District Human Development Report

SURAT

Gujarat Social Infrastructure Development Society (GSIDS)
General Administration Department (Planning)
Government of Gujarat

DISTRICT HUMAN DEVELOPMENT REPORT

SURAT

District Human Development Report: SURAT

The report is prepared by Veer Narmad South Gujarat University
Under a tripartite MoU between
Member Secretary, Gujarat Social Infrastructure Development Society (GSIDS), District Collector, Surat and
Vice Chancellor, Veer Narmad South Gujarat University, Surat

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MESSAGE

Gujarat enjoys the reputation of being the most progressive and well-administered State in the country. The State Government is aware that although progress has been achieved in various sectors since the State's inception much remains to be done in many fields. The Government is, therefore, making strenuous efforts to provide basic minimum services to the people, including drinking water, housing, health, education, livelihood opportunities, etc. The issues like securing peoples participation, poverty alleviation, social protection to the poor, removal of regional imbalances, good governance are also high priority areas of focus on the agenda of the Government. We are committed to the cause of Human Development.

I compliment the Veer Narmad South Gujarat University-Surat for collaborating with the State Government in preparation of the District Human Development Report of Surat District, which provides an objective, in-depth analysis of the present status of various aspects of human welfare in the district. I also compliment the GSIDS, General Administrative Department (Planning) for undertaking this project.

I am sure, the comprehensive document, so meticulously prepared, providing a realistic assessment of the current status of the district and will serve as a guide for future planning in various fields which leads towards inclusive development of the people of the district.

I appreciate the endeavor.

(JAYESH RADADIYA)

सत्यमेव जयते
Government of Gujarat

MESSAGE

Human Development is a development paradigm which is beyond mere rise or fall of national incomes. It is about creating an environment where people can develop their full potential and lead productive, creative lives in accordance with their needs and interests. People are the real wealth of nation. Development is thus about expanding the choices people have to lead lives that they value.

The District Human Development Report is a Document which gives the present status of Human Development in different talukas of the District. Human Development requires focus on the basic as well as crucial indicators of Human Development. Thus this report has highlighted three important pillars which are: Education, Health and Livelihood.

I commend the efforts put in by stakeholders in preparing this publication and hope that this will be useful to all the state & district level officials, policy makers and planners in working towards improving Human Development scenario of the District.

(S. Aparna)
Principal Secretary (Planning)
and Chairperson, GSIDS

PREFACE

The objective of all the interventions is to bring in human development. A district human development report has to basically address the issue of formulation of a strategy, which will accelerate the pace of human development. Therefore, the objective of the present exercise is to build up a developmental path, which will address human development issues in Surat.

Normally a human development report covers three aspects related to human development — standard of living, health and education. Broadly the same format has been maintained in this exercise.

When we talk of building of a strategy, all concerned who are expected to participate in its execution must be involved at the formulation stage. In other words, the whole exercise has to be participatory in nature. An attempt has been made to involve all the line departments in this exercise. At the same time other stakeholders have also been involved in identification of the bottlenecks and solutions. We have included several case studies to capture the essence of the district and success stories from the district itself that can be scaled up to accelerate the pace of human development.

The formulation of Human Development Index (HDI) has not been attempted here. In the process of formulation of a strategy, intra-district scenario needs to be brought out. The quality of data varies from district to district and if the usual data available at the district level is used to formulate the HDI, the comparison across district may become erroneous. Since quality of data within a district is likely to be similar, a comparison within a district may provide us a relative picture of progress and a comparison of talukas over conveniently defined indicator will not be off the mark. In any case using the normal HDI formulae may not be able to capture the specific nuances and barriers to human development in different parts of a district. Since we need to build a strategy we should use a framework, which is flexible enough to capture the specific need of the district in terms of human development. HDI formulation is rather complicated and is difficult to comprehend, say, for panchayat level functionaries who are likely to participate in execution of schemes in the process of human development.

Considering the above, the Human Development Radar has been attempted which may be helpful. It is easily understandable and the weak areas can be quickly identified. In addition, the indicators may be selected as per the district specific issues.

This exercise started with a district level workshop involving all the line departments, other government officials and academicians. A Core committee was formed at the district level consisting of government officials, Panchayat functionaries, representatives of non-governmental organisations (NGO) and representatives from academia. Based on the issues highlighted in the district level workshop weaker pockets under each sector in the district were identified. Identification of barriers to human development under each area in this district followed next. The process of documentation was initiated thereafter. Specific studies were also initiated and findings have been incorporated.

I put on record my sincere thanks to all who have been involved in this exercise. I am grateful to the officers of the line departments including the departments of Land, Forest, Agriculture, Animal Husbandry Development, Fisheries, Agri-irrigation, WASMO, District Industries Centre, Education, Health, Social Welfare and Bureau of Economics and Statistics. I was assisted by a dedicated band of officers from the Surat Collectorate which included the DDO, DPO, etc.

I express my deep gratitude to the representatives from academia who have helped us in preparing this exercise. Special mention may be made of Dr. Kiran Pandya and his team from VNSGU for all the efforts they put in for preparing this report.

Finally I express my sincere thanks to the GSIDS, General Administration Department (Planning), Government of Gujarat for their kind guidance and constant encouragement.

Shri M.S.Patel
Collector
Surat

FOREWORD

The Human Development approach arose in part as a result of growing criticism to the leading development approach, which presumed a close link between national economic growth and the expansion of individual human choices. As of 1990, the human development concept was applied to a systematic study of global themes, as published in the yearly Global Human Development Reports under the auspice of the UNDP.

The Human Development story of India is unique in its kind. India initiated Human Development issues during 8th Five Year Plan (1992-97). In order to integrate Human Development into state planning in India the preparation of reports at state level has been started. Now-a-days the Gujarat State is on the fast track of development. Planning Commission-Government of India and UNDP had partnered Strengthening State Plan for Human Development (SSPHD) Programme, under which the Government of Gujarat had initiated the process of integrating Human Development in planning and policy documents.

Human Development is increasingly becoming an area of concern and priority is given to development a strategy which conceptually goes beyond per capita income as a measure of development. The preparation of DHDR (District Human Development Report) marks the beginning of the process whereby people are mobilized and actively participate in the developmental process.

The DHDR is expected to be an important document for formulating the District Human Development Plan. The report has incorporated the status of Human Development in different talukas of Surat District. The report depicts the present status of the district with available information for various indicators of Education, Health, Nutrition and Livelihood.

I hope this report will form a milestone in the overall planning and development of the district. DHDR will also be very useful to concerned District level Officials, policy makers, decision makers and NGOs.

Shri K. Rajesh
(DDO, Surat)

ACKNOWLEDGEMENT

The District Human Development Report of Surat is facilitated by the Government of Gujarat and UNDP as a part of their approach to emphasize the importance of Human Development in district planning. The main objective of the preparation of district human development report is to transform the process of development planning with full participation of all stakeholders.

The District Human Development Report is written with warm support and guidance received from the high level government officials, especially Kum S Aparna, Principal Secretary –Planning and Shri Dr. Rajendra Kumar, the District Collector, Surat. Shri Kalpesh Shah, Joint Secretary (Planning), GAD-Planning also gave his incisive comments which significantly improved the quality of work. Their active role helped us to get necessary information from different organs of the government on human development indicators.

We thank Shri K D Vashi, Director & Member Secretary, GSIDS for his encouragement and support. We also acknowledge the support of Shri. S.S.Leuva, Deputy Director, GSIDS and other officers from GSIDS. They were always accessible for the work related to human development report. Shri M. M. Patel, District Planning Officer, has also been proactive throughout the preparation of the report, especially for ensuring that latest data is made available. We also thank Ms Mamta Mateda SPA, GSIDS and Mr Mitulsinh Parmar SPA, Surat, for their continuous support and co-ordination throughout the preparation of this report. Assistance provided by the officers of Bureau of Economics and Statistics is also acknowledged with gratitude.

In preparation of the report many institutions, departments, officials and individuals extended their support in various ways. We express our sincere thanks to Commissioner of Police, DDO, District Planning officer, District Statistical Officer, DRDA, Pollution Control Board, BSNL office, District Industrial Centre, District Education Officer, District Health Officer, Officers from Fisheries, Animal Husbandry and Agriculture; and all others who have helped us in preparation of the report by providing necessary information and support despite their busy schedule.

We thank all those who have helped us directly or indirectly in completing our task. We acknowledge responsibility for errors of commission and omission.

We hope that the report is useful to policy makers, administrators, academicians, research scholars and all those who are interested in issues of human development.

Dr Kiran Pandya
Professor & Head of the Department
of Human Resource Development

Project Team (VNSGU)

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ABBREVIATIONS USED IN THE REPORT

ABER	Annual Blood Examination Rate
AIDS	Acquired Immune Deficiency Syndrome
ANC	Anti Natal Care
ANM	Auxiliary Nurse Midwife
AP	Andhra Pradesh
API	Annual Parasite Incidence
APL	Above Poverty Line
ASHA	Accredited Social Health Associate / Activists
ATM	Automatic Teller Machine
AWs	Angan Wadis
AWW	Angan Wadi Worker
BMW	Bio-Medical Waste
BOLT	Build, Operate, Lease and Transfer
BOOT	Build, Own, Operate and Transfer
BPL	Below Poverty Line
BSC	Blood Smear Collection
BSNL	Bharat Sanchar Nigam Limited
CAGR	Compounded Annual Growth Rate
CBR	Crude birth Rate
CDPO	Community Development Programme Officer
CDR	Crude Death Rate
CEW	Community Extensive Worker
CHC	Community Health Centre
CNG	Compressed Natural Gas
COD	Chemical Oxygen Demand
CPCB	Central Pollution Control Board
CSC	Community Sanitary Complexes
DDC	Drug Distribution Center
DDGC	Door-to-door Garbage Collection
DDO	District Development Officer
DF	Dengue Fever
DIC	District Industrial Centre
DLHS	District Level Health survey
DMO	District Medical Officer
DNA	Deoxyribonucleic Acid
DO	Oxygen Demand
DRDA	District Rural Development Agency
DSA	District Statistical Abstract
DSO	District Statistical Officer
EDPT	Early Detection and Prompt Treatment
EMCP	Enhanced Malaria Control project

EMRI	Emergency management and Research Institute
ESIS	Employee State Insurance Service
EWS	Economically Weaker Section
FA	Folic Acid
FHW	Female health Worker
FSL	Forensic Science Laboratory
FTD	Fever Treatment Depot
FYPs	Five Year Plans
GAD	General Administrative Department
GAIL	Gas Authority of India Limited
GDP	Gross Domestic Product
GIDC	Gujarat Industrial Development Corporation
GMB	Gujarat Maritime Board
GOI	Government of India
GPA	General Practitioners'' Association
GPCB	Gujarat Pollution Control Board
GSDMA	Gujarat State Disaster Management Agency
GSDP	Gross State Domestic Product
GUDM	Gujarat Urban Development Mission
GWSSB	Gujarat Water Supply & Sewerage Board
HDI	Human Development Index
HDR	Human Development Report
HMIS	NRHM Health Management and Information System
HIV	Human Immunodeficiency Virus
HRD	Human Resource Development
ICDS	Intensive Child Development Scheme
IEC	Information Education Communication
IHHL	Individual Household Latrines
IMA	Indian Medical Association
IMR	Infant Mortality Rate
IOC	Indian Oil Corporation
IPC	Indian Penal Code
IRS	Indoor Residual Spray
IT	Information Technology
LIG	Low Income Group
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
LSIs	Large Scale Industries
MANTRA	Man-made Textile Research Association
MAP	Malaria Action Plan
MDM	Mid-Day Meal
MIS	Management Information System
MLV	Malaria Link Volunteers
MOs	Medical Officers

MOU	Memorandum of Understanding
MP	Madhya Pradesh
MPHS	Male Primary Health Supervisor
MPHW	Male Primary Health Worker
MPO	Modified Plan of operation
MSK	Medvedev-Sponheuer-Karnik
MSMED	Medium, Small and Micro Enterprise Development
MSW	Management of Solid Waste
MW	Mega Watt
NAAQS	National Ambient Air Quality Standards
NACO	National Aids Control Organization
NAMP	National Anti- Malarial Programme
NCCL	Narmada Cement Co. Limited
NGO	Non-Governmental Organisation
NIV	National Institute of Virology
NMEP	National Malaria Eradicate Programme
NRHM	National Rural Health Mission
NRI	Non Resident Indian
NTPC	National Thermal Power Corporation
NUEPA	National University of Educational Planning and Administration
NVBDCP	National Vector Borne Disease
OBC	Other Backward Class
ONGC	Oil and Natural Gas Corporation
Pf.	Plasmodium Falciparum Case
PHC	Primary Health Centre
Po.	Malaria Cases
Popu.	Population
POY	Partially Oriented Yarn
PPs	Private Practitioners
PSM	Preventive and Social Medicine
PUC	Pollution Under Control
RCC	Reinforced Cement Concrete
RCH	Reproductive Child Health
RIL	Reliance Industries Limited
RNTCP	Revised National Tuberculosis Control Programme
RTI	Right to Information
RTO	Regional Traffic Office
RWH	Rain Water Harvesting
SARS	Severe Acute Respiratory Syndrome
SC	Scheduled Caste
SEWS	Socially and Economically Backward
SEZ	Special Economic Zone
SFR	Slide Facliparum Rate
SJSRY	Swarna Jayanti Shaheri Rojgar Yojana

SMC	Surat Municipal Corporation
SMIMER	Surat Municipal Institute of Medical Education and Research
SPR	Slide Positivity Rate
SSAM	Sarva Shiksha Abhiyan Mission
SSIs	Small Scale Industries
ST	Scheduled Tribe
STD	Sexual Transmitted Disease
SUDA	Surat Urban Development Authority
SURSEZ	Surat Special Economic Zone
SWM	Solid Waste Management
TB	Tuberculosis
TFR	Total Fertility Rate
UCD	Urban Community Development
UHC	Urban Health Centre
UN	United Nations
UNDP	United Nation Development Program
UP	Uttar Pradesh
USA	United states of America
VANBAY	Valmiki Ambedkar Awas Yojana
VTMS	Vessel Traffic Management System
WASMO	Water and Sanitation Management Organization
WC	Water Closet
WDR	World Development Report
WHO	World Health Organization

TABLE OF CONTENTS

List of Figures

EXECUTIVE SUMMARY

The report is prepared in order to create documentation of the issues in human development at disaggregated level. The main objective of the preparation of district human development report is to transform the process of development planning with full participation of all stakeholders. District Human Development Report aims at getting deeper understanding of the issues at the district level and thus help in formulation of developmental policies through human development prism. District Human Development Report is expected to be input for deliberations of the District Planning Committee for the preparation of district plans.

BACKGROUND

Surat is located in the Southern part of Gujarat state between 20° 48′ and 21° 33′ latitude and 72° 35′ and 74° 19′ longitude. The area of Surat district is 4841 sq.km. Surat district is organized into 9 talukas. There are 567 Gram Panchayats for 707 inhabited villages. The maximum temperature reaches around 43° C in the months of March to May and the lowest temperature is around 11° C in the months of December to February. The total average rainfall of the season in all the talukas of Surat district is 906 mm.

The population of Surat district, according to the Census 2011, is 60.81 lac. The growth rate of population during the decade 2001-2011 is 42.19 per cent, which is highest among all the districts of Gujarat state. The population density is 1337 persons per sq.km. and sex ratio is 787 females per 1000 males. The sex ratio of Surat district is lowest among all the districts of Gujarat. However, the sex ratio in 0-6 years' age group is better and it is 835 females per 1000 males. The urbanization percentage is 79.74.

