surat is India's 8th most populated city having a population of 44.62 lakhs as per census 2011 (http://www.suratsmartcity.com/Surat/AboutSurat, n.d.). Surat city has emerged as one of the fastest growing cities in the world. The city of Surat is located at latitude 21°12'N and longitude 72°52'E on the bank of river Tapi having a coastline of Arabian sea on its West. The city of Surat is situated in the well-developed region of south Gujarat. The city of Surat is divided into 7 administrative zones. The demographics of each zone is shown in the Table-1:

Table 1 Zone wise demographics of Surat city

Sr. no	Zone	Area (Sq. Km.)	Population (Census, 2011)
1	Central	8.18	408760
2	South-West	111.912	347447
3	South	61.764	695028
4	South-East	19.492	748304
5	East	37.525	1137138
6	North	36.363	705163
7	West	51.279	424986
Total		326.515	4466826

(Source: Surat Municipal Corporation)

From Table 1, it is reflected that the South-East zone is the second most populous zone in the Surat city after Central zone with a population of 7.48 lakhs according to Census of India, 2011. The study area is having 88.37% of the decadal growth rate of population. The study area is divided into 6 wards namely, Umarwada-Matawadi, Anjana-Khatodara, Dumbhal-Parvat, Limbayat-Udhna Yard, Godadara-Dindoli (North) and Dindoli (South).

Demographics were studied for population projection up to the year 2041. The mean of Arithmetic Increase Method and Incremental Increase Method was adopted for future population.

Table 2 Approximate projected population up to the year 2041

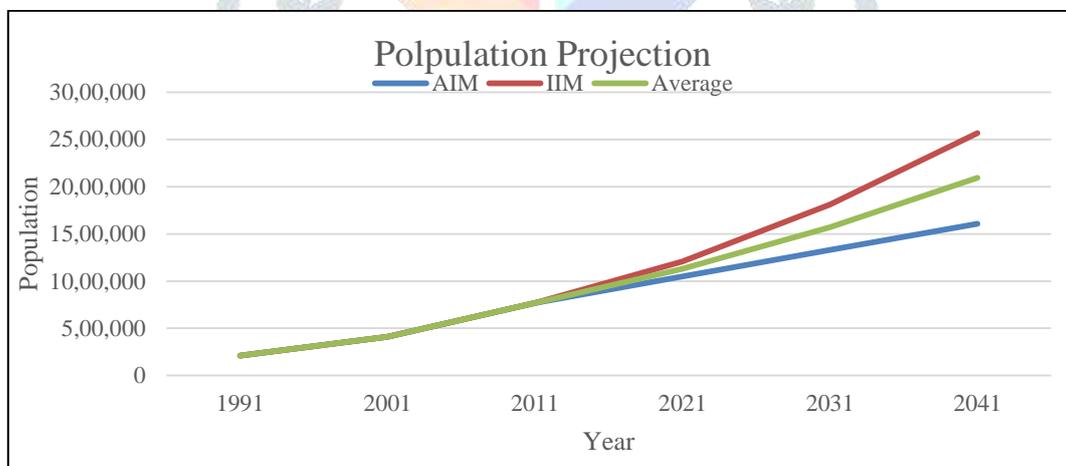| Year	1991	2001	2011	2021	2031	2041
Population	2,12,100	4,11,124	7,70,109	11,29,874	15,70,400	20,91,686

(Source: Surat Municipal Corporation)

Figure 1 Population projection for the study area

V. DATA COLLECTION

Data collection was done to assess the existing number of social infrastructure in the study area. According to the URDPFI guidelines, social infrastructure includes educational facilities; healthcare facilities; socio-cultural facilities; open spaces; sports facilities; distribution services; police safety; and safety management. Information was collected with the help of Surat Municipal Corporation. The location of each facility was obtained in terms of latitude and longitude with the help of google earth and site visits. The number of social facilities available in South-East zone of Surat city is listed in Table 3 herewith:

Table 3 Available social infrastructure in South-East zone, Surat

Sr.	Social Infrastructure		Existing
1	Educational Facilities	Pre-Primary Schools	127
		Primary Schools	114
		Senior Secondary School	62
		Colleges	1
		School for physically challenged	0
		School for mentally challenged	0

2	Socio Cultural Facilities	Aanganwadi	45
		Library	16
		Community Hall	37
		Music, Dance, Drama centre	0
3	Open Space Facilities	Neighborhood Park	5
		Housing	7
		Community Park	1
4	Health Facilities	Intermediate category B	2
		Child Care/ Maternity / Nursing Home	14
		Dispensary	17
5	Safety Management	Fire Station	2
		Disaster Management Center	0
6	Police Safety	Police station	3

The locations of various facilities in the study area are shown on the google earth pro map as follows:

Figure 2 Locations of pre-primary schools in the study area (courtesy: google earth pro)

Figure 3 Locations of libraries in the study area (courtesy: google earth pro)

Figure 4 Locations of maternity homes in the study area (courtesy: google earth pro)

Figure 5 Locations of community parks in the study area (courtesy: google earth pro)

Figure 6 Locations of fire stations in the study area (courtesy: google earth pro)

Figure 7 Locations of police stations in the study area (courtesy: google earth pro)

