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CHALLENGES AND ISSUES FOR LAND USE PLANNING OF GREATER BARDOLI TALUKA CENTRE

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Abstract: **An important development in urban settlement during the past few decades has been the rapid expansion of population and built-up area into the unincorporated suburb and in areas surrounding our large towns and cities. This recent finger like trend of development at the town margins has been made possible by the mechanized transportation and the extension of the public utility services such as electricity, water and sewage, etc. beyond the town's limit. In such Situation, the pressure increases on the fringe area, and demand of the sharing of basic infrastructure like road network, water supply, sewerage; and natural resources like land, ground water increases.**

The study is carried out on Indian norms and standards and scope of study is limited to land use pattern only. This study comprises of planning proposal of land use for Greater Bardoli Taluka Centre (GBTC) which comprises of Bardoli town and adjoining seven villages. An attempt has been made to provide land use planning proposal for GBTC area for 20 years.

I. INTRODUCTION

Urban sprawl promotes the spread of urban land use into the urban fringe Villages. The pressure increases in the fringe area, the demand of land increases, the land prices goes up, even the sharing of basic infrastructure like road network, water supply, sewerage; and natural resources like land, ground water increases. Apart from that the local authority also tries to imply the planning framework for the guided development with the control regulations. The land market located immediate surrounding the urban area becomes more lucrative for the investors and developers as a hub of the development.

II. STUDY AREA

The study area is demarcated by accumulating seven fringe villages of Bardoli town with Bardoli town. This new area is named as Greater Bardoli Taluka Centre (GBTC) for the study purpose and includes **Bardoli Town, Baben Village, Astan Village, Dhamdod-Lumbha Village, Utara Village, Khali Village, Isroli Village & Ten Village**. Greater Bardoli Taluka Centre (GBTC) is located at the core of Bardoli Taluka which is in South-East direction to Surat city at a distance of 35 km and on the bank of river Mindhola. Bardoli Taluka is the most developed Taluka amongst ten talukas of Surat district. It is directly connected with busy road and rail network. NH-6 from Surat-Nagpur-Kolkata is passing through GBTC. Moreover it many state highways are also passing through GBTC. It is having good connectivity with Surat-Bhusaval Tapti railway network.

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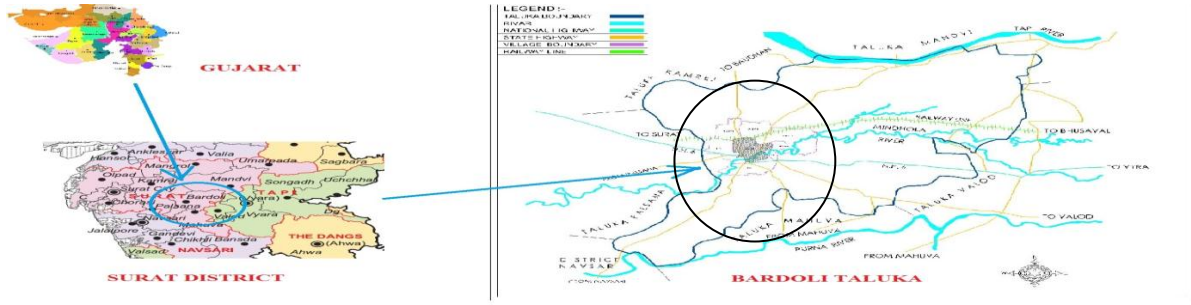

Fig. No. 1 Study area location with respect to Gujarat
Source : Map of Gujarat Govt.

III. STUDY AREA DEMOGRAPHY

A. Population and Decadal Growth Rate

The decadal population and growth rate for GBTC area is shown as Table No. 1. The population growth rate for fringe villages keeps increasing due to availability of land, migration of Bardoli town peoples, clean environment and other benefits.