The report is organized into Six chapters: An overview of Surat district, Education, Health, Livelihood, Status of Surat City and The Way Ahead. A brief outline of chapters is as follows:

CHAPTER OUTLINE

Chapter – 1 provides an overview of Surat district. The chapter discusses climatic conditions and seasons in Surat, demographic characteristics of the district, infrastructure facilities in the district and on tourism avenues. The pattern of demographic characteristics like population, population growth rate, sex ratio, percentage of ST population etc. is examined at taluka level. Assessment of infrastructure facilities include road length, road type, access to railways, ports, airports, electricity connection and; access to post offices and telephone connections.

Important Points need to be highlighted:

- Surat has a moderate climate
- Surat is rich in mineral resources, especially lignite, limestone and silica
- It is well-connected through all modes of transportation - road, rail and sea route. Even interior areas are well-connected by all- weather roads. It has a well-developed port
- Surat attracts large number of people from other parts of the state and the country. The people are peace loving. For decades, the district has remained calm and free from major riots. This helps in promoting economic activities
- Good educational institutions can accelerate the growth in long-term. The district does have large number of schools and colleges but it requires good educational institutes to provide quality education and cater to the needs of local industries

Chapter – 2 discusses the status of education in Surat district. The chapter discusses literacy rate across gender and region (rural-urban). Analysis of enrolment and dropouts from schools is also presented. Discussion on education infrastructure like number of schools, access to drinking water and sanitation facilities in school etc. Alternate schooling system for children of sugarcane cutters details are also discussed.

Important Points need to be highlighted:

- The literacy rate of the Surat district is 85.53 and it is higher than the state literacy rate.
- The gender gap between Male and Female Literacy rate is 9.19 percent as per 2011 Census, which has reduced from 15.15 in 2001.
- Enrolment of girls students is consistently increasing from 2008-09.
- Drinking water, sanitation and electrification is there in all schools.
- More than 98 per cent schools have a separate girls toilet.
- Enrolment is close to 100 per cent and dropout has reached zero per cent in 2014-15 for standards 1 to 5
- There is at least one college in each taluka

Chapter – 3 presents the status of health. The development of social infrastructure for healthcare like developing healthcare organizations, providing drinking water, and sanitation and drainage facilities is discussed in this chapter. The chapter presents the status of vital indicators like Infant Mortality Rate, Maternal Mortality Rate, Crude Birth Rate, Crude Death Rate etc. for Surat. The details on number of cases and deaths due to various water-borne diseases are also discussed in this chapter. The status of vector-borne diseases and HIV-AIDS cases in the district is also discussed. Information on cases and death due to sickle cell anaemia, leptospirosis, swine flu etc. is also

covered in this chapter. Various schemes for awareness among people about these diseases, their prevention and cure are discussed in this chapter

Important Points need to be highlighted:

- Surat district has public health centres and health sub-centres as per the norms prescribed by the government of India.
- The percentage of people suffering from malaria and falciparum has reduced because of the systematic efforts by the government
- More than 87 percent of the children registered under ICDS are normal weight.
- The services of 108 are extremely useful to the people residing in rural area.
- Institutional deliveries have increased because of Chiranjeevi scheme.

Chapter – 4 **Livelihood** provides overview about livelihood issues in Surat district. The present status of agriculture, animal husbandry, poultry, fishing, mining and industries is discussed in this chapter. The industrial development in Hazira area, the status of large, small and medium scale industries, textile, diamond and zari industries and development of Special Economic Zones is presented in this chapter. Government initiatives taken to develop coastal villages, fishermen and salt pan workers, providing cash benefits to aged, destitute and disabled people, health cover through insurance scheme etc. are discussed in this chapter.

Important Points need to be highlighted:

- Out of total 24.05 lac main workers, 11.42 per cent agriculture labourers and 82.98 per cent are engaged in other activities for livelihood.
- Net sown area has remain more or less constant in past four years
- Except Umarpada, fish production has declined in almost all talukas.
- Government has allocated 271.66 hectares land among 782 families under the Land Ceiling Act.
- Different categories of people are given houses under Indira Awas Yojana, Sardar Awas Yojana and Dr Ambedkar Awas Yojana.

Chapter – 5 ***Surat City*****:** This chapter presents the features of Surat city. Surat is known for textile, diamond and Zari industries. However, on the other hand, Surat faces problems of floods, pollution and other diseases like AIDS that require immediate attention. This chapter focuses on characteristics of city and the issues associated

Important Points need to be highlighted:

- Surat city is well-connected through all modes of transportation - road, rail and sea route.
- Even interior areas are well-connected by all- weather roads.

- Health care infrastructure in the city is good.
- ICDS is performing well and SMC is boosting the efforts of ICDS by providing incentives to anganwadi workers and helpers.
- There are ample employment opportunities in textile, zari and diamond sectors in the city
- Surat has five Special Economic Zones (SEZs).
- There are industrial hazards, problems of floods and threat from Ukai and Kakrapar dams.
- Crime on women continues to be a cause of worry.

Chapter – 6 ***Way Ahead*****:** discusses major outcomes of human development indicators in the district. The major focus is the identification of concern area and government initiatives to tackle the issues.

1 SURAT DISTRICT: AN OVERVIEW

HIGHLIGHTS

- Surat has a moderate climate.
- Surat is rich in mineral resources, especially lignite, limestone and silica.
- It is well-connected through all modes of transportation - road, rail and sea route. Even interior areas are well-connected by all- weather roads. It has a well-developed port.
- Surat attracts large number of people from other parts of the state and the country. The people are peace loving. For decades, the district has remained calm and free from major riots. This helps in promoting economic activities.
- Good educational institutions can accelerate the growth in long-term. The district does have large number of schools and colleges but it requires good educational institutes to provide quality education and cater to the needs of local industries.

The existence of Surat can be traced back to 23 AD – the beginning of the Kshatrap era. During this era, Kshatrap, the then ruler of Gujarat, is found to have developed the facilities for river navigation using boats and for water supply in the Surat. Archaeological evidences show that civilizations flourished on the banks of river Tapi during 415 to 470 AD, the era prior to the regime of Kumargupt Maurya, and onwards. There is a mention of two villages – Jokha and Dhatva of the present day Kamrej taluka – from where these archaeological remains were found during the said period. It is mentioned in the Gazetteer of Surat district that Qutubuddin Aibak, the commander-in-chief of Shiabuddin Muhammad Ghori had come to Rander (Surat) after defeating Bhimdev Solanki, the then ruler of Gujarat, in 1194 AD. However, the history of Surat is recorded only from the first decade of 15th century.

There has been a mention of two names – Surat and Suryapur – right from the time of history of Surat. There are several imaginary tales and parables tracing the history of Surat to 10th century. Out of these several tales, two are more popular, as they are based on some evidences. According to one tale, the name Surat (or Surayapur / Surajpur) is derived from the river Tapi, which is said to be the daughter of Sun (Surya), as per one of the religious Epics of those days. Another tale is about the name of the mother (Suraj) of Malik Gopi – the then Prime Minister in the cabinet of Muzzaffarshah – II, the ruler of Surat during 1511-1526 AD.

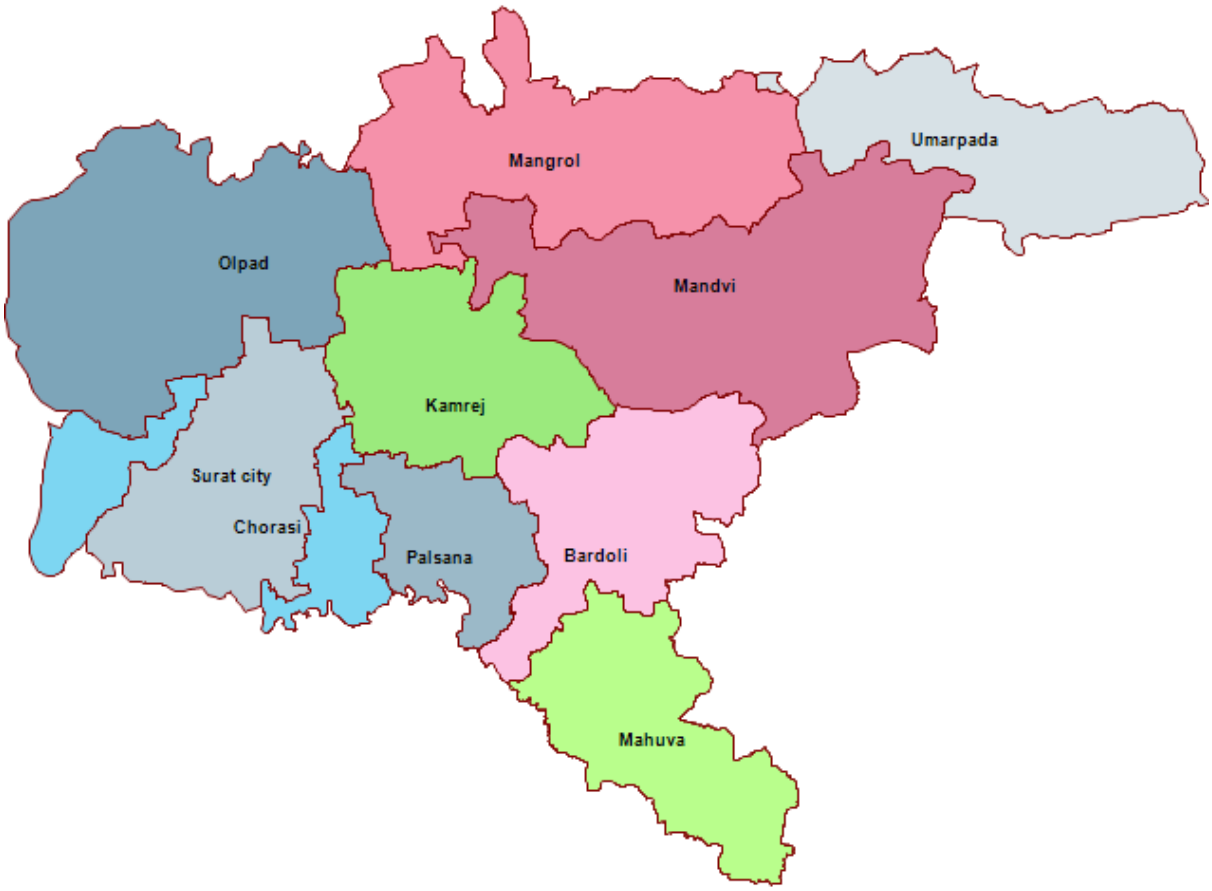
Surat has occupied an important place in trade and commerce right from the medieval period. The port of Surat was called the "Choryasi Bandar No Vavto" (Flags of 84 ports / countries). Surat port was one of the busiest port and cargo from 84 different countries used to be transported via the Surat port. Trade and Commerce flourished in Surat during the regime of Muhammad Beghdo (1448 to 1511 AD) and Surat became an important political as well as trade centre. The major traded commodity was silk and cotton textiles. The silk used to be imported from China and Iran. Cotton came from Burhanpur (North India). The major exports were Muslin and Calico Textiles. Other exports were of carved furniture and carved cupboards made from elephant tusk, sugar, rice, banana, edible gum, other fruits and medicinal herbs, sealing wax, turmeric, ginger, other spices, opium, heena, pearl shells, Sandal wood , Akik, Paper, Diamonds, other precious and semi-precious stones, spices etc. The trade and commerce in Surat flourished till the beginning of 19th century.

Surat was thus, an attraction for traders and politicians. However, successive plundering by Portuguese and Shivaji in 16th and 17th centuries respectively, cyclone of 1800, severe famines of 1804 and 1813 and the devastating fire in 1837 had affected the economy of Surat very severely. Surat port was severely affected by the successive floods in river Tapi in 1810, 1822 and 1837. Portuguese once again plundered Surat in beginning of 20th century. Surat has made a significant progress since then. It has regained its relevance as port and has become a major business hub of Gujarat.

1.1 PHYSICAL FEATURES

Surat is located in the Southern part of Gujarat state between 20° 48′ and 21° 33′ latitude and 72° 35′ and 74° 19′ longitude. The area of Surat district is 4841 sq.km. The map of Surat district is shown in Figure 1.1:

Figure 1.1: Map of Surat



The people of Surat have shown resilience in event of natural disasters or calamities. In recent past, Surat has made remarkable progress after the outbreak of plague and major floods of 2006. More than 80 per cent of the area was submerged in flood but quickly, normal life was restored in the city. On several occasions, people have shown such resilience, also in the past. This could be one of the reasons for rapid development of the city.

In year 1964, Valsad district was formed by bifurcating the Surat district and transferring 8 talukas – Navsari, Valsad, Pardi, Umbergaon, Gandevi, Chikhli, Vansda and Dharampur. In 1997 Navsari district was formed by bifurcating Valsad. In 2007, Tapi district was created by once gain bifurcating the Surat district. Surat district has 9 talukas comprising a total of 11 towns and 729 villages, out of which 707

villages are inhabited villages.

Surat district can be divided into six plains and on the basis of topography, climate, geology, soils and natural vegetation. Some of these plains extend to the neighbouring districts of Surat. The six plains are:

1. Khambhat Coast covering Olpad and Mangrol talukas.
2. Mangrol Plain covering Mangrol and Mandvi talukas.
3. Umarpada Forest Upland extending over small parts of Mandvi and Mangrol talukas, over and above Umarpada taluka.
4. Tapi Basin extending over Choryasi, Mandvi, Kamrej, Bardoli and some parts of Mangrol talukas.
5. Mindhola – Purna Plain extends over parts of Palsana, Kamrej, Bardoli and Mahuva talukas.
6. Choryasi – Palsana Coastal Plain covers the areas of Choryasi and Palsana talukas.

Surat district has a few hill ranges. There are mountain ranges in Mandvi. Tapi, Kim, Mindhola, Purna and Ambika rivers flow through various parts of Surat district. Tapi and Kim are perennial rivers. River Tapi meets the Arabian Sea near Hazira area of Surat district.

1.2 ADMINISTRATION

Surat district is organized into 9 talukas. The details of developmental activities along with the officer responsible for the same in presented in Table 1.1:

Table 1.1: Units of Administration

Sr. No.	Heads	Nos.
1	Area (Sq. Kms.)	4841
2	No. of Talukas	9*
3	Prants	4*
4	Municipal Corporations	1
5	Municipal Towns	12
6	Panchayats	
6.1	Taluka Panchayats	9
6.2	Gram Panchayats	567
7	Villages	729
7.1	Inhabited	707
7.2	Unhabited	22

Source: Census 2001 and District Planning Office
**** 9 talukas + Surat City***
**** 4 Prants + Surat City***

In Surat district, there are 567 Gram Panchayats for 707 inhabited villages. This is because the Gram Panchayat is constituted for the local area having population less than 10000.

1.3 CLIMATE

The climate of Surat district is characterized by hot summer and cold winter. The months of summer and winter in Surat district are March to May and December to February respectively. The humidity in atmosphere is less, except in coastal areas where the climate is humid. The months of monsoon in Surat district are June to September.

The maximum temperature reaches around 43° C in the months of March to May and the lowest temperature is around 11° C in the months of December to February. Winds are light and moderate in the months of March to May and become stronger in the months of monsoon. These winds are predominantly from west to east. In the months of winter, the winds change their direction and blow from north-east direction. The total average rainfall of the season in all the talukas of Surat district is 906 mm.

1.4 NATURAL RESOURCES

Surat district has a forest cover of 1467.11 acre. There are rich mineral resources in Surat district. Lignite, Lime Stone and Silica Sand are the major mineral products in Surat district. But the major contribution to the income from minerals is from minor mineral products. The minor mineral products in Surat district are: black trap, sand, ordinary clay and brick clay.

