

HEALTH SECTOR OPPORTUNITIES, PLANNING AND PRIORITIZATION IN SURAT

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Abstract

Urbanisation refers to the concentrated human settlements in discrete areas as a result of the transformation of productive or non-productive land into diversified use such as residential, commercial, industrial, transportation, public purpose and so on. India (NIUA) claims to have the World's second largest urban population which is predicted to cross 600 million by the year 2031. Among the states in India, Gujarat emerged as one of the advanced federations in terms of economic activities, education and other such aspects related to promoting urbanisation. In the South region of Gujarat state, the Surat city is developing on the banks of Tapi River. The city was declared as the "fastest growing city" in Asia during 2001, and the city registered a decadal growth rate of 85.09% during 1991-2001. Recently, in 2011 the city crossed a total population of 4.46 million with a decadal growth rate of 55.29%. The city had merely 1.02 million population in year 1981. It shows the tapping of available potential opportunities resulting in migration from across the country that increased urban population 4.5 times in three decades. Projections depict the rise of the population to 10 million in next three decades leveraging city status as a Metropolitan. The urbanisation brings challenges along with opportunities. The paper discusses on urban health and care facilities. Better health for the urban population results in reduced infant mortality (average rate of 18.02 since 2001 till 2013) as well as affects maternal mortality (average rate of 0.43 for the duration). Reduction in deaths is ensured by means of availing a variety of facilities including pocket level actions, as well as city-wide services. It seeks attention from the authority to avail all such infrastructure (social) and services (health and care) to be available with maximum possible accessibility by the citizens. The Surat Municipal Corporation (SMC) is one of the oldest urban local body (established in 1852 AD). It is by constitutional provisions and the GTPUD Act; 1976 is responsible to make assessments of the social infrastructure requirement. It also needs to make planning arrangements as well as to look after the implementation. In absentia of information regarding planning approach to allocating such facilities motivated the authors to carry out a study in the area. The study aims to identify the demand-supply and gaps underlying in the sector using population projections by AIM and IIM tools. It also includes recommendations to carry out detailed planning and allocation prioritisation of facilities at different zones (through TPS mechanism of land plot reservation). Initial assessment till 2011 revealed that four out of total seven zones are not meeting with the requirements based on prevailing URDPFI guidelines.

Keywords: Health and care, Population Projection, SMC, Urban Health Center, Urbanization

Theme: (E) Health Sector (Sub-theme: Health and Sanitary Policies)

1. INTRODUCTION

Among the major two types of urban infrastructure, physical set-up includes facilities provided to serve water, transportation, housing, commercial and industrial activities. Social infrastructure include the schools, hospitals, community halls, informal markets and allied utilities.

Education and the healthcare facilities are prime among social services. As per the Indian constitutional provisions for healthcare services, it is a subject concern for a State Government. The central government may assist with development funds in forms of grants or subsidies through the scheme. Preventively, there is an epic need to improve effectiveness and efficiency in health care facilities. Millennium Development Goals (MDG) are set by the UNDP for overall development on the Globe.

The eight MDG majorly include improving maternal health, combat HIV/AIDS, malaria and other diseases, reduce child mortality. It can fulfil the provisions of adequate healthcare facilities across the globe. Study area in this paper is Surat city which in 2001, identified as the fastest growing city in Asia. Primary health and care facility is a prime focus of research.

2. DEMOGRAPHY OF SURAT CITY

Surat is second largest city of Gujarat in both ways, area as well as population. To the northern side of Surat is Ahmedabad and to the southern is Mumbai. Followed by Ahmedabad, the population of Surat is second largest among Gujarat urban centres. In 2011, recorded population of the city was 4.6 million. The geographical spread of Surat administration under SMC is 326.51 Sq. Km. Population density is about 136 ppha. Administratively, the city has seven divisions of zones of which the densest is the Central district (Old walled city area). Following section deal with the details of birth and death, infant and maternal death, existing population and population projection are as shown below.

2.1 Births and Deaths

Birth and Death registration activity conduct by the Urban Local Body. Table-1 shows a record detail from 2001 to 2013. A crude rate is the ratio of registered birth/death and a total population of city multiply with 1000. The Average Crude birth rate is 17.04, and the Crude death rate is 4.06.