Table No. 1 Population and Decadal Growth Rate of GBTC

Sr. No.	Name of Town/Village	Population (Year wise)				% Decadal variation		
		1981	1991	2001	2011	1981-	1991-	2001-
I	Bardoli Town	2813	38377	5194	7059	36.42	35.36	36.60
II	Baben Village	4389	5342	8377	1245	21.71	56.81	48.66
III	Astan Village	1856	2179	3461	5223	17.40	58.83	50.91
IV	Dhamdod-Lumbha	1019	1219	1513	1845	19.63	24.12	21.94
V	Utara Village	433	481	587	722	11.09	22.04	23.00
VI	Khali Village	N.A	88	101	127	-----	14.77	25.74
VII	Isroli Village	1387	1545	1845	2216	11.39	19.42	20.11
VIII	Ten Village	2259	3325	4613	6595	47.19	38.74	42.97
Total		3947	52556	7244	9977	33.14	37.84	37.72

B. Density Variation

The population density of GBTC is ranging from 71 pph in Bardoli town to 0.9 pph in village Utara. The data in Table No. 2 clearly shows that, the population density is doubled in year 2001 then it was in 1981. The population density of GBTC area for different census year is shown as Table No. 2.

Table No. 2 Population Density of GBTC

Sr No	Name of Town/Village	Density (persons per Hactor) pph				Remarks
		1981	1991	2001	2011	
I	**Bardoli**	**38.221**	**52.143**	**70.579**	**95.910**	**Urban**
II	**Baben**	**9.426**	**11.472**	**17.990**	**26.743**	**Fringe**
III	**Astan**	**3.863**	**4.535**	**7.204**	**10.871**	**Fringe**
IV	**Dhamdod Lumbha**	**1.368**	**1.637**	**2.031**	**2.477**	**Fringe**
V	**Utara**	**0.683**	**0.759**	**0.926**	**1.139**	**Fringe**
VI	**Khali**	**----**	**1.024**	**1.175**	**1.477**	**Fringe**
VII	**Isroli**	**2.026**	**2.257**	**2.695**	**3.234**	**Fringe**
VIII	**Ten**	**3.790**	**5.578**	**7.739**	**11.064**	**Fringe**

C. Land Use Structure

The quality of life and characteristics of a city are governed by the land use pattern of it. The land use plan has emerged with consideration of the nature, type and distribution of various activities, the circular pattern and the utilization of available land. Table No. 3 shows the land use pattern observed in 2001 in delineated area.

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Table No. 3 Existing Land Use Pattern in GBTC

Sr. No.	Land Use	Area in Hactor	% of Total developed
I	Residential	466.23	56.51%
II	Commercial	63.29	7.67%
III	Industrial	90.91	11.02%
IV	Public Use	58.14	7.04%
V	Recreational Purpose	5.28	0.64%
VI	Trans. &	141.15	17.12%
	Total Developed Land	**825.00**	**100%**
VIII	Water body	273.32	-----
IX	Agricultural Land	3329.39	-----
Total		**4427.71**	-----

D. POPULATION PROJECTION 2031

The requirements of different types of infrastructure and Land Use for Greater Bardoli Taluka Centre for the year 2031 would be based on the projected population for that year and also migration of population that seeks livelihood in the town.

For the purpose of population projections following methods have been adopted:

- Arithmetic Increase Method
- Geometric Progression Method
- Incremental Increase Method
- Simple Graphical Method

The projected populations for GBTC are shown as Table No. 4

Table No. 4 Projected Population for GBTC

Sr No	Town/Village	Target Population (Maximum of Four Methods)			
		2011	2015	2021	2031
I	Bardoli Town	70590	82287	95925	130351
II	Baben	12453	14491	16529	22624
III	Astan	5223	6103	6984	9120
IV	Dhamdod	1845	2036	2247	2739
V	Utara	722	790	857	992
VI	Khali	127	140	153	179
VII	Isroli	2216	2402	2587	2958
VIII	Ten	6595	7885	9429	13479
Total		99771	116134	134711	182442

Source: Calculated Data

So the adopted value of population of GBTC for 2011, 2016, 2021 and 2031 are 100000, 116500, 135000 and 183000 respectively.

E. LAND USE PLANNING

Proposed Land Use plan of GBTC area for year 2031 is to be prepared keeping in mind existing land use zones such as residential, industrial, commercial, public & semi public, water body and agricultural etc. Land use proposal is made for vision year 2031 for GBTC area considering existing land use, existing growth of whole area and the potential of area for future development.

F. Evaluation of Present Land Use Structure of GBTC

In order to visualize the future structure of the GBTC, it is necessary to understand the existing structure. In GBTC, the work areas and residential areas are not separately located. The existing Land Use of GBTC is shown in Figure No. 4.