1.5 DEMOGRAPHIC CHARACTERISTICS

The population of Surat district, according to the Census 2011, is 60.81 lac. Disaggregated statistics on socioeconomic groups are released so far. The growth rate of population during the decade 2001-2011 is 42.19 per cent, which is highest among all the districts of Gujarat state. The population density is 1337 persons per sq.km. and sex ratio is 787 females per 1000 males. The sex ratio of Surat district is lowest among all the districts of Gujarat. The cause of this low sex ratio could be attributed to migrating male population, leaving their families in their respective hometowns. However, the sex ratio in 0-6 years' age group is better and it is 835 females per 1000 males. The urbanization percentage is 79.74. The overall literacy rate in Surat district is 85.53, the literacy rate for males is 89.56 and that of females it is 80.37.

Table 1.2: Demogrpahic Characteristics of Total Population and Population in 0-6 Years Age-Group

Name	Location	Total Population				Population (0 - 6 Years)			
		Decadal Growth (%)			Sex Ratio	Decadal Growth (%)			Sex Ratio
		Total Population	Total Males	Total Females	(Nos)	Total Population	Total Males	Total Females	(Nos.)
Surat	Total	21.74	24.97	17.89	787	5.23	7.33	2.83	835
	Rural	-38.37	-37.65	-39.14	925	-49.87	-49.78	-49.98	934
	Urban	61.87	62.87	60.56	756	41.62	42.93	40.04	813
Olpad	Total	5.92	5.48	6.41	906	-10.64	-10.69	-10.58	910
	Rural	-5.85	-6.49	-5.14	922	-21.08	-21.16	-21.00	916
	Urban	164.36	154.86	176.71	835	119.29	114.84	124.54	884
Mangrol	Total	21.88	24.12	19.50	908	-1.91	-1.64	-2.20	930
	Rural	3.56	5.65	1.33	904	-17.04	-16.89	-17.20	936
	Urban	235.64	239.20	231.85	919	171.48	168.13	175.26	908
Umarpada	Total	22.60	22.77	22.43	989	-7.17	-7.16	-7.19	970
	Rural	22.60	22.77	22.43	989	-7.17	-7.16	-7.19	970
	Urban	*	*	*	*	*	*	*	*
Mandvi	Total	5.40	4.67	6.14	997	-16.96	-17.00	-16.91	960
	Rural	-4.40	-5.22	-3.56	1000	-24.32	-24.42	-24.22	962
	Urban	*	*	*	964	*	*	*	945
Kamrej	Total	7.12	8.86	5.24	897	-11.75	-11.64	-11.87	906
	Rural	3.55	5.20	1.78	898	-15.48	-15.26	-15.73	903
	Urban	*	*	*	874	*	*	*	967
Surat City	Total	83.57	85.34	81.28	756	61.45	62.87	59.73	808
	Rural	**	**	**	**	**	**	**	**
	Urban	83.57	85.34	81.28	756	61.45	62.87	59.73	808

Name	Location	Total Population				Population (0 - 6 Years)			
		Decadal Growth (%)			Sex Ratio	Decadal Growth (%)			Sex Ratio
		Total Population	Total Males	Total Females	(Nos)	Total Population	Total Males	Total Females	(Nos.)
Choryasi	Total	-60.86	-58.89	-63.57	640	-69.12	-69.43	-68.76	880
	Rural	-56.71	-54.73	-59.18	725	-64.86	-65.67	-63.96	936
	Urban	-62.99	-60.89	-66.06	593	-71.09	-71.13	-71.05	849
Palsana	Total	22.01	22.16	21.82	791	15.10	15.98	14.14	899
	Rural	-4.83	-4.57	-5.12	863	-20.32	-21.05	-19.54	942
	Urban	110.79	97.24	133.95	695	128.59	131.97	124.77	854
Bardoli	Total	6.35	6.29	6.41	967	-8.57	-8.07	-9.12	908
	Rural	-6.99	-7.87	-6.10	989	-24.08	-23.54	-24.66	917
	Urban	47.14	49.19	44.98	926	46.18	45.07	47.45	892
Mahuva	Total	1.74	1.37	2.12	970	-18.47	-18.55	-18.39	950
	Rural	1.74	1.37	2.12	970	-18.47	-18.55	-18.39	950
	Urban	*	*	*	*	*	*	*	*

*** Only rural** **** Only Urban**

Note: In two talukas – Mandvi and Kamrej, there was no urban area when Census 2001 was conducted. Now, these two talukas have urban areas. Therefore, decadal growth could not be calculated for these two talukas.

Source: Census 2001 and 2011

Table 1.3: Demographic Characteristics of SC and ST Population

Name	Location	SC Population					ST Population				
		Decadal Growth			Sex Ratio	Percentage of SC	Decadal Growth			Sex Ratio	Percentage of ST
		Total Population	Total Males	Total Females			Total Population	Total Males	Total Females		
Surat	Total	-6.62	-5.55	-7.75	923	2.60	-39.15	-38.97	-39.33	983	14.09
	Rural	-39.70	-39.63	-39.77	976	3.14	-46.00	-45.94	-46.05	995	55.47
	Urban	13.52	14.67	12.29	907	2.46	21.56	20.50	22.71	939	3.58
Olpad	Total	-0.04	0.89	-1.03	933	4.55	1.73	1.17	2.30	985	24.43
	Rural	-18.47	-18.24	-18.71	948	4.08	-3.03	-3.40	-2.65	981	27.23
	Urban	186.12	190.95	180.88	890	6.80	143.92	139.37	148.49	1033	10.99
Mangrol	Total	8.93	10.35	7.48	952	4.64	5.71	5.86	5.56	969	45.70
	Rural	-23.28	-22.40	-24.17	961	3.77	1.41	1.33	1.49	973	54.48
	Urban	308.56	306.70	310.58	937	7.77	158.34	166.75	149.71	913	14.08
Umarpada	Total	-40.94	-39.56	-42.50	836	0.12	22.95	23.24	22.67	991	96.73
	Rural	-40.94	-39.56	-42.50	836	0.12	22.95	23.24	22.67	991	96.73
	Urban	*	*	*	*	*	*	*	*	*	*
Mandvi	Total	-60.97	-61.69	-60.20	979	0.97	7.26	6.61	7.91	1014	77.07
	Rural	-64.93	-65.50	-64.33	975	0.96	3.11	2.49	3.74	1014	81.69
	Urban	*	*	*	1021	1.07	*	*	*	1012	32.05
Kamrej	Total	-24.30	-24.62	-23.97	1002	5.37	-9.36	-10.81	-7.86	993	31.71
	Rural	-27.37	-27.79	-26.95	1005	5.33	-10.32	-11.71	-8.88	992	32.45
	Urban	*	*	*	933	6.55	*	*	*	1084	10.09
Surat City	Total	21.94	23.41	20.36	905	2.36	52.34	48.92	56.24	922	2.95
	Rural	*	*	*	*	*	*	*	*	*	*
	Urban	21.94	23.41	20.36	905	2.36	52.34	48.92	56.24	922	2.95

Choryasi	Total	-70.40	-70.08	-70.74	892	2.34	-44.26	-45.10	-43.38	985	13.34
	Rural	-67.27	-67.17	-67.37	951	3.02	-46.82	-47.46	-46.16	989	21.18
	Urban	-72.85	-72.28	-73.50	841	1.93	-39.96	-41.19	-38.65	978	8.62
Palsana	Total	-13.87	-12.75	-15.03	949	3.71	-8.09	-9.08	-7.06	984	28.60
	Rural	-24.08	-23.70	-24.45	983	4.70	-7.16	-8.15	-6.13	986	45.30
	Urban	48.69	50.43	46.70	852	2.24	-22.52	-23.40	-21.58	966	3.65
Bardoli	Total	-19.19	-19.88	-18.50	1008	4.04	2.24	1.67	2.81	1012	45.25
	Rural	-31.32	-31.55	-31.09	1000	3.82	-1.63	-2.12	-1.14	1008	61.30
	Urban	14.22	12.11	16.37	1021	4.45	51.93	51.19	52.64	1043	14.23
Mahuva	Total	-22.02	-20.61	-23.47	939	1.50	4.46	3.83	5.10	992	81.21
	Rural	-22.02	-20.61	-23.47	939	1.50	4.46	3.83	5.10	992	81.21
	Urban	*	*	*	*	*	*	*	*	*	*

*** Only rural** **** Only Urban**

Note: In two talukas – Mandvi and Kamrej, there was no urban area when Census 2001 was conducted. Now, these two talukas have urban areas. Therefore, decadal growth could not be calculated for these two talukas.

Source: Census 2001 and 2011

Talukawise details for change in population and sex ratio of people belonging to Schedule Caste and Schedule Tribe are given in

Table 1.3. The percentage of SC population in Surat district is 2.60 and that of ST population is 14.09 as per Census 2011. The sex ratio of SC population is 923 and that of ST population is 983. There are three talukas – Mandvi, Kamrej and Bardoli which has favourable sex ratio for SC population and for ST population, there are four talulas – Olpad, Mandvi, Kamrej and Bardoli – which has favourable sex ratios.

Table 1.3 shows that percentage of SC population is maximum in Kamrej (5.37 %) and it is minimum in Umarpada (0.12 %). The percentage of ST population is maximum in Umarpada (96.73 %) and it is minimum in Surat city (2.95 %).

1.6 INFRASTRUCTURE

Infrastructure development is, if not precondition, absolutely necessary for economic growth of nation whether developing or developed. Poor infrastructure acts as a constraint for accelerating economic growth.

1.6.1 Transport: Roads, Railways, Ports and Air

Transport infrastructure forms the backbone of a developing economy and it plays a very crucial role in the development process. The increase in the economic activities, mobility and movement of goods and passengers registers manifold growth which demands a good transport infrastructure.

Roads

The classwise bifurcation of road length is given in Table 1.4:

Table 1.4: Classwise Road Length [2014-15]

Road Type	Length in Km			
	Surat R&B Div 1	Surat R&B Div 2	Panchayat R & B Div	Total
Total	97.77	668.11	1578.34	2344.22
National Highway	16.21	17.53	0.00	33.74
State Highway	49.68	456.05	0.00	505.73
Major District Roads	20.68	87.00	493.50	601.18
Other District Roads	8.20	86.68	286.49	381.37
Village Roads	3.00	20.85	798.35	822.20
Source: Executive Engineer, Surat R & B Division (1 and 2) and Panchayat R & B Division				

Table 1.4 shows that out of the total length of roads in Surat district, 33.74 km are national highways, 505.73 km are state highways, 601.18 km are major district roads,

381.37 km are other district roads and 822.20 km are rural roads.

A comparison of talukas of Surat district on length of pucka and kachcha roads reveal the pattern as shown in Table 1.5:

Table 1.5: Talukawise Road Length [2015-16]

Taluka	Road Length in Km						
	Surat R & B Div 1*	Surat R & B Div 2		Panchayat R & B Div		Total	
	Pucka	Pucka	Kachcha	Pucka	Kachcha	Pucka	Kachcha
Surat District	97.77	642.12	26	1541.13	37.21	2281.02	63.21
Olpad	14.13	179.99	0.00	143.02	5.00	337.14	5
Mangrol	0.00	94.11	0.00	212.09	2.00	306.20	2
Umarpada	0.00	54.78	26.00**	94.23	15.68	149.01	41.68
Mandvi	0.00	79.15	0.00	282.12	9.37	361.27	9.37
Kamrej	16.50	42.90	0.00	210.10	3.00	269.50	3
Choryasi	63.14	4.38	0.00	96.15	0.00	163.67	0
Palsana	4.00	20.23	0.00	128.44	0.81	152.67	0.81
Bardoli	0.00	102.45	0.00	156.50	1.35	258.95	1.35
Mahuva	0.00	64.13	0.00	218.48	0.00	282.61	0

Source: Executive Engineer, Surat R & B Division (1 and 2) and Panchayat R & B Division

** There are no Kachcha roads under R & B Division 1*

*** Kachcha road due to forest area.*

The road length of pucka roads is maximum in Mandvi (361.27 km) and is minimum in Umarpada (149.01 km).

However, the statistical information on length of pucka roads does not reveal the actual condition of the road. Moreover, a motorable kachcha road will be more useful than a simple pedestrian road. Issues like poor quality of pucka roads and roads getting washed out in heavy rains cannot be ruled out. Creation of infrastructure does not guarantee its effective usage. In rural areas, in spite of having pucka roads, public transport is not easily available. This results in ineffective utilization of social infrastructure like schools and health centres in nearby urban localities.

It is equally important to ensure that of good quality roads should result in reduced road accidents and in case of accidents, sufficient first aid facilities should be available in the vicinity as well as ambulance facilities should be available to shift the injured to the nearest hospital. Recently, the emergency services of (by calling on 108) have been started across the country. It is crucial to know the accessibility as well as

efficiency of these services on dealing with accidents on in interior rural areas.

The expansion of road network has played dominant role in development of rural area. The road network provides an important linkage between rural and urban centres. Road linkages play crucial role in the marketing of agricultural produce, purchase of agricultural produces, purchase of agricultural and consumable articles, access to school, college and hospitals. Indirectly it promotes non-farm activities also. Moreover, it reduces burden on urban centres by preventing migration of population, since people prefer to commute instead of migration. Benefits accruing from expansion of road network are indisputable. But still many measures are to be done to improve road infrastructure for cost effective and safe transport. The quality of roads in interioir parts of the District can be improved so that they can sustain monsoon. If repairs and repairing time reduce, then large recurrent and capital losses can be converted into socio-economic gains. Overloaded vehicles damming roads, cause fatal accidents. Narrow roads, poor traffic management, absence of indicators/signals etc. - all these factors hinder smooth flow of traffic in one way or other, which ultimately enhances transport cost. With strict enforcement of traffic laws and regular maintenance of rural roads, benefits accruing from creation of road infrastructure can be improved considerably.

Railways

During British rule railways played a vital role in many ways. This mode of transport is quicker and cheaper compared to other modes of transport. Primarily, railways are suitable and useful for transportation of bulky and heavy commodities like coal and steel.

Railway has played a vital role in supporting economic development of area along Bombay - Ahmedabad railway line. From Vapi to Ahmedabad many industrial growth centres have developed and new centres are coming up. Railway remains most suitable mode of long haul freight movement in bulk, long distance inter-city passenger traffic and for mass rapid transit suburban systems. Among the problems it faces are the ageing rolling stock, unsatisfactory signalling and telecommunication network and deteriorating conditions of railway tracks. A lot more needs to be done to improve its operational efficiency and safety factor while enlarging its network and services to meet rising demand.

Due to inflexibility of railway transport, it is gradually losing grip over the short distance movement of passenger and freight. But rail system has crucial role to play to increase access to the ports. A number of existing ports are being modernized to meet increasing demand for port transport. It will be essential to provide broad gauge rail link to some of these ports.

Connectivity through railway line is also an important parameter of infrastructure development. A village connected with railway line is likely to have more economic activities than a village not connected with it. It provides access to nearby urban areas as well as other developed villages for the purpose of employment, business etc. Accessibility to better schools, colleges, education centres, health care facilities etc. becomes easy because of railways. Industrial development is possible in those villages which are connected through railways.

In Surat, at present there are two types of railway lines[3] – broad gauge and narrow gauge. Most of the cities, towns and villages are connected through broad gauge line. Narrow gauge are gradually getting replaced by the broad gauge lines. So, if a village is connected through narrow gauge lines, its accessibility becomes difficult but still it is likely to be economically more active that a village without a railway line. The details of railway lines in Surat district are discussed here. Conversion of narrow gauge lines to broad gauge lines and construction of new lines require huge resources. Alternative ways of financing these projects should also be considered. It is suggested that a corporation may be formed on the pattern of Konkan Railway Corporation with joint equity participation of Government of Gujarat. Private initiatives may be encouraged under BOLT [Build, Operate, Lease and Transfer] scheme, recently introduced by Ministry of Railways.