Table 1 Births and deaths in Surat

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Registered Births*	47,114	49,204	53,452	55,521	55,907	62,633	63,213	66,356	67,254	70,632	68,559	72,719	76,178
Registered Deaths*	10,198	10,208	11,255	11,921	12,633	14,915	15,714	17,125	16,747	18,628	18,681	18,740	20,310
Crude Birth Rate	19.04	18.84	19.4	19.09	18.2	19.3	16.56	15.48	14.87	14.76	15.37	15.6	15.08
Crude Death Rate	4.12	3.91	4.09	4.1	4.11	4.6	4.12	4.01	3.7	3.89	4.19	4.02	4.02

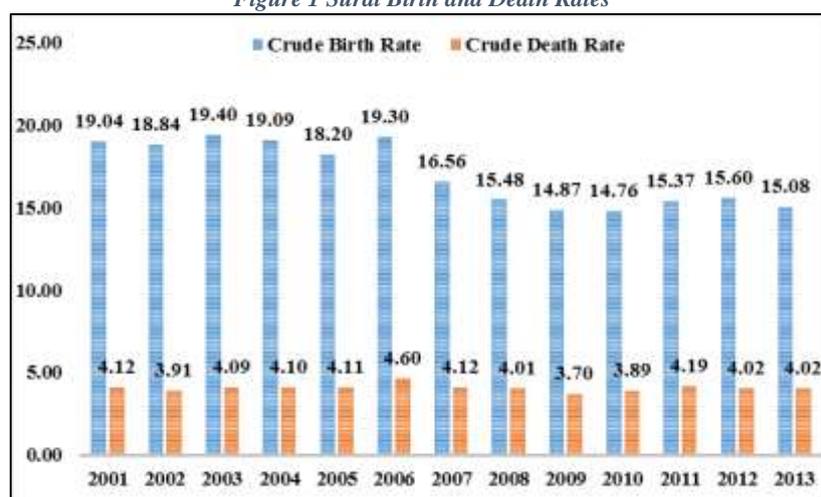
* Figures are in thousands

(Source: Surat Municipal Corporation, Health Department, birth and death registration)

2.2 Infant and maternal deaths

Infant mortality is the death of a child within a year of birth. The death of a female within 42 days after conceiving is the maternal mortality and calculated on the basis of registered births. Registered crude birth rate (CBR) for Surat as per Census of India 2011 was 15.37 which was comparatively reduced from 19.04 in 2001. National average CBR was about 23.95 in the recent Census decade. The Crude death rate averages around 4.06 in the past decade (almost half to the national average of 8.5). The figure below shows the birth and death rate scenario for Surat city.

Figure 1 Surat Birth and Death Rates

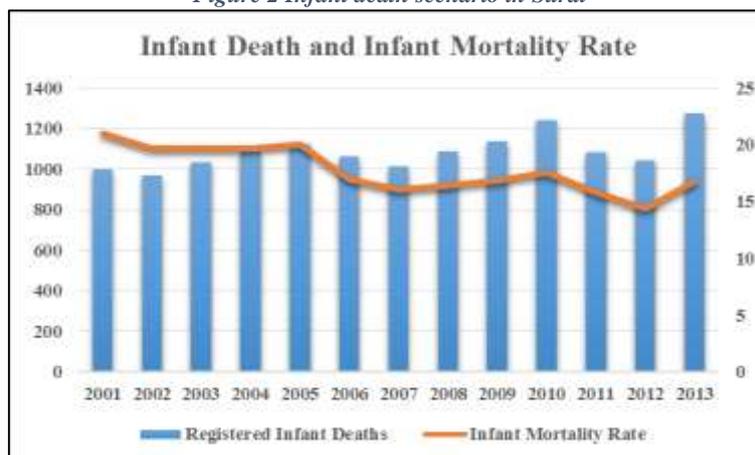


(Source: Surat Municipal Corporation, 2014)