VI. GAP IDENTIFICATION

Gaps were identified considering the norms suggested by the URDPFI guidelines, 2015. The ideal requirement for various social infrastructure was found using the predefined norms in the guidelines. For example, a pre-primary school for 2,500 population, a library for every 15,000 population, a community park for every 1,00,000 population, a maternity home for every 45,000 population, a fire station for every 2,00,000, a police station for 90,000 population and so on. For example, gap identifications of various facilities are shown as below:
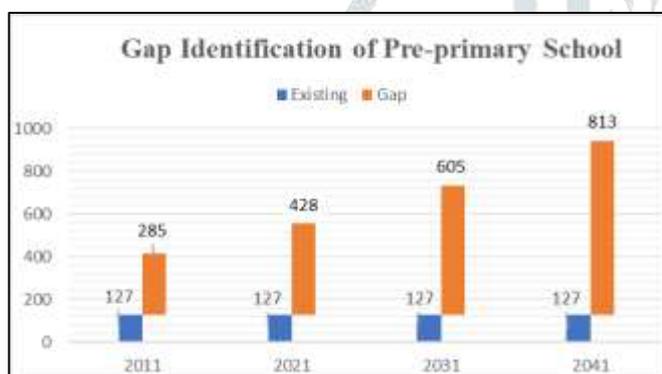
Figure 8 Gap identification for pre-primary schools
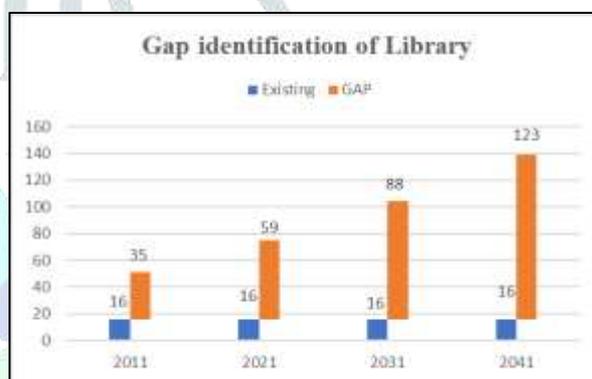
Figure 9 Gap identification for libraries
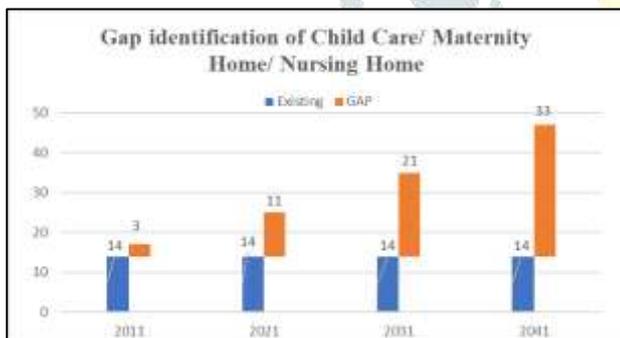
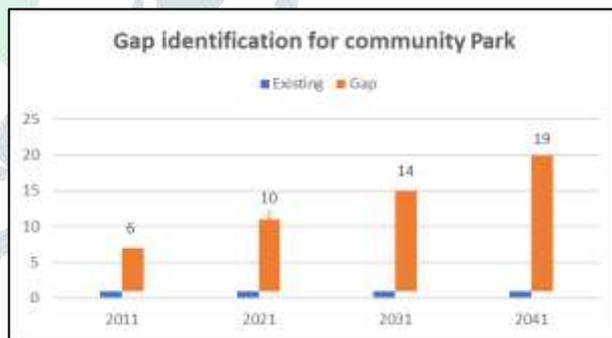Figure 10 Gap identification for maternity homes

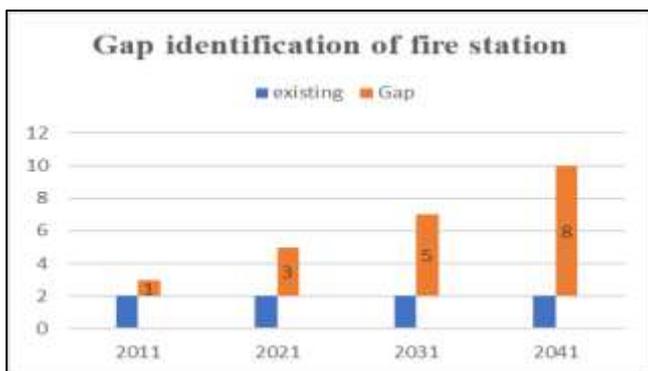Figure 11 Gap identification for community parks

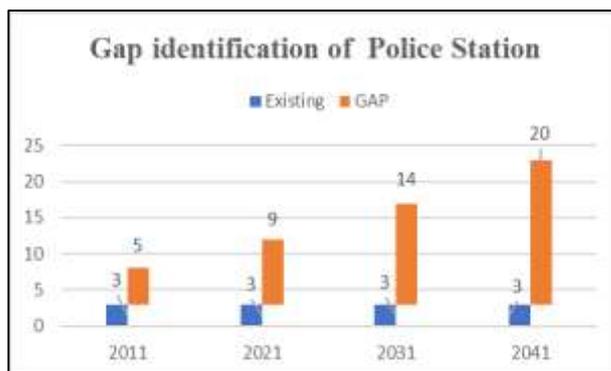
Figure 12 Gap identification for fire stations

Figure 13 Gap identification for police stations

From the above figures, it is revealed that the study area lacks in the provision of all the social facilities. For example, according to the norms of URDPFI guidelines, 2015, there is a need of 3 fire stations in the study area as per the population of the year 2011, but there exist only 2 fire stations. Therefore, it indicates a gap of an additional fire station as per the population of the year 2011, a gap of additional 3 fire stations as per the population of the year 2021 and so on.

VII. CONCLUDING REMARKS

It is a general thought that the social infrastructure has prime importance towards achieving sustainable communities. Social sustainability should be given equal importance as economic and environmental sustainability. Some of the essential findings from the study show that the study area is depriving for most of the categories of social infrastructure. Thus, the study area possesses ample opportunities in terms of investment in the sector. The identified gap of various facilities may be matched by either public organizations or private sector. Public-Private Partnership based arrangement may also be worked out for providing the social facilities in which the study area lacks.

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