The data on railways reveal following pattern. There has been no change in the length of broad gauge rail roads from 1990-91 till date. The length of railroads for Surat district is 147 km. Choryasi taluka has the longest rail road of 36 km and Valod has shortest of 5 km. Umarpada, Mandvi, Kamrej and Mahuva are not connected through railway line – either broad gauge and narrow gauge. There are no meter gauge lines in Surat district. The only narrow gauge line in Surat district is found in Mangrol taluka and its length is 59 km. Mangrol is also connected through broad gauge line.

Ports

Ports play a very important and crucial role in the development of the trade, commerce and industries. The strategic location of the state enables to serve large hinterland extending over central and Northern India. Port is an important infrastructural facility and therefore development of ports which can be helpful to the development of hinterland is very essential. Gujarat is one of those states where investment is taking place on a very large scale and this would require cheaper mode of transport for importing raw material and exporting final products.

The development of ports can benefit industries in central and northern India. The distance from the ports located in Gujarat to various parts of north India is quite less by roads as compared to the distance from major ports like Bombay, Cochin, Chennai etc. Until now, the vast potential for port development has remained unutilised.

Gujarat has nearly 1600 Kms long coast line, out of which Surat has 83 km of coast line. Magdalla port of Surat district is one of the all weather direct berthing ports for small coastal vessels. There are two port sites in Surat district – Hazira and Magdalla. Both these ports are located very close to each other. These ports are located on the southern bank of river Tapi, 16 km upstream. Magdalla is a literage port with 10 nautical miles of deep water anchorage. Literage operations take place at deep water anchorage for tankers and bulk carriers. Major commodities imported include Clinker, Food grains, Fertilizers, Onions, Machinery, Butane, Building Materials, Iron Ore, Sponge Iron, Ethylene, VCM and Coal. Major exports include Fruits, Cotton Seeds, General Cargo, Sponge Iron and Coal.

Magdalla is connected to other industrial areas like Udhna and Pandesara by roads. It is also connected to other states in northern India by National Highway, rail and air. Airport is just 4 km away from the port. Rail connection has to be extended to the ports, the construction of 4-lane toll road between Hazira and Ichchhapore completed. However, the quality of roads has deteriorated because of rains and floods of year 2007. The work of rehabilitation requires to be done. Moreover, a 4-lane Magdalla- Palsana road is proposed.

Essar (steel & LPG), Reliance (naphtha, LPG & chemicals), KRIBHCO (fertiliser), Larsen & Toubro (L&T) (cement/industrial cargoes), National Thermal Power Corp (coal/LNG) and ONCG, Narmada Cement Co. LTD (NCCL) and Gujarat Ambuja (cement) make use of port facilities for inland transport as well as for exports and imports of commodities. Essar, Reliance, L&T and Gujarat Ambuja Cement have their own Jetties. The details of these Jetties are given in Table1.6:

Table 1.6: Jetties in Hazira Area as on March 31, 2015

Sr. No.	Name of the Company	Name of Jetty	Nature of Facility	Length of Jetty (In Mt)
GMB Jetties				
1	Gujarat Maritime Board	GMB Jetty No.1 at Magdalla	Solid / General Cargo	210.8
2	Gujarat Maritime Board	GMB Jetty No.2 at Magdalla	Solid / General Cargo	143.5
Captive Jetties				
1	Essar Steel Ltd	Main Jetty	Solid / General Cargo	1049
2	Essar Steel Ltd	LPG Jetty	Liquid Jetty	14
3	Essar Bulk Terminal Ltd	Deep Water Berth	Solid / General Cargo	550
4	Reliance Industries Ltd	Ethylene Jetty	Liquid Jetty	38
5	Reliance Industries Ltd	2nd Gas Jetty	Liquid Jetty	20
6	Reliance Industries Ltd	EDC Jetty	Liquid Jetty	8.5
7	Reliance Industries Ltd	Single Point Mooring Jetty	For Liquid Cargo	*
8	Larsen & Tubro Ltd	Main Jetty	Solid / General Cargo	72
9	Larsen & Tubro Ltd	Ro-Ro Jetty	Ro-Ro Jetty	90
10	Gujarat Ambuja Cements Ltd	Main Jetty	Solid / General Cargo	44
Private Jetty				
1	KRIBHCO	Kribhco Jetty	Solid / General Cargo	147
Private Ports				
1	Hazira Port Pvt Ltd	LNG Terminal	LNG Cargo	**
2	Adani Hazira Port Pvt Ltd	Multipurpose Jetties (Total: 3)	Solid / General / Liquid Cargo	963
3	Adani Hazira Port Pvt Ltd	Container Jetties (Total: 2)	Container Cargo	637

**** SPM is floating Platform/Mooring Buoy installed in Sea connected with RIL through pipelines in water.***
***** Only mooring dolphins for berthing of LNG ships up to 350 Mtr length.***
Source: Port Officer, Magdalla (Surat) Port

The port has facilities of crawler mounted crane, draft lighters operated by private parties, containers, lighters, Roll-on-Roll-off (Ro-Ro), storage godowns etc. Ro-Ro lighter facilities are available on L&T and KRIBHCO Jetties. It is possible that power stations of Ukai and Vanakbori, which presently use domestic coal, can be supplied coal through Hazira port. Gujarat Maritime Board (GMB) has already taken initiative to install a Vessel Traffic Management System (VTMS) in the Hazira-Magdalla Channel.

Hazira port is nominated as "green field site" and is developed by private sector participation. The industries that use Magdalla port are also located in Hazira. The industrial area of Hazira is expected to be one of the largest in India. It is planned that LNG (Shell), LPG, oil products, petrochemicals, cement/clinker, iron ore, fertilisers, and general cargoes will be operated from Hazira port.

1.6.2 Energy Sector

Energy sector usually includes power coal, oil and natural gas and non-conventional sources of energy. The energy sector claims the largest allocation in our five year plans ranging from 25 % to 30 % of public sector five-year plan allocations [IDR 1997, p. 77]. Generation of energy requires huge capital investment. Energy is demanded by all the sectors of the economy like industry, agriculture, transport and even household. Here, we intend to concentrate on electricity scenario in Surat district. It is already very well recognized that electricity is one of the most important elements of infrastructure for the development of agriculture, and industries in the state and its contribution to the economic growth is obvious. Per capita income indicates the degree of affluence of the state, similarly, per capita consumption of energy reflects development and prosperity of the state. We endeavour to make an inquiry into various aspects of electricity sector of the state.

A typical characteristic of electricity is that it cannot be imported or stored. Hence management of supply and demand assumes great importance. If capacity additions are not done in tune with the generation of demand, power shortages will result. This will lead to inadequate capacity utilization in all important sectors like agriculture, industry, commerce etc. hampering the pace of the economic development. In India unfortunately, the demand has been constantly more than the supply of electricity.

The importance of power sector in the economy is due to many reasons. Electric power can be generated through water turbines, wind mills, gas / coal operated plants. In industries, automated plants have increased the efficiency of production. Quality control and uniformity are achieved because of production on assembly line. All automated processes run on electric supply. For small businesses like washerman, electricity can be used for operating the industrial washing machine.

Electricity is also required to run the flour mill. Electric power is useful for health care services as well as for education. Use of latest technology equipments for examination, diagnosis and surgery require electricity. Use of computers and other pedagogical tools like multimedia projectors, used to enhance the quality of teaching, require electricity. Railways use electric power for signalling system as well as for running trains. In air transport, electric power is necessary for the use of latest technology equipments for operating the air craft as well as for keeping track while in air. The domestic use of power includes refrigerator, air conditioner and appliances for housekeeping and cooking. This increases the efficiency of household work; leaving

more time that could be utilized for leisure or labour.

In Gujarat, the situation of power sector is relatively good. Even in Surat district all villages are electrified after 1990-91. As per 2011 census, the percentage of households having access to electric power supply is shown in Table 1.7:

Table 1.7: Households by Main Source of Lighting

Area	Percentage of Households by Source of Lighting					
	Electricity	Kerosene	Solar Energy	Other Oil	Any Other	No Lighting
Gujarat	90.41	8.08	0.13	0.21	0.21	0.96
Surat District	96.37	3.20	0.03	0.05	0.08	0.27
Rural	87.39	11.45	0.04	0.12	0.24	0.76
Urban	98.65	1.10	0.03	0.03	0.05	0.14

Source: Census 2011

One can see from Table 1.7 that 96.37 per cent households are having access to electricity. In urban areas, 98.65 households are electrified where as in rural areas of Surat district, 87.39 per cent households are electrified. The details of power station alongwith their installed capacities for electricity generation are given in Table 1.8:

Table 1.8: Power Stationwise Capacity Installed as on March 31, 2015

Power Station	Installed Capacity (in Mega Watt)
NTPC Kawas	645.00
Essar Power Ltd	1015.00
Gujarat State Energy Corporation, Hazira	156.00
Gujarat Industrial Power Corporation, Mangrol	505.00
Kakrapar Atomic Power Station	220.00
Crain Energy India Pvt Ltd	2.40
KRIBHCO Captive Power Plan	72.00
Torrent Power SUGEN Power Plant, Akhakhol	1147.50
Gujarat Power Corporation Ltd – Solar Roof Top Power Project, Surat	5.00
GSECL Uttran Gas-Based Power Station	510.00
Total	3762.90

Source: Executive Engineer, DGVCL, Kapodara

The total capacity of power generation of all the power stations of Surat district is 4497.90 Mega Watts (MW).

1.6.3 Communications

Communication is intricately woven with everyone's life. The need for communication could have been primarily to express ones' basic needs. Communication is crucial for security purposes. The primitive communication methods were used to indicate any probable danger or threat to oneself or to the concerned community. Two major modes of communication are posts and telecommunications.

Posts

The invention of papyrus, the modern day paper and using of homing pigeons gave the concept of postal system. There are 452 post offices – including main office, sub-offices and branch offices in Surat district as on March 31, 2015. Choryasi taluka has maximum number of post offices and the number is 58, and Umarpada has 12 offices.

The development of post office infrastructure as on March 31, 2015 are shown in Table 1.9:

Table 1.9: Post Offices as on March 31, 2015

Taluka	Post Offices		
	Main Office	Sub-Office	Branches
Surat District	3	106	370
Olpad	*	6	44
Mangrol	*	7	44
Umarpada	*	1	12
Mandvi	*	5	45
Kamrej	*	9	33
Choryasi**	2	58	85
Palsana	*	6	21
Bardoli	1	8	51
Mahuva	*	6	35

*** Main Offices are there only in Choryasi and Bardoli**
**** Choryasi is inclusive of Surat city.**

Choryasi taluka has maximum number of post offices – 2 main offices, 58 sub-offices and 85 branches. Umarpada has minimum number of post offices – 1 sub-office and 12 branches.

Telecommunications

Telecommunication sector is important for several reasons. For households telecommunication services can be useful for social networking, domestic work for buying consumables, booking tickets, net banking etc., emergency calls such as to police, ambulance etc. Telecommunication services might be useful for marketing, Customer Relationship Management (CRM), interaction with suppliers, teleconferencing, administration, disaster management etc. Expansion of telecommunication infrastructure will have more than proportionate impact on economic development because telecommunication infrastructure is characterized by network externality and therefore, every additional user of telecommunication services benefits the existing users. The talukawise details of landline connections of BSNL are given in Table 1.10:

Table 1.10: Landline Connections as on March 31, 2013 and on March 31, 2015

District / Taluka	Landline Connections (as on March 31,2013)	(as on March 31,2015)
Surat District	155695	142279
Olpad	1806	2986
Mangrol	2822	2250
Umarpada	113	103
Mandvi	1951	1895
Kamrej	5202	6440
Choryasi*	127498	112477
Palsana	931	3067
Bardoli	14946	12188
Mahuva	426	1373
		Source: BSNL, Surat
****Choryasi is inclusive of Surat District***		

Since the figure of landline connections of Choryasi is inclusive of Surat city, it appears to be maximum among all the talukas of Surat district. However, Bardoli has highest number of connections, following Choryasi. There are 12188 landline connections in Bardoli. Umarpada has 103 landline connections, which is minimum of all talukas of Surat district.

As per information given by the BSNL office, there are 155695 mobile connections in the Surat district as on March 31, 2013. These numbers excludes information of connections provided by private service providers. This has reduced to 142779, which is a reduction of 8.29 per cent. However, mobile phones are becoming more accessible and affordable. It was observed during the field visit that even in the remotest village, mobile phone network was available.

1.7 CHAPTER SCHEME

The District Human Development Report is organized in seven chapters. A comparative position of Surat district on human development indicators vis-a-vis the state average is presented in each chapter. The analysis at disaggregate level is undertaken for inter-taluka comparison on human development indicators. The details of the issues covered and human development indicators compared are discussed as under:

Chapter – 2: ***Education*** discusses the status of education in Surat district. The chapter focuses on overall literacy rate and makes comparison of literacy rate across specific groups such as males and females, schedule castes, schedule tribes and general category; as well as across rural and urban areas of Surat district. Similar comparison is made for enrolment and dropouts from schools. The chapter discusses the education infrastructure and various pedagogical tools used by government schools, alternate schooling system like ashramshala and schools for children of sugarcane cutters.

Chapter – 3: ***Health*** highlights the status of health. The development of social infrastructure for healthcare like developing healthcare organizations, providing drinking water, and sanitation and drainage facilities is discussed in this chapter. The chapter presents the status of vital indicators like Infant Mortality Rate, Maternal Mortality Rate, Crude Birth Rate, Crude Death Rate etc. for Surat city. The details on number of cases and deaths due to various water-borne diseases are also discussed in this chapter. The status of vector-borne diseases and HIV-AIDS cases in the district is also discussed. Information on cases and death due to sickle cell anaemia, leptospirosis, swine flu etc. is also covered in this chapter. Various schemes for awareness among people about these diseases, their prevention and cure are discussed in this chapter.

Chapter – 4: ***Livelihood*** provides overview about livelihood issues in Surat district. The present status of agriculture, animal husbandry, poultry, fishing, mining and industries is discussed in this chapter. The industrial development in Hazira area, the status of large, small and medium scale industries, textile, diamond and zari industries and development of Special Economic Zones is presented in this chapter. Government initiatives taken to develop coastal villages, fishermen and salt pan workers, providing cash benefits to aged, destitute and disabled people, health cover through insurance scheme etc. are discussed in this chapter. A discussion on unorganized – skilled and unskilled labour as well as on poverty in Surat district is also presented here.

Chapter-5: ***Surat City:*** This chapter presents the features of Surat city. Surat is known for textile, diamond and Zari industries. However, on the other hand, Surat faces

problems of floods, pollution and other diseases like AIDS that require immediate attention. This chapter focuses on characteristics of city and the issues associated.

Chapter 6: ***The Way Ahead*** discusses major outcomes of human development indicators in the district. The major focus is the identification of concern area and government initiatives to tackle the issues.

SWOT Analysis

STRENGTHS

- All villages are connected through all-weather roads.
- All villages have access to electricity.
- All villages have at least one Village Telephone and a computer with Internet connection in panchayat office.
- Mobile phone network is available in even the remotest village.
- Hazira and Magdalla Ports handle all categories (solid, liquid, gas) of cargo.

WEAKNESS

- Umarpada is identified as backward taluka by Cowlagi Committee.

OPPORTUNITIES

- Bardoli holds historical Significance. Therefore, there is an opportunity for developing Surat as tourism destination.
- Surat has a long coastline and four beaches. These beaches could also be developed as tourist spots.

THREATS

- Low Sex ratio.