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- A careful study of the above figure shows that the central part of the GBTC is Bardoli town which is highly developed. The main road from gamtal to northern part of Bardoli town is the main work area where most of the people are engaged in trade and commerce.
- The industries are located at several places in GBTC area. The major industrial pockets are at North-West, West and Southern parts of GBTC area. The North-Western pocket is at Baben village which is in the form of sugar factory, paper mill and other heavy industries. The industrial area in the Western part of GBTC is a GIDC estate which is in Ten village. The Southern Industrial pocket is between river Mindhola and NH-6 which comprises of light and heavy industries like paper mill, chemical industry etc.
- The residential areas in GBTS are located in pockets. The major pocket is at the centre which is Bardoli town. The residential societies are arising in outer area of Bardoli town due to availability of cheap land and clean environments. There are two major technical institutes in N-W and Southern part of GBTC area which also results in formation of major residential areas.

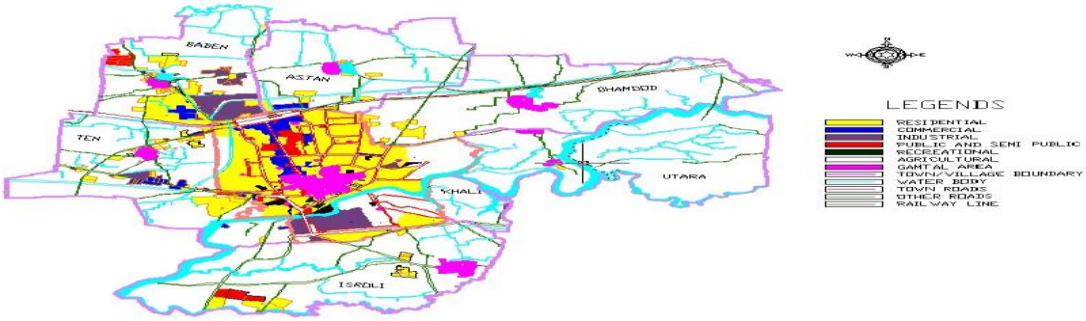

Fig. No. 4 Existing Land use in GBTC area

The existing development trend in GBTC area as shown in Fig. No. 5.

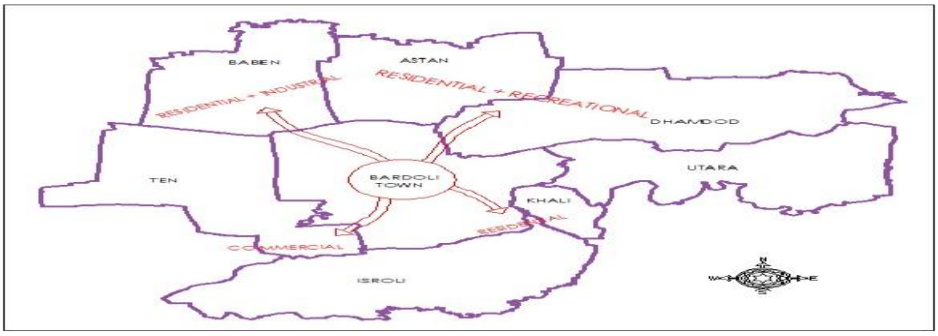

Fig. No. 5 Development Trend of GBTC area

G. Proposed Land Use Structure of GBTC

The proposed land use for GBTC area for the year 2031 is shown as Table No. 5.

Table No. 5 Proposed Land Use area for GBTC for the year 2031

Particulars	**Calculated* (2011)**		**Proposed for study area (2031)**		**UDPFI**
Population (lac)	0.99		1.83 lac		
Density (pph)	22.53		150		
Land Use	Area Existing (ha)	% Developed Area	Proposed Area (ha)	% Developed Area	% Developed area
Residential including gamtal	466.23	56.51%	1120.37	45%	45-50%
Commercial	63.29	7.67%	224.07	9%	3-4%

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Industrial	90.91	11.02%	224.07	9%	8-10%
Pub. & semi Public	58.14	7.04%	124.49	5%	10-12%
Recreational	5.28	0.64%	448.15	18%	18-20%
Transport & communication	141.15	17.12%	348.55	14%	12-14%
Total Developed Land	825.00	100%	2489.70	100%	100%
Water body	273.32	-----	273.32	-----	-----
Agriculture	3329.39	-----	1664.70	(-50%)	-----
Total Area	4427.71	-----	4427.71	-----	-----
***The existing area calculated through approximation method**					