The city has registered an average infant and maternal mortality rates as 17.75 and 0.43 respectively. Since last 13 years, a total of 344 maternal deaths depicts that there is a considerable need to focus on

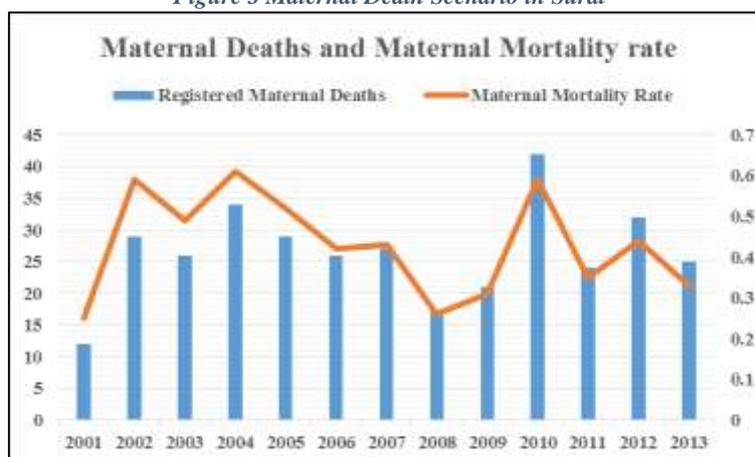
improving facilities for maternity care to achieve absolute zero. Figures below show the comparative infant and maternal mortality and rates.

Figure 2 Infant death scenario in Surat



(Source: Surat Municipal Corporation, Health Department, 2014)

Figure 3 Maternal Death Scenario in Surat



(Source: Surat Municipal Corporation, Health Department, 2014)

2.3 Demography and population projection

The Table below reveals that from 1.02 million population in 1981 to 4.44 million by 2011, there is almost a 4.5 times rise merely in three decades. The growth rate in recent Census decade (2001 to 2011) was 55.29% which is considerably higher for an urban area.

Table 2 Population in Surat

Sr.	Zone	Population (in million)			
		1981	1991	2001	2011
1	Central (CZ)	0.45	0.43	0.41	0.41
2	East (EZ)	0.13	0.30	0.68	1.12
3	North (NZ)	0.09	0.19	0.39	0.67
4	South (SZ)	0.07	0.18	0.41	0.70
5	South-East (SEZ)	0.11	0.21	0.40	0.75
6	South-West (SWZ)	0.09	0.17	0.27	0.38
7	West (WZ)	0.08	0.14	0.29	0.42
	Total	1.02	1.62	2.86	4.46

(Source: Surat Municipal Corporation, Demography, population data)

Unlike the component method, mathematical methods are with a simpler base to project population size on the basis of past growth. These methods are usually less reliable than component method. Mathematical methods are used in situations when only limited data on population size is available for

the past periods. Different types are Arithmetical Increase Method (AIM), Geometrical Increase Method (or Geometrical progression method) (GIM), Incremental Increase Method (IIM), Graphical Method, Comparative graphical method, Master Plan Method, Logistic Curve Method.

The AIM is suitable for comparatively larger and older cities having considerable development. However, if it is used for smaller, average or comparatively newer cities, it will give lower results than actual observations. The method uses the average increase in population per decade and calculates from the past census reports. The increase is added to the present population to project over next few decades. Underlying basic assumption is that the population grows at a constant rate. The IIM is a modification over AIM. Under a normal condition where the growth rate is found to be in increasing order, this method is suitable for an average size town.

Past Development Plans of Surat suggest that projection of Surat is prepared using either the AIM or IIM. Here, the average projection of both method is assumed for forecasting population having relation to demand for health care facilities. In later sections, the norms are considered using URDPFI guidelines and surplus or deficiency in services are obtained using average projected values obtained from both methods.