2. PROGRESS IN EDUCATION

HIGHLIGHTS:

- Literacy rate of Gujarat is 78.03 according to Census 2011. The literacy rate of the Surat district is 85.53 and it is higher than the state literacy rate.
- The gender gap between Male and Female Literacy rate is 9.19 percent as per 2011 Census, which has reduced from 15.15 in 2001.
- Rural – Urban imbalances in the level of literacy rate is less in Gujarat compared to India.
- Enrolment of girls students is consistently increasing from 2008-09.
- Drinking water, sanitation and electrification is there in all schools.
- More than 98 per cent schools have a separate girls toilet.
- Enrolment is close to 100 per cent and dropout has reached zero per cent in 2014-15 for standards 1 to 5.
- There is at least one college in each taluka.
- Number of girls students enrolled in colleges is more than number of boys students.
- Girls students are performing better than boys students at college level.
- There are Nivasi Camps for children of temporary migrants.

Universal elementary education is a constitutional directive. Article 45 of the Directive Principles of the constitution urges all state to provide 'free and compulsory education for all children until they complete the age of fourteen years' within a period of ten years from the commencement of the constitution. Right to education has been recognized as fundamental right in 83rd constitutional amendment, even then the goal of universal education for all has remained distant dream. Enormity of the problem has been underestimated by policy makers and indifferent attitude prevailed till recently.

Education is one of the most important social indicators that have direct bearing on economic development. Level of literacy or education is direct influence on economic growth and it is indirectly associated with poverty, health, population growth, and crime rate. Despite its importance, education continues to be a neglected area at the policy level both by state and central governments considering the promise made in the Constitution for the universalization of primary education. After 50 years of planning, enormous funding and promises, total literacy remains to be a distant dream. The deadline for achieving total literacy is postponed year after year. Apart from overall low levels of literacy at the national level, disparities across regions, genders, social groups, etc, are of serious concern. Education is recognized as a basic input for empowerment to individual and overall development of the society. In recent past both state and central government has number of measures to improve the

enrolment ratio and level of literacy rate.

The Surat district which has plentiful natural resources is one of the most prosperous regions of the state. Both in industrial and agricultural sectors the district has made rapid and impressive progress. In the past Surat was invaded and plundered precisely because of its enviable richness. For many years, it remained important growth centre in the South Gujarat region.

Growth of any region can be sustained or increased if corresponding improvement in infrastructure is also made. In the past, the role of social infrastructure was recognized but not given due importance in policy making. Development of social infrastructure, which includes education and health, is very crucial for economic development. Moreover, education and health are desirable in themselves.

The main objective of this chapter is to examine the achievements of the Surat district in the field of education in recent past. Regional and gender imbalances will also be studied. It is not intended to seek answers for the maladies prevailing in educational sector but to assess its performance and make some important observations. Before we discuss the progress literacy rate in the Surat district, it would be pertinent to discuss the importance of education.

2.1 IMPORTANCE OF EDUCATION

Despite commendable achievement made in creation of physical infrastructure, the HDI ranking of the state has to go a long way. Some important parameters of social infrastructure requires attention.

The notion of investment in education is not new but received very scant attention until now. Expansion of education results in both personal and social benefits Economic growth is affected by the formation of human capital and education is one of the important factors which affect formation of human capital. Expenditure on education, therefore, is considered to be an investment as it leads to the formation of human capital.

Expansion of education enlightens the people and helps to remove many religious beliefs which hinder the process of growth. Increase in female literacy rate is associated with reduction in fertility rate. Female education is expected to reduce desired family size for several reasons. Educated women are more likely to be aware of modern methods of contraceptives and use them for planning child birth. Because of this unplanned and unwanted pregnancies are avoided. Increase in literacy rate has also played crucial role in reducing child mortality rate. Reduction in fertility rate and mortality rate are likely to reduce family size.

Education also helps in increasing health awareness and in turn it increases return on education. Mobility and adaptability of labour also increases with increase in the level

of education. Agricultural growth is also found to be affected by the level of education. Educated farmers tend to adopt new technology more easily compared to illiterate farmer, at least in initial phase of technological change. **Dreze and Sen [1996]** have pointed out following benefits which can accrue from education:

- Being educated and healthy are valuable in themselves and opportunity to have them can be of direct importance to person's effective freedom.
- A person's education and health help him or her getting a job and making use of economic opportunities.
- Greater literacy and basic education can facilitate public discussion of social need and encourage informed collective demands.
- Process of schooling can reduce incidence of child labour, which is quite a serious problem in India. Besides, it broadens horizons of children through associations and interactions.
- Greater educational achievements enable discouraged groups to resist oppression and get fairer deal.

> **Galbraith [1991]** says that ***"in our time ----no literate population is poor, no illiterate population is other than poor. Perhaps, poverty and illiteracy have larger causes nonetheless; this unshakable association should remain in mind"***.

The benefits of education are numerous and therefore its importance in economic development is enhanced.

We shall now discuss the pattern and level of literacy rate in Surat district. Aggregate data reveal less information. Micro level and disaggregated data provide more insights in examining and analysis of important relevant issues. Some reference will also be made to the state level and all India data for meaningful comparison and inferences.

2.2 PRIMARY EDUCATION IN SURAT DISTRICT

Surat district was a part of Bombay presidency during British rule. The district was then under Bombay State and now under the Gujarat state has made good progress in the field of education. Under the Education Act of 1923, the administration of primary education was under the jurisdiction of District Local Boards. Under the Government of India Act of 1935 administration of primary education was handed over to District School Board, an elected body. In 1963, as a part of implementation of the scheme of decentralization of administration, Districts Panchayats were formed in all the districts of Gujarat State and all the former school boards were dissolved. From April, 1963 the administration of primary education was taken over by the District Panchayats.

2.3 PROGRESS AND PATTERN OF LITERACY RATE

Literacy rate is used to measure achievements in the field of education. This measure has many limitations. For example, quality of education, quality of school infrastructure, problems related to poor attendance, shirking of responsibilities by teachers, dropouts etc.; are the issues which are not captured by literacy rate. It will become obvious when we look at the definition given by the Census of a literate person. Census defines literate as

"A person who can both read and write with understanding in any language, is taken literate. A person who can merely read but not write is not considered as literate".

It is not necessary that a person who is considered to be literate by the census should have obtained any formal education or passed any minimum educational standard. Table 2.1 gives a status of literacy rate in Surat district, segregated by gender as well as location (rural-urban) and change in literacy over a period of one decade:

Table 2.1: Status of Literacy Rate of Surat District

T/M/F	2001				2011			
	Total	Rural	Urban	Regional Gap	Total	Rural	Urban	Regional Gap
Person	**74.65**	**62.53**	**82.75**	20.22	85.53	76.92	87.74	10.82
Male	81.51	70.74	88.00	17.26	89.56	82.76	91.14	8.38
Female	66.36	53.87	75.80	21.93	80.37	70.60	83.19	12.59
Gender Gap	15.15	16.87	12.20	-	9.19	12.16	7.96	-

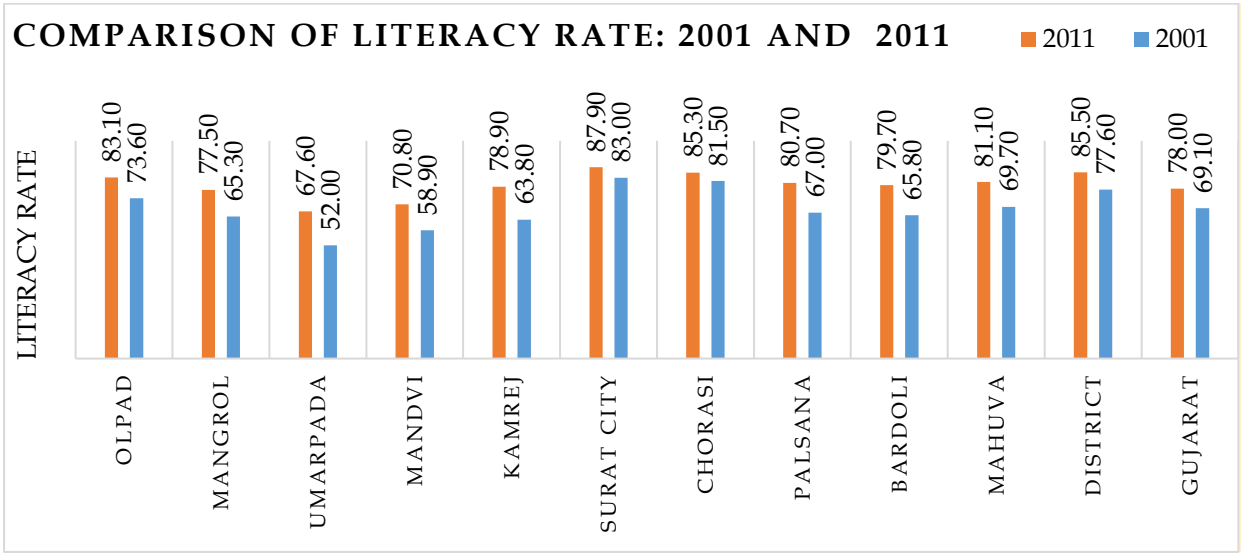
Source: Census 2001 and 2011

In Surat district the literacy rate has increased from 74.65 percent in 2001 to 85.53 percent in 2011. Among males, the literacy rate increased from 81.51 in 2001 to 89.56 percent in 2011, whereas among females, it has increased from 66.36 percent in 2001 to 80.37 percent in 2011.

One can observe are large variations in the gap of literacy rates of rural and urban area. A comparison of literacy rates for rural and urban area reveals presence of urban bias. The literacy rate for rural areas **of Gujarat** is 71.71 percent and for urban area 86.31 percent for the state of Gujarat. Thus, the rural-urban gap is 14.60 percentage points for Gujarat.

The literacy rate for rural area **of Surat** 76.92 percent and for urban area it is 87.74 percent in the Surat district. Surat district thus reveals more or less similar pattern that was found in overall variations in literacy rates of rural and urban areas of the state. The rural-urban literacy gap for Surat district is 10.82, which is lower compared to the gap at state-level. The literacy gap is larger for females compared to males. The regional gap in literacy for females is 12.59 per cent where as that of males is 8.38 per cent. The literacy rate for male is 89.56 percent and female literacy rate is 80.37 percent in Surat, according to 2011 Census. The gender gap in literacy rate is 9.19 percent. Change in literacy rate for all talukas of Surat, from of 2001 to 2011 is given in Figure 2.1

Figure 2.1: Talukawise Overall Literacy Rate



Source: Census 2001 and 2011

Figure 2.1 shows that the literacy rate of Surat district is higher than that of Gujarat. The literacy rate of Surat is 85.50 and that of Gujarat is 78 per cent. Literacy rate is highest in Surat city (87.90). Among talukas of Surat district, Choryasi has the highest literacy rate (85.30) and is lowest in Umarpada (67.60). Umarpada is classified as backward taluka by Cowlagi committee. Moreover, this is indicative of the rural-urban gap.

Rural-Urban gap in literacy rate at taluka level is compared with Surat district's overall literacy rate and Gujarat's literacy rate. These details are given in Table 2.2:

Table 2.2: Talukawise Rural-Urban Literacy Rate

Talukas	2001				2011			
	Total	Rural	Urban	GAP	Total	Rural	Urban	GAP
Gujarat	**69.14**	**61.29**	**81.84**	**20.54**	**78.03**	**71.71**	**86.31**	**14.60**
Surat District	**74.65**	**62.53**	**82.75**	**20.22**	**85.53**	**76.92**	**87.74**	**10.82**
Olpad	73.63	73.56	74.69	1.13	83.10	82.19	87.48	5.29
Mangrol	65.35	64.26	78.03	13.77	77.46	75.04	86.20	11.16
Umarpada	52.04	52.04	*	*	67.65	67.65	*	*
Mandvi	58.88	58.88	*	*	70.78	69.27	85.37	16.10
Kamrej	63.84	63.84	*	*	78.92	78.85	81.12	2.27
Surat City	82.98	*	82.98	*	87.89	-	87.89	*
Chorasi	81.50	78.93	82.85	3.92	85.28	83.72	86.23	2.51
Palsana	67.03	63.16	79.92	16.76	80.74	76.85	86.82	9.97
Bardoli	65.79	61.14	79.71	18.57	79.67	77.15	84.57	7.42
Mahuva	69.67	69.67	*	*	81.15	81.15	*	*

*** Not Applicable**

Source: Census 2001 and 2011

The overall literacy rate (excluding children in the age group 0-6 years) has increased from 69.14 in 2001 to 78.03 in 2011 in the state. Regional imbalances within district are also quite prominent as there are large variations in literacy rates among talukas of Surat district. Surat city tops with 87.89 per cent literacy rate. Umarpada has a literacy rate of 67.65 per cent only.

One can see that though most talukas had literacy rate lower than the state average in 2001, the literacy rates of most talukas in 2011 is higher than the literacy rate of Gujarat state.

Surat district does not have any single village having 100 percent total literacy rates. The district also does not have any single village having zero literacy rates.

There are large variations in the performance of different talukas in improving literacy rate. The talukas having low literacy rate have performed well. For example, there is considerable increase in literacy rate in low literacy rate talukas like Mandvi and Umarpada in comparison to other talukas. The government has launched number of schemes like Sarva Siksha Abhiyan, Mid-Day Meal Scheme etc. seems to have worked well in these talukas.

The increase in literacy rate in the district is satisfactory but there are huge variations in the increase in literacy rate among talukas of Surat district. The literacy rate increased by 15.61 percentage point in Umarpada, 13.88 percentage point in Bardoli, 13.71 percentage point in Mandvi and as low as 4.91 percentage point in Surat city.

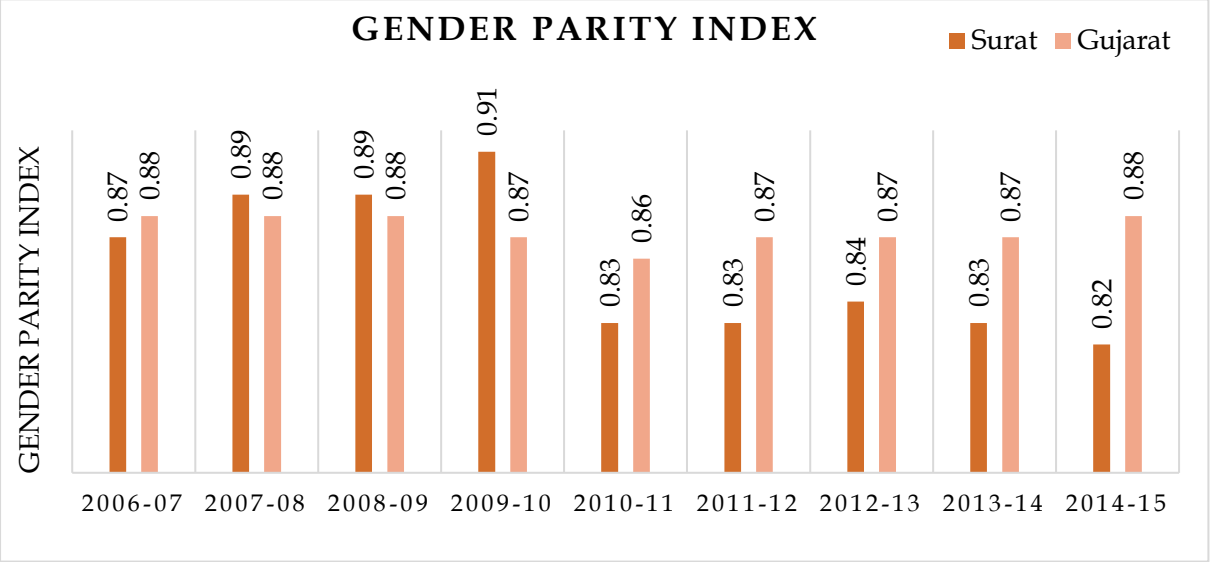
In Census 2011, we do not find any village with 100 per cent literacy. But we do find some villages having 100 per cent male literacy and 100 per cent female literacy. Birama in Mandvi taluka and Butopor in Palsana have 100 per cent male literacy. Kachhab village in Olpad taluka and Charetha in Mangrol taluka have 100 per cent female literacy. These four villages can be the first villages to have 100 per cent literacy if some focused measures are initiated.