Source: Calculated data

H. Future Land Use Plan -2031 of GBTC

There is a proposal of constructing a new bridge on river Mindhola by Bardoli Municipality so with the establishment of new bridge on River Mindhola connecting GBTC to NH-6 Surat-Nagpur-Kolkata) and SH-187 (Bardoli-Valod), the scenario of development is expected to be changed dramatically because of the opening of new opportunities for work, business and other activities with other major cities. Keeping in view the position of the three major educational institutes in Baben, Isroli and Tarsadi, it has been envisaged that the areas falling between these three nodes would be most potential for future development of GBTC. Besides this the potentials of railway line cannot be underestimated. Therefore the areas along these transport lines may attract some activities.

In light of the above facts, the future town structure for GBTC has been envisaged as shown in Fig. No. 6.

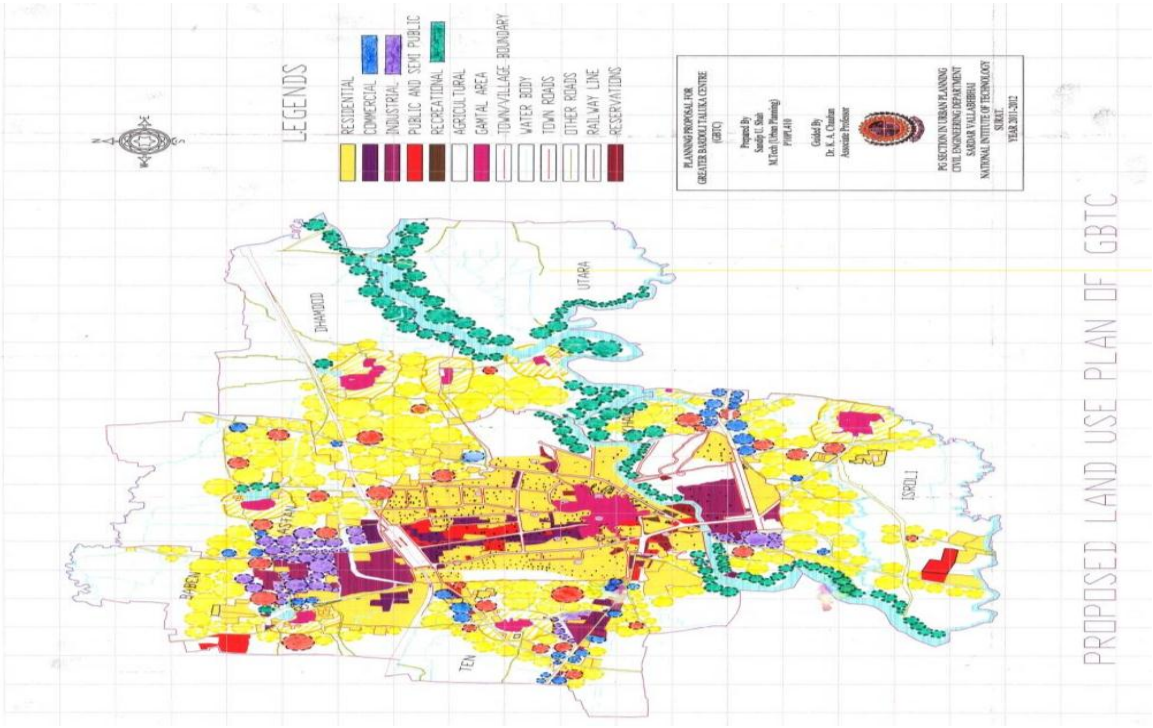

Fig. No. 6 Proposed Land use plan of GBTC

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V. CONCLUSION

- Developable land is not easily available in Bardoli Town therefore people are attracted towards fringe villages of Bardoli town.
- The development in fringe villages of Bardoli town is unplanned and in haphazard manner.
- Due to availability of large amount of vacant land major industries, private residential societies and small scale industrial units are attracted towards fringe villages rather than Bardoli town.
- Though Bardoli town and fringe villages are growing rapidly, hence attempt has been made to relocate the boundaries of town and ultimately re-plan the whole area named GBTC.

ACKNOWLEDGEMENT

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