Table 3 Population projection for Surat

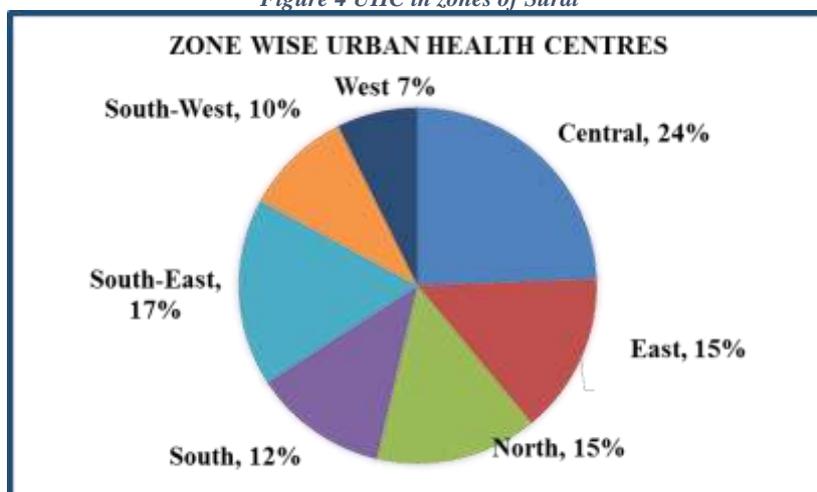
Sr.	Zone	AIM (in million)			IIM (in million)			Average (in million)		
		2021	2031	2041	2021	2031	2041	2021	2031	2041
1.	Central (CZ)	0.40	0.38	0.37	0.40	0.40	0.40	0.40	0.39	0.39
2.	East (EZ)	1.45	1.78	2.11	1.58	2.17	2.90	1.51	1.97	2.50
3.	North (NZ)	0.86	1.05	1.24	0.94	1.31	1.76	0.90	1.18	1.50
4.	South (SZ)	0.91	1.12	1.33	1.00	1.40	1.89	0.96	1.26	1.61
5.	South-East (SEZ)	0.96	1.17	1.38	1.08	1.53	2.10	1.02	1.35	1.74
6.	South-West (SWZ)	0.47	0.56	0.66	0.49	0.61	0.75	0.48	0.59	0.71
7.	West (WZ)	0.54	0.66	0.77	0.58	0.77	0.99	0.56	0.71	0.88
	Total	5.58	6.72	7.85	6.07	8.19	10.79	5.82	7.45	9.32

3. HEALTH SERVICES IN SURAT

The SMC manages two major hospitals namely, SIMMER (with medical college and facility of 750 beds) and Maskati (capacity of 150 beds). The city is having a total of 540 hospitals including the government and private with a gross capacity of 8,992 beds.

A total of 41 Urban Health Centres (UHC) are established in Surat. Out of these, SMC has recently developed 11 health centres in past two decades. The CZ of SMC is set with 24% of health centre facilities where the area concentrates 9% of the city population (0.40 million) by 2011. Population wise the EZ is the largest having established 15% health centres of total.

Figure 4 UHC in zones of Surat



(Source: Surat Health Sector Study, India, August 2011)

There are 13 UHC with maternity homes among a total of 41. Central zone have 10 UHC within which six of them provide maternity services. The East and West zones have two maternity homes and in all other zones there is only one such facility at present.