2.3.1 Gender Dimension of Literacy Rate

Status of women is increasingly being recognized as an important factor in influencing various aspects of social behaviour. Scholars have encountered difficulties in its measurement and a consensus is yet to emerge on a good indicator that can capture the status of women. Level of female literacy rate is commonly used as proxy for the status of women. Generally population with low female literacy also has low male literacy and hence female literacy may reflect overall dimension of the development. Very often, the gap between male and female literacy rates is used as such measure. Ratio of the female and male literacy rates is also a simple index which extensively used. Critics argue that both the male and female literacy gap and the female /male ratio may indicate the stage of transition rather than the literacy dimension of the status of women. We shall use here both male and female literacy gap and female/male ratio to study existence of gender disparity in the level of literacy rate.

Gender Parity Index, increase in enrolment of girls students in schools, increase in literacy rate over a period of one decade and reduction in literacy gap between males and females are important indicators to capture gender dimension of literacy rate. Table 2.2 shows the change in Gender Parity Index over a period of past eightyears for both – Surat district as well as Gujarat.

Figure 2.2: Gender Parity Index [2006-07 to 2014-15]



Source: Gujarat Council of Elementary Education (SSA), Gandhinagar

One can see that since past eight years, the Gender Parity Index (GPI) for Gujarat has remained more or less constant at 0.88 in 2006-07 to 0.82 in 2014-15, the GPI for the District ranges from as high as 0.91 to as low as 0.82. The GPI of Gujarat for 2014-15 is 0.88.

The second important indicator of gender dimension of literacy is increase in enrolment of girls students.

Table 2.3 shows the enrolment of girls students in schools as well as the change in enrolment over a period of past nine years:

Data at disaggregated would give a deeper insight and therefore the pattern of gender disparity in literacy rates at taluka level is also studied. Change in female literacy rate over a period of 2001 to 2011 is shown in Figure 2.3

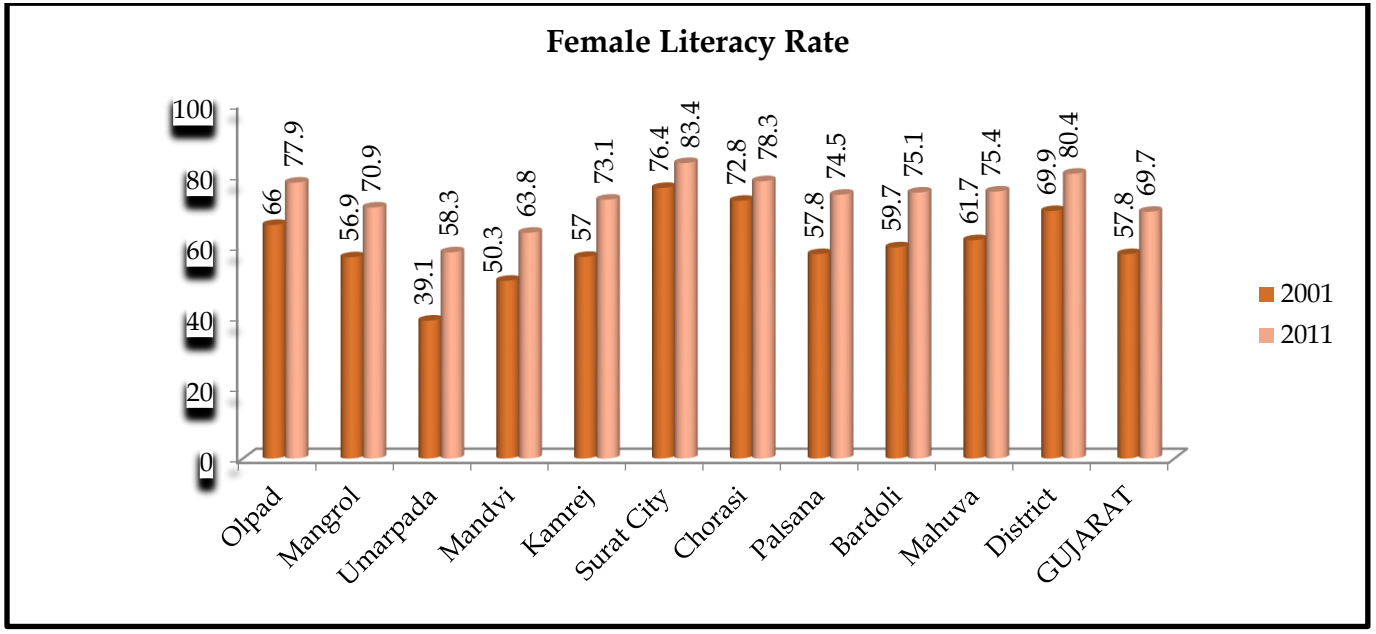
Table 2.3 shows that the number of girls students enrolled in standards 1^{st} to 7^{th} has consistently increased except in the year 2008-09. Total number of girls students enrolled for the year 2014-15 is 369672.

Table 2.3: Enrolment of Girls Students in Schools

Year	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Enrolled 1-7th	218,302	257,822	263,935	213,365	233,476	267,793	287,543	337525	357414	369672
Change over previous year		39,520	6,113	-50,570	20,111	34,317	19,750	49,982	19,889	12258

Source: Computed from Gujarat Council of Elementary Education (SSA), Gandhinagar (2015)

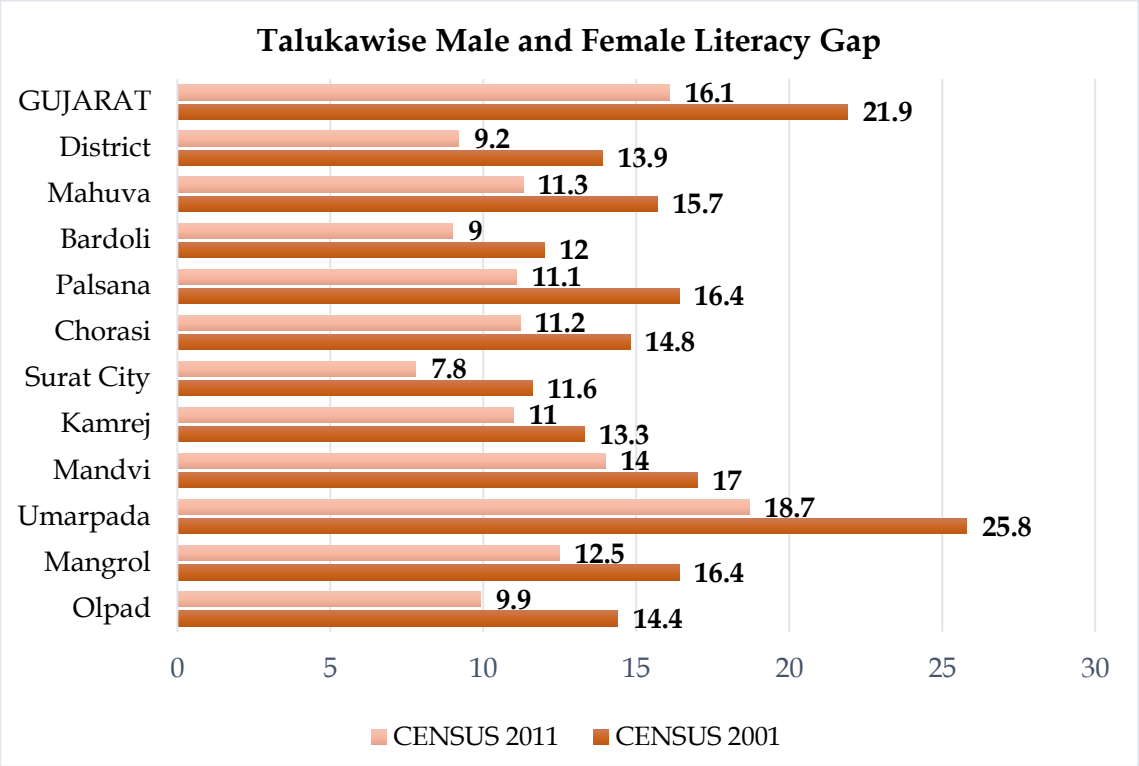
Figure 2.3: Female Literacy Rate at Taluka Level



Source: Census 2001 and 2011

One can see that there is a consistent increase in female literacy rate across all the talukas. Gap in literacy rate across gender as well as over a period of time are indicators of gender dimension of literacy rate. Male-female literacy gap for years 2001 and 2011 are shown in Figure 2.4

Figure 2.4: Genderwise Literacy Gap at Taluka Level



Source: Census 2001 and 2011

Figure 2.4 shows that the gap in literacy rate of Surat district is lower than that of Gujarat. The gap in literacy rate for Surat district is 9.2 and that of Gujarat is 16.1. It can also be seen that the gap in literacy rate has reduced from 13.9 in 2001 to 9.2 in 2011 for Surat. Similarly, it has reduced from 21.9 to 16.1 over the same period for Gujarat state. Gap in literacy rate is maximum (18.7) for Umarpada and minimum (7.8) for Surat city.

It can be inferred from this analysis that there is improvement in literacy rate over a period of time and the gender disparity in literacy rate is reducing over a period of time. Increased access to schooling and availability of good physical infrastructure might contribute to increased enrolment and reducing drop-outs.

2.3.2 *Access to Schooling and Physical Amenities at School*

Physical access to school is an important dimension in terms of both supply and demand factors. Access is often defined as availability of school to all school-going children within a distance of one kilometre. It is observed that children from lower social groups are not comfortable going to school located in the higher social group.

In the Surat district total number of habitations is 849. All the habitations have access to primary schools within 1km. Besides, all the habitations have access to upper primary schools within 3 km. Thus it can be seen that district has made satisfactory progress for increasing accessibility for primary education.

These statistics supports 'inverse pyramid hypotheses in expansion of educational institutions. This indicates that there is remarkable neglect of primary education which is reflected in inverted educational pyramid, despite its obvious importance.

Table 2.4 gives details of category-wise number of schools over a period of past five years. The total number of schools shows an increasing trend between 2009-10 and 2014-15. Number of schools is an important indicator of access to education but physical infrastructure available in the schools is equally important to retain students in the school.

Government has taken special measures to improve manpower deficit and physical infrastructure facilities in primary school. Table 2.5 gives details of various physical amenities available at the schools.

Table 2.4: Number of Schools [2009-10 to 2014-15]

School Category	2009-10		2010-11		2011-12		2012-13		2013-14		2014-15	
	Govt	Private	Govt	Private	Govt	Private	Govt	Private	Govt	Private	Govt	Private
OP	541	37	531	34	571	48	574	46	572	78	567	101
P+UP	830	339	857	479	798	612	803	272	796	482	791	533
P+UP+S/HS	17	50	12	55	-	-	22	400	7	280	8	288
OUP	2	5	4	5	3	7	6	3	7	5	9	7
UP+S+HS	-	6	-	5	-	-	3	7	1	3	9	2
Source: Gujarat Council of Elementary Education (SSA), Gandhinagar (2015)												

Table 2.5: Talukawise % Physical amenities available at Primary Schools 2014-15

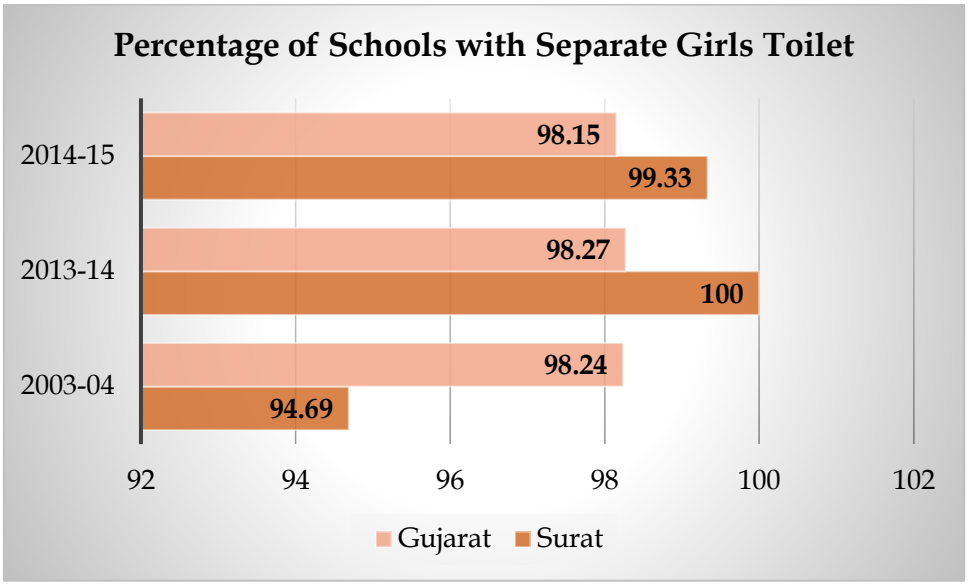
Talukas	Total Schools	Average Number of Rooms per School	Drinking Water	Sanitation	Electrification	Ramp / Railing	Compou-nd Wall	Playground	Garden	Average number of teachers per school
Surat District	980	7.07	100.00	100.00	100.00	100.00	90.72	58.58	90.13	5
Olpad	122	6.56	100.00	100.00	100.00	100.00	92.62	76.23	95.21	4
Mangrol	124	7.32	100.00	100.00	100.00	100.00	98.40	56.41	92.10	6
Umarpada	106	6.00	100.00	100.00	100.00	100.00	81.13	39.62	91.02	4
Mandavi	206	5.62	100.00	100.00	100.00	100.00	89.32	29.61	80.54	4
Kamrej	70	7.49	100.00	100.00	100.00	100.00	98.19	61.97	91.21	6
Choryasi	57	13.13	100.00	100.00	100.00	96.23	96.11	75.47	96.23	9
Palasana	46	7.95	100.00	100.00	100.00	100.00	84.78	69.57	90.10	7
Bardoli	109	6.77	100.00	100.00	100.00	100.00	81.65	55.96	89.45	5
Mahuva	140	5.51	100.00	100.00	100.00	100.00	94.32	62.41	85.30	4
Source: District Primary Education Office (SSA), Surat										

All the schools have drinking water and sanitation facilities; as well as electricity connection. Compound wall is an important infrastructure components from the safety and security point-of-view, as the students range from 6 to 14 years of age-group. Among all the talukas of Surat District, most of the talukas have more than 90 percent of schools have compound walls.

Minimum number of schools having a playground is found in Mandvi (29.61 per cent) and maximum is found in Olpad (76.23 per cent).

Clean and hygienic sanitation facilities are important for health of school students and separate sanitation facilities for boys and girls students help in reducing the drop-out rate of girls' students. Figure 2.5 shows separate toilet facilities for girls' students. One can see that in last decade, the percentage of schools with a separate girls's toilet has increased.