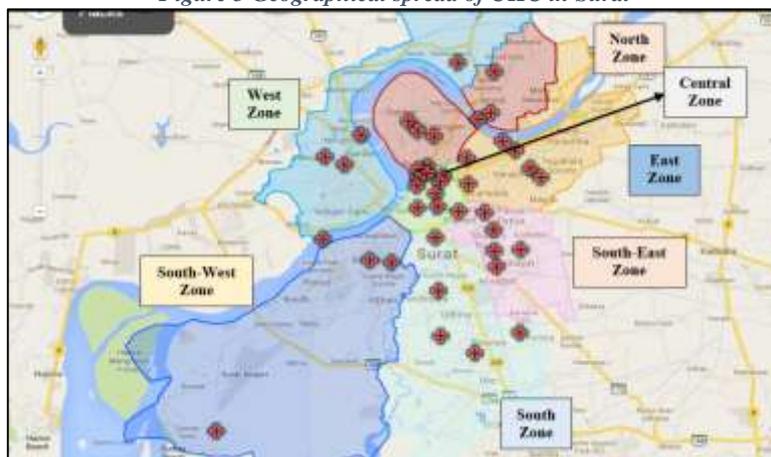
Table 4 Details of UHC in Surat

Central Zone (Total 10)	
1. Lakhpati U.H.C.	6. Asarawala U.H.C.& MH
2. Maskati U.H.C.	7. D.K.M. U.H.C. & MH
3. B.P. U.H.C.	8. Khetarpal U.H.C. & MH
4. Variavibazar U.H.C.	9. Sonifalia U.H.C. & MH
5. Kadiwala U.H.C. & MH	10. Mahidharpura U.H.C. & MH
North Zone (Total 6)	
1. Singanpor dabholi U.H.C & MH	4. Ved Road U.H.C.
2. Katargam U.H.C.	5. Chhaprabhatha U.H.C.
3. Utran U.H.C.	6. Kosad U.H.C.
South West Zone (Total 4)	
1. Althan U.H.C. & MH	3. Umra U.H.C.
2. Panas/Athwa U.H.C.	4. Dumas U.H.C.
East Zone (Total 6)	
1. Hirabaug U.H.C.	4. Puna U.H.C.
2. Fulpada U.H.C.	5. Karanj U.H.C. & MH
3. Varachha U.H.C. & MH	6. Simada U.H.C.
South East Zone (Total 7)	
1. Limbayat U.H.C. & MH	4. Umarwada U.H.C.
2. Mithikhadi U.H.C.	5. SMIMER U.H.C.
3. Navagam Dindoli U.H.C.	6. Navanagar U.H.C.
	7. Godadara U.H.C.
South Zone (Total 5)	
1. Pandesara U.H.C. & MH	3. Vadod U.H.C.
2. Udhna U.H.C.	4. Udhna U.H.C
	5. Bhestan U.H.C
West Zone (Total 3)	
1. Rander U.H.C. & MH	2. Adajan U.H.C. & MH
	3. Palanpor U.H.C.
Total Urban Health Centres = 41	
U.H.C. = Urban Health Centre, MH= Maternity Home	

(Source: Surat Health Sector Study, India, August 2011)

Below is the map showing geographic spread of these UHC. Central zone have a surplus of this facility, and there exist geographical disparities in terms of influence catchment area of UHC in zones.

Figure 5 Geographical spread of UHC in Surat



(Map courtesy: Surat Municipal Corporation website <https://www.suratmunicipal.gov.in/map/index.aspx>)

4. NORMS AND GAP IDENTIFICATION

The URDPFI guidelines are referred here to identify gaps in the health care facilities existing in Surat. Reduced child mortality and maternal health are essential for a city as well as the nation. Reduction of both of these to absolute zero is identical and to achieve this goal, primary health centres and maternity home having efficient and effective facilities play a vital role. The Table below shows suggested norms for necessary services as extracted from the URDPFI.

Table 5 Guideline norms for urban health facilities

Sr.	Category	No. of beds	Population served per Unit	Area requirement
1	Dispensary	-	15,000	0.08 to 0.12 Ha
2	Nursing home, child welfare and maternity centre	25 to 30	45,000 to 1 lakh	0.20 to 0.30 Ha

(Source: Draft URDPFI Guidelines; First Draft Volume 1; February 2014)

Table 6 shows the number of basic health centres in Surat city both public (service by the ULB or the State Government) and private. Central zone have 34 UHC, which is highest, however, in this area the population decadal growth rate is decreasing. Also, the reducing population trend is depicted till 2041 showing no more scope for new facilities in future. Industrial and commercial activities are peaking up in the NZ, EZ, SZ and SEZ resulting in population growth. In these areas, there are chances for the shortage of UHC services in future. For a population of 2011, these zones show a gap in terms of required centres, however, the city total shows no deficit indicating zonal disparity of service spread. Projected population for next three decades points out for UHC shortage at the city level. Identified shortage will be 15, 48 and up to 85 UHC for the years of 2021, 2031 and 2041 respectively. More than 24 UHC will be needed in four-zone namely the NZ, EZ, SZ and SEZ. Future requirements for SWZ are comparatively little and for the WZ, it is almost nil with present status till 2041.

Table 6 Zone wise gaps for UHC

Sr.	Zone	Area (Sq. km)	Centres (Public + Private)	Health centres needed as per requirement				Gap			
				2011	2021	2031	2041	2011	2021	2031	2041
1.	Central (CZ)	8.18	34	8	8	8	8	26	26	26	26
2.	East (EZ)	37.53	15	22	30	39	50	-7	-15	-24	-35
3.	North (NZ)	36.36	6	13	18	24	30	-7	-12	-18	-24
4.	South (SZ)	61.76	6	14	19	25	32	-8	-13	-19	-26
5.	South-East (SEZ)	19.49	10	15	20	27	35	-5	-10	-17	-25
6.	South-West (SWZ)	111.91	10	8	10	12	14	2	0	-2	-4
7.	West (WZ)	51.28	20	8	11	14	18	12	9	6	2
	Total	326.51	101	89	116	149	186	12	-15	-48	-85

(Source: Zone detail from Surat Municipal Corporation Demographic detail; Health Data from Surat Disaster Management Plan 2010; Projection by Author)

5. IDENTIFICATION MECHANISM AND PROPOSAL PRIORITIZATION

The state Government of Gujarat follows the Town Planning Schemes (T. P. S.) as a tool for urban land management. The Gujarat Town Planning and Urban Development Act, 1976 promotes two stages of urban planning. First is the preparation of a Development Plan (DP with an implementation duration of 10 years) includes broad land-use planning. In the second stage, T. P. S. are prepared to deal with detailed area planning of land parcels. The plans are developed by Appropriate Authority as specified under the Act. Meanwhile the planning of DP and TPS, the authority procure land through use reservations using the enacted procedures. Section 40 empowers to reserve land for public use that include social infrastructures like school, health centre and community hall. Once the TPS reaches the final stage, these reserved land parcel ownerships are transferred to the ULB for further purposeful development. At present, total 38 TPS are reached a final status in Surat. On the other hand, recently SMC has announced an inclusion of the proposal in Budget 2015-16 to develop at least one UHC in all the zones and a maternity home with 25 beds capacity.

Out of 38 schemes, 18 schemes have reservations for health centres. A total of 19 plots reserved out of which 12 plots are vacant with development on remaining seven plots. Referring to Table 7 and status

of vacant plots in deficient zones, against a requirement of 8 facilities, 11 plots are available. However, a development proposal must follow other development norms such as availing accessibility (road width more than 12 mt), plot size (as per norms) and built up area development status of TPS and so on. Table 7 as below shows the identification of plot for development proposal considering the satisfaction of all criteria. Such analysis is essential prior carrying out a project as well as the construction of the facility. Identically, the best-fit plan in the case here can be for the reserved plot in TPS 21 (Bhestan) located in the SZ for which gap was identified earlier.