Figure 2.5: Percentage of Schools with Girls Toilet

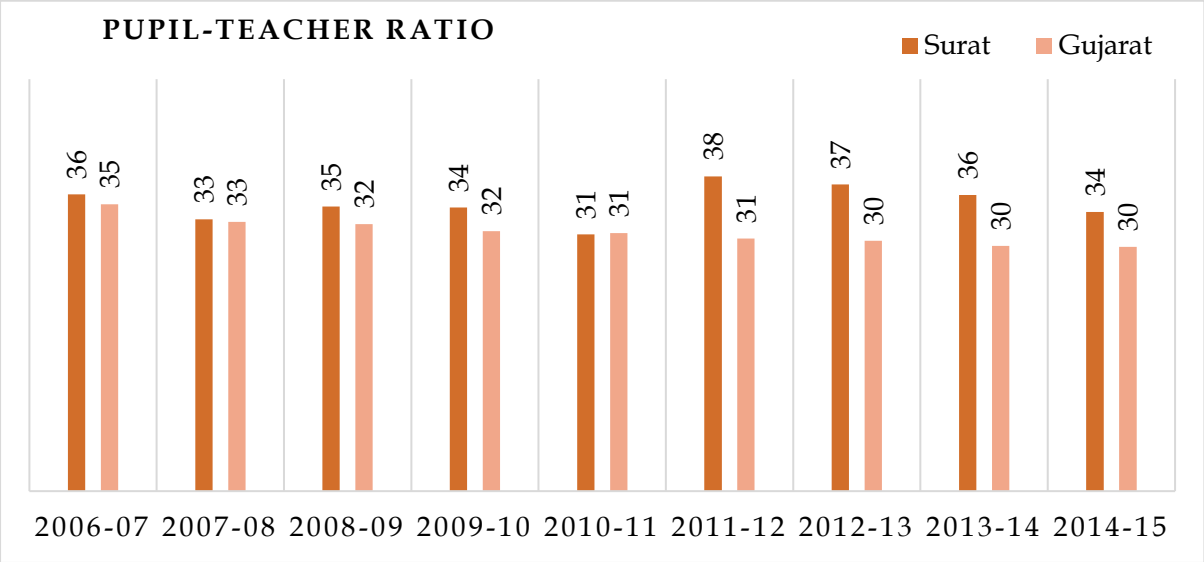


Source: Gujarat Council of Elementary Education (SSA), Gandhinagar (2015)

Figure 2.5 reveals that all the primary and upper primary schools have separate toilet for girls. However, during our field visit, it was observed that attention is required to improve the functionality of compound wall, drinking water and toilet facilities in schools of remote areas. This is because, availability and utility of these facilities are crucial for attendance of girl students.

Adequacy of teachers is another criteria to effective learning. Pupil-Teacher ratio is an ideal indicator for adequacy of teachers. Figure 2.7 shows the percentage of teachers in schools over a period of past five years:

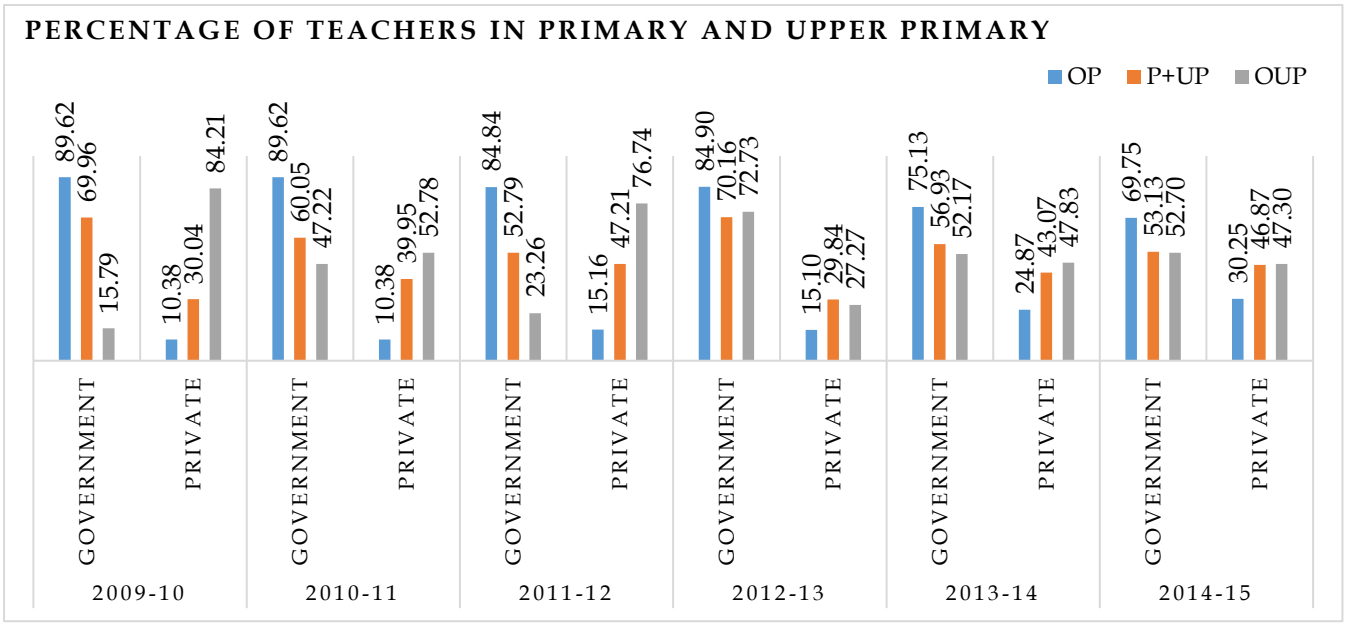
Figure 2.6: Pupil-Teacher Ratio of Surat and Gujarat [2006-07 to 2014-15]



Source: Gujarat Council of Elementary Education (SSA), Gandhinagar (2015)

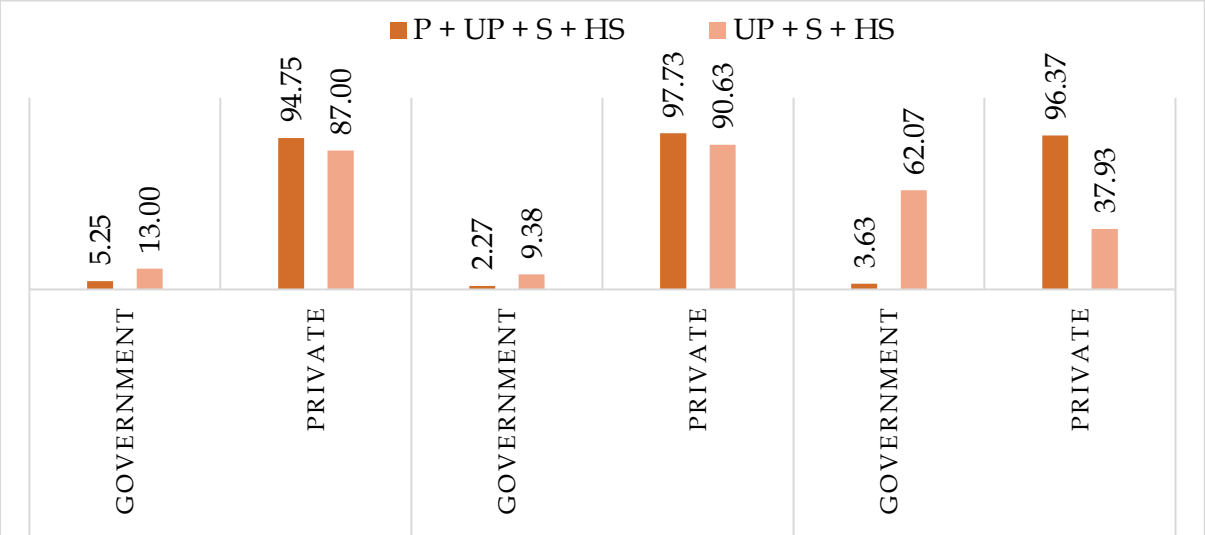
Figure 2.7 and Figure 2.8 show the percentage of teachers in government and private schools over a period of 6 and 3 years respectively:

Table 2.7: Percentage of Teachers in Primary and Upper Primary [2009-10 to 2014-15]



Source: Computed from Gujarat Council of Elementary Education (SSA), Gandhinagar (2015)

Figure 2.8 Percentage of Teachers in Primary with Upper Primary, Secondary and Higher Secondary Schools [2012-13 to 2014-15]



Source: Computed from Gujarat Council of Elementary Education (SSA), Gandhinagar (2015)

2.3.3 Enrolment and dropout

Access to schools is one of the important factors that influence enrolment in primary schools. Enrolment in primary schools is nearly 100 percent and it can mainly be attributed to accessibility to primary schools and other ameliorative measures initiated by the government.

Enrolment

Total enrolment ratio (number of children in the age group of 6-11 admitted in the primary school divided by population of children in the age group of 6-11) is little more than 99 percent for all communities. There is not much difference in enrolment of boys and girls. For different categories of the population the enrolment ratio is in vicinity of 99 percent.

Drop out

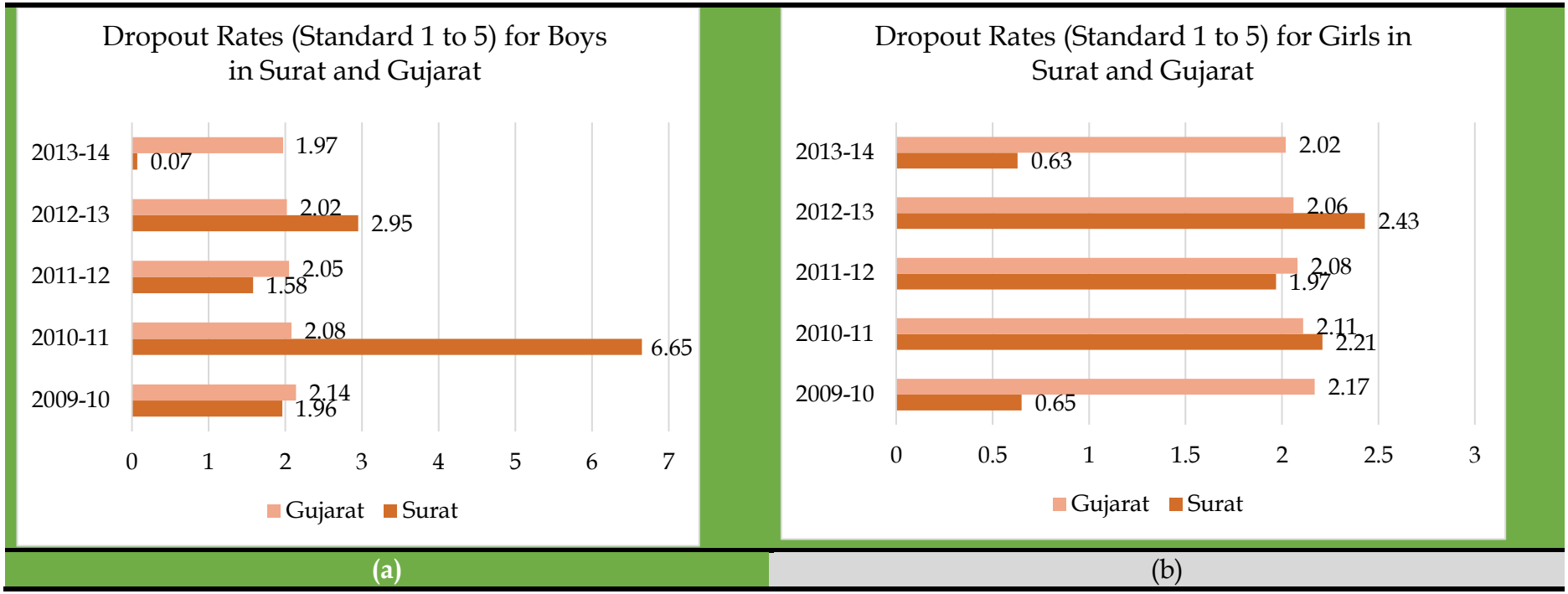
Details of dropout rates of girls and boys students for standard 1 to 5 and for standard 1 to 7 are given in Figure 2.9 and Figure 2.10 respectively; for past six years:

Table 2.6: Percentage Enrolment (6-11 Age Group) for the Year 2014-15

Taluka	Percentage Enrolment (6-11 age group)											
	All communities			SC			ST			Minority		
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total
Surat District	98.59	99.18	98.89	99.42	99.53	99.48	99.66	99.71	99.69	99.43	98.60	99.07
Olpad	99.00	99.45	99.23	100	100	100	100	100	100	100	100	100
Mangrol	99.46	99.65	99.56	100	100	100	99.86	99.87	99.87	99.83	99.98	99.91
Umarpada	95.99	98.66	97.33	97.21	98.80	98.01	99.00	99.95	99.48	100	100	100
Mandvi	98.78	99.00	98.89	100	100	100	99.95	98.95	99.45	99.58	98.63	99.11
Kamrej	100	100	100	100	100	100	100	100	100	100	100	100
Choryasi	99.95	99.88	99.92	98.99	98.65	98.82	99.56	99.99	99.78	99.65	98.66	99.65
Palsana	98.90	98.11	98.51	98.60	98.35	98.48	98.55	98.65	98.60	95.82	90.16	92.99
Bardoli	96.95	98.92	97.94	100	100	100	100	100	100	100	100	100
Mahuva	98.28	98.95	98.62	100	100	100	100	100	100	100	100	100

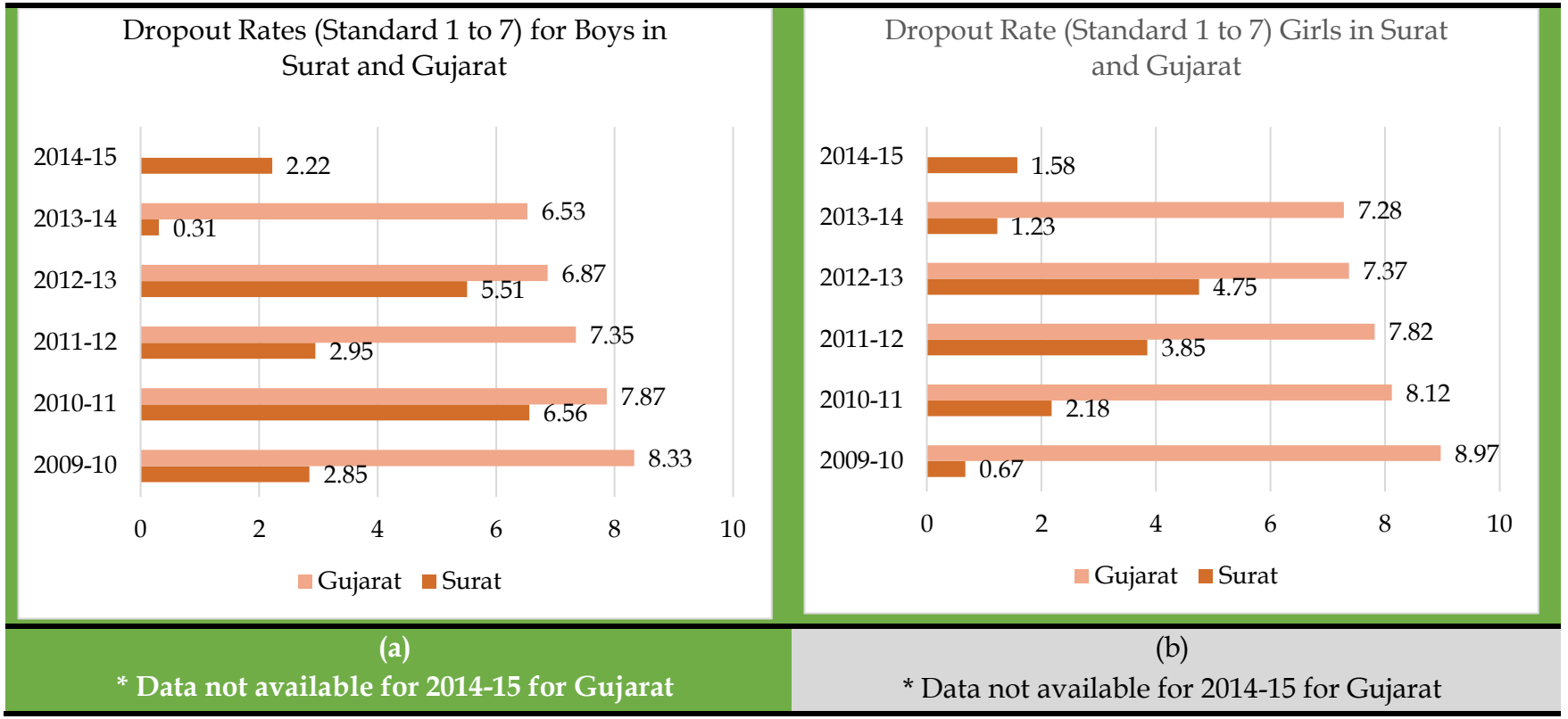
Source: District Primary Education Office, District Panchayat, Surat

Figure 2.9: Dropout Rates of Boys and Girls for Standard 1 to 5 [2009-10 to 2014-15]



Source: Gujarat Council of Elementary Education (SSA), Gandhinagar (2015)

Figure 2.10: Dropout Rates of Boys and Girls for Standard 1 to 7 [2009-10 to 2014-15]



(a)
* Data not available for 2014-15 for Gujarat

(b)
* Data not available for 2014-15 for Gujarat

Source: Gujarat Council of Elementary Education (SSA), Gandhinagar (2015)

It can be seen that, the dropout at the primary stage both among the boys and the girls is showing a declining trend. The dropout rate has reduced to zero for both – boys as well as girls in 2014-15 for standard 1 to 5. The dropout rates at the upper primary in (2014-15) stage too have come down significantly and have reached at the low level of 2.22 for boys and 1.58 for girls. These dropout rates are much lower than that of the state average.