Table 7 Reservation of health centres in TPS

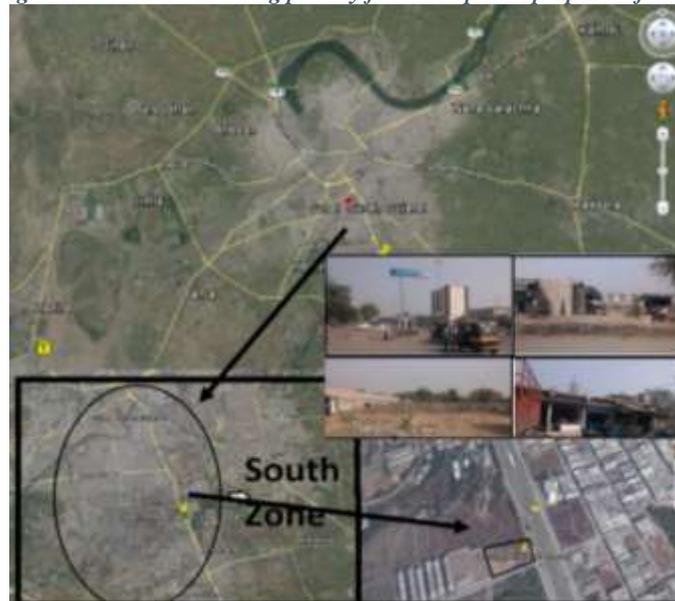
Sr.	Zone	Name of final schemes	T.P. area (in Ha)	Area of health reservation (in Ha)	Road width (in Mt.)	Development status of T.P.
1	South-West	1 (Vesu)	119.00	0.17	12	Fully developed
2	South-West	4 (Umara-South)	146.44	0.70	18	Fully developed
3	South-West	6 (Vesu)	74.00	0.38	12	Partly developed
4	South	21 (Bhestan)	100.00	0.40	15s & 60e*	Partly undeveloped
5	South	22 (Bhestan)	100.00	0.10	9	Partly undeveloped
6	South-East	34 (Mogob- Dumbhal)	105.00	0.58	15n & 7.5w*	Partly developed
7	South-West	36 (Althan)	98.00	0.23	18w & 15s*	Fully developed
8	South-West	37 (Althan-South)	81.00	0.19	36	Partly undeveloped
9	West	10 (Pal)	140	0.27	30	Partly Developed
10	West	14 (Pal)	100	0.31	15	Partly Developed
11	West	14 (Rander-Adajan)	116.6	0.51	7.62	Fully Developed
12	West	31 (Adajan)	75.87	0.74	12	Fully Developed

*s-South, e-East, n-North, w-West

(Source: Surat Municipal Corporation, Town Planning, Final TPS)

In addition to the above information, the plot proposed here is vacant and have direct accessibility to BRTS on 60 Mt. broad road to the East. In the course of TP development duration, due to a vacancy on plot and taken no measures for securing the plot boundaries, encroachment has taken place (Figure 6). It included unauthorised and encroached built spaces construction with ongoing commercial activities. In the absence of a prioritisation and identification mechanism for selecting the appropriate time for developing reserved land, such encroachment takes place. It needs extra resources to recover the precious reserved land. Similar could be many such cases if a detailed investigation is taken up, however, that at present is beyond the scope of work in the current research.

Figure 6 Plot selection using priority for development proposal of UHC



(Image courtesy: Google Earth)

6. CONCLUDING REMARKS

Based on the above discussions, following points are emerging that needs the attention of the decision-makers while framing up a policy for the development of the urban health sector.

- In the absence of data on appropriate demographic details lead to use crude methods of population projection, and it may at times misguide for investment in social projects of the urban area.
- There is a need for allocation of capital for primary health care infrastructures like UHC and MH for improve maternal health, reduce child mortality. Improved service delivery in the health sector will also ensure safety against epidemics and health hazards in urban areas saving a significant portion of revenue.
- Surat Municipal Corporation need to carry out an exercise on existing situation analysis and adopt proactive and need-based planning approach for effective and efficient health care services for citizens.
- Present research attempt indicate that deficiency for the UHC requirement exists in the North, East, South and South-East Zones of the city. Proposals shall be worked out appropriately in these area with prioritisation.
- In addition, interestingly it was identified for the SWZ and WZ there are 1.66 Ha and 1.83 Ha land parcels have health care purpose reservation at final TPS stage at present. In case of the WZ, no need is identified for UHC till 2041 whereby the reservation may be re-worked out (change of land use) by appropriate authority. Based on projections, the authority has at least 15 years to begin with implementation of UHC proposal in the SWZ. Hence, new UHC proposal and development priority shall be in order of EZ, NZ, SEZ and SZ.
- The ULB must secure the reservation land parcels at first place otherwise there remains the chances for encroachment and unauthorised development due to a shortage of land at prime locations.
- The mechanism discussed in the paper or similar more suitable approach shall be adopted by SMC prior carrying out development on precious reserved plots.

ACKNOWLEDGEMENTS

Authors duly appreciate the support extended by Prof. (Dr.) Vaishali Mungurwadi, Principal for Faculty of Engineering at SCET and constant motivation towards research by Prof. Himanshu J. Padhya, Head of Civil Engineering Department at SCET. At the instance, authors are also thankful to the health department personnel of the Surat Municipal Corporation for extending their support in availing information and insights of the service delivery mechanism.

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