Over and above enrolment and dropout, the flow – in terms of retention, transition from the one standard to the next, repeating in the same standard are indicators of attitude towards school education. The flow rate for a period of past eight years is given in Table 2.7

It can be seen from Table 2.7 that retention rate has increased from 94.57 in 2006-07 to 98.02 in 2014-15. Transition from primary to upper primary is also quite remarkable. Only 0.11 per cent students have to repeat the same class in standard 1 to 5 (as per 2014-15 figures).

Table 2.7: Trend in Flow Rates in Surat

Flow Rates	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Retention Rate (Primary Level) 1-5	94.57	96.44	97.59	98.65	95.42	98.28	97.29	99.67	98.02
Transition Rate (Primary to Upper Primary)	97.02	97.18	95.30	96.78	112.54	94.48	96.92	98.32	99.58
Repetition Rate (Class 1-5)	9.18	8.52	4.56	4.87	5.95	3.28	0.73	0.33	0.11
Promotion Rate (Class 1-5)	85.64	84.39	93.06	93.79	87.95	95.11	96.56	98.05	97.59
Source: Gujarat Council of Elementary Education (SSA), Gandhinagar (2015)									

2.3.4 *Higher Education*

Surat district has four universities:

1. Veer Narmad South Gujarat University located on the Udhna- Magdalla road (now in city limits).
2. Jamia Islamic University situated right in the centre of the Surat city.
3. Auro University, a private university on the Hazira belt.
4. Uka Tarsadia University in Bardoli taluka.

Agricultural University of Navsari district has a centre as well as agricultural farms in Surat city. SNDT has an affiliated college in Surat city. Two open universities – Indira Gandhi National Open University and Ambedkar Open University have also opened up their centres in Surat city. Auro University (and Pacific Universities have their centres in Surat. This indicates that there are good opportunities for higher education in Surat.

A large number of self-financed colleges were set-up during past few years. Out of these 92 colleges, 22 are grant-in-aid colleges whereas 72 are self-financed colleges. Kamrej has maximum number of grant-in-aid colleges and Choryasi has maximum number of self-financed colleges. There are 3 grant- in-aid colleges in Kamrej and 9 self-financed colleges in Choryasi. The growth of higher learning institutions is skewed in the district. There are 16 grant-in-aid colleges and 45 self-financed colleges in Surat city. Aspirant students from Choryasi and Olpad can avail the facilities of colleges of Surat city. The number of grant- in-aid and self-financed colleges in different talukas of Surat district are shown in Table 2.8:

Table 2.8: Colleges Affiliated to Veer Narmad South Gujarat University as on March 31, 2015

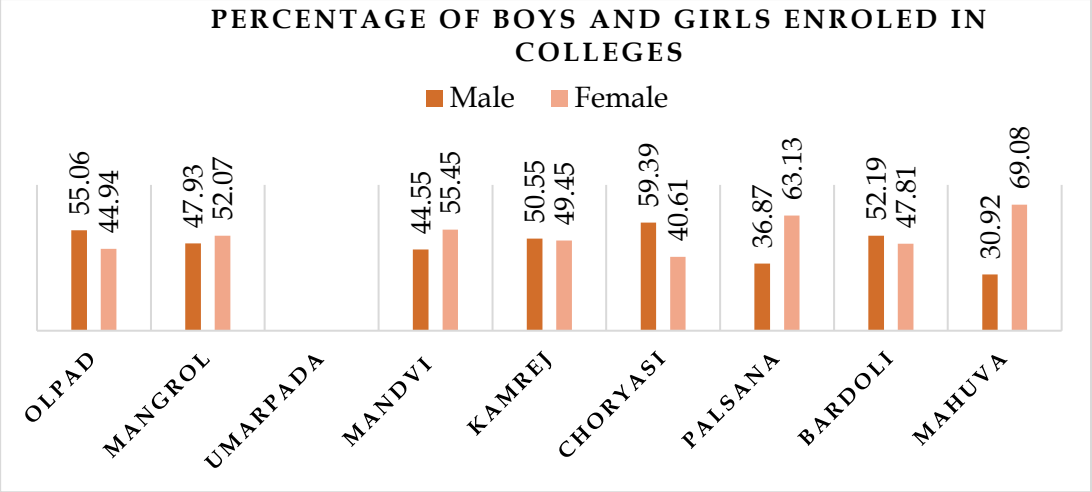
Taluka	Colleges		
	Grant-in-aid	Self-Financed	Total
SURAT District	**29**	**76**	**90**
Olpad	1	8	9
Mangrol	2	0	2
Umarpada	1*	0	1
Mandvi	1	3	4
Kamrej	3	2	5
Choryasi	1	9	10
Palsana	0	5	5
Bardoli	2	4	6
Mahuva	2	0	2
Surat City	16	45	46

** In Umarpada, new college was opened in academic year 2015-16.*
Source: Veer Narmad South Gujarat University, Surat

These figures are of colleges affiliated to South Gujarat University only. This excludes the institutions affiliated to other universities like SNDT etc. However, the number of institutions affiliated to other universities is very low and hence, colleges affiliated to Veer Narmad South Gujarat University can be considered to be a good indicator of facilities for higher learning in Surat district. There is at least one college in each taluka.

We have seen in earlier sections that the gender gap in enrolment at school is positive. This means that number of boys enrolled in schools is higher than that of number of girls. The situation is quite different when we analyse the gender gap in higher education. Gives details of boys and girls enrolled in college.

Figure 2.11: Percentage of Boys and Girls Enrolled in Colleges affiliated to Veer Narmad South Gujarat University as on June 30, 2015



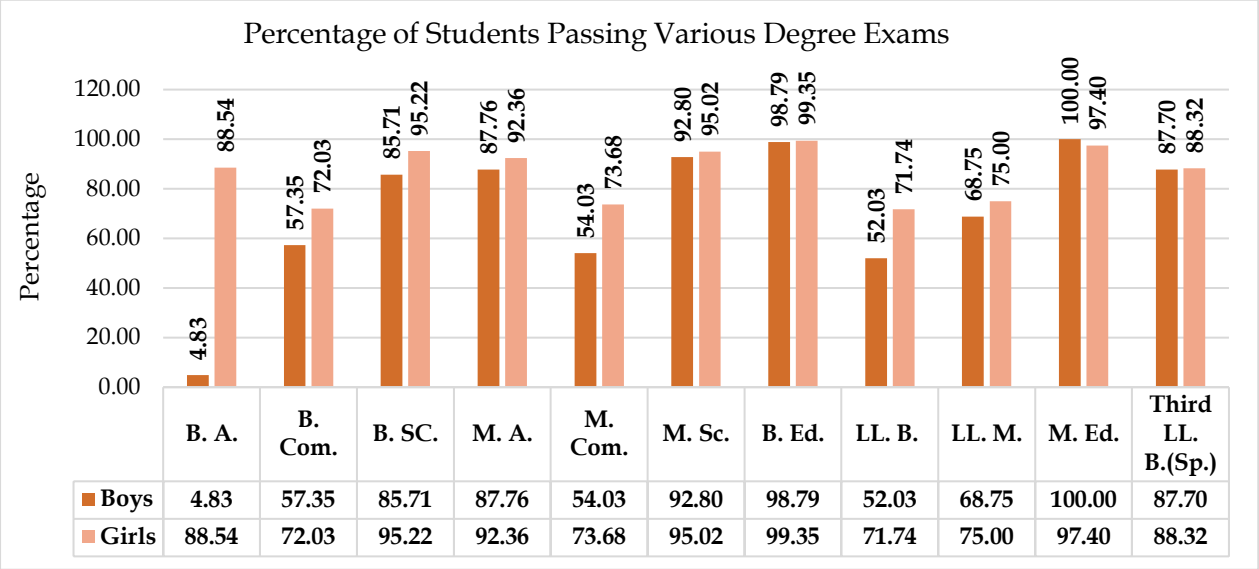
** In Umarpada, new college was opened in academic year 2015-16.*

Source: Veer Narmad South Gujarat University, Surat

One can see that contrary to the scenario of school education, the percentage enrolment of girls students is more than that of boys students.

Figure 2.12 gives genderwise details of percentage of students passing out various degree exams of Veer Narmad South Gujarat University. Percentage of students passing out is calculated by number of students passing the exam divided by the number of students appearing the exam. This data is analysed for all categories of degree exams like BA, BCom, BSc, MA, MCom, MSc, Bed, MEd, LLB and LLM.

Figure 2.12: Percentage of Students Passing Out Various Exams for 2014-15



	B. A.	B. Com.	B. SC.	M. A.	M. Com.	M. Sc.	B. Ed.	LL. B.	LL. M.	M. Ed.	Third LL. B.(Sp.)
Boys	4.83	57.35	85.71	87.76	54.03	92.80	98.79	52.03	68.75	100.00	87.70
Girls	88.54	72.03	95.22	92.36	73.68	95.02	99.35	71.74	75.00	97.40	88.32

Source: Veer Narmad South Gujarat University, Surat

One can see from Figure 2.12 that except for MEd exams, percentage of girls students passing the degree exam is more than the percentage of boys passing the same degree exam.

2.4 GOVERNMENT INITIATIVES

The state government has initiated series of measures to improve enrolment ratio, and retention rate in the primary schools. Some steps were also taken to provide education to children of migrant population and to encourage female education.

'Sarva Siksha Abhiyan Mission' (SSAM) has been launched to achieve 100 percent literacy rate. Under the umbrella of SSAM, 'National Programme for Education for Girls at Elementary Level' is also being implemented. Besides, Kasturba Gandhi Balika Vidyalaya Yojna is being implemented. Under this scheme, residential elementary school with boarding facilities are set up for girls belonging to the disadvantaged group of SC/ST/OBC/Minority and BPL in difficult areas.

The Mid Day Meal scheme is re-introduced since January 1992 and it is being implemented throughout the state. Under the scheme, children are provided hot cooked meal. Under Nutritional Support to Primary education, food grains @100 Gms. per child per day provided free of cost to the children of standard I to V.

Recruitment of the teachers, construction of class-rooms, computer labs, toilet blocks and other school facilities have helped to improve enrollment of students in schools or to reduce the drop-out rate. People do not prefer to go to public schools because they perceive that good quality education is not provided in public schools. The state

Government has taken up the Gunotsav campaign involving large number of bureaucrats to have a quality check in primary education in government run primary schools. All the schools in the districts are covered during the Gunotsav campaign. The campaign will certainly help to sensitize the machinery to focus on quality of education. The issue is required to be tackled from demand side. Prevalence of child labour and poverty of parents may foil the efforts by the government to improve the quality of education from supply side. Besides, appointment of lowly paid teachers acts as a demotivating factor in improving the quality of education. Proper human resource management system requires to be developed to recruit and retain good quality teachers.

Figure 2.13: Alternative Schooling System

Table.2.9: Alternative Schooling System for Sugarcane Cutters' Children for the Year 2012-13

Taluka	Class	Number of Students		
		Boys	Girls	Total
Surat	201	2609	2378	4987
Olpad	16	205	183	388
Mangrol	8	75	82	157
Umarpada	0	0	0	0
Mandvi	43	505	481	986
Kamrej	33	503	476	979
Choryasi	17	187	152	339
Palsana	18	267	256	523
Bardoli	35	525	401	926
Mahuva	31	342	347	689

Source: District Primary Education Office (SSAM), District Panchayat, Surat

Sugarcane Cutter Child Alternative Schooling Systems is introduced to provide primary education to the children of migrant population. During the year 2012-13, total 4987 children are being provided education Surat district under this scheme.

Providing education to the children of migrating population is a challenging task. The government has introduced scheme of Nivasi Camp to provide education to the children of such population. During the year 2014-15, total 40 camps were organised in Surat district to provide education to total 1000 children. The number of boys students were 528 and girl students 472.

Figure 2.10: Nivasi Camp for Migrant People's Children for the Year 2014-15

Taluka	Total Camp	Boys	Girls	Total
Umarpada	40	528	472	1000
Source: District Primary Education Office (SSAM), District Panchayat, Surat				

The scheme of 'Vidya Laxmi Bond' has been introduced to encourage the poor parents to send their girl child to school and provide education upto to primary level. Under the scheme, the villages and cities where women literacy rate is less than 35 percent, are provided bond of Rs. 1000 at the time of admission in standard I, receivable after completion of standard IV.

The state government has introduced the scheme of 'Vidya deep' insurance to provide insurance coverage for accidental death of students studying in primary / secondary schools. Insurance cover under the scheme provided for accidental death, except suicide or natural death, death by any other means viz. earthquake, floods, cyclone, fire, riots, accidental poisoning, dog bite or bite by any other beast or accidental death by any other means at any place during 24 hours of day.

2.5 SUMMARY

Education is an important component of human capital formation. More than that, education in itself is desirable as it leads to enhancement of choices, opportunities and dignity. Expansion of education leads to social benefits also. In particular, it helps to reduce female fertility and thereby contains population growth. Inequality in the level of education implies inequality in the benefits stated above.

Disaggregated data on the level of the literacy rate show considerable regional, gender, and caste imbalances. In order to remove regional imbalances, more resources should be allocated in the regions which are lagging behind in educational infrastructure. In order to reduce gender inequality, special concessional measures for girls should be undertaken. The state government has exempted girl students from the payment of tuition fees. But it forms very insignificant component of total private expenditure in education. The factors behind poor literacy rate among female compared to male children should be identified and measures should be taken accordingly. Gender bias is likely to exist for different reasons and the causes for its existence is likely to vary on caste, region, class and religious basis.

SWOT ANALYSIS OF EDUCATION IN SURAT

STRENGTHS

- All villages have at least one primary school.
- All primary schools have access to safe drinking water, sanitation facilities – separately for girls and boys, electricity connection, a television set, ramp, railing and a garden.
- Female literacy has improved in past 10 years.
- Enrolment is close to 100 per cent and drop-out is close to zero percent.
- Flow of students from primary to secondary and from existing class to higher class / standard is high, though not 100 per cent.
- There is at least one college in each taluka.
- There are more number of girl students as compared to boy students at college level.
- The passing ratio of girl students is higher than that of boy students for various degree exams.
- Alternative schooling system and residential (Nivasi) camps are available for children of sugarcane cutters, who are temporary migrants.

WEAKNESS

- Rural-urban gap in literacy is 10.82 per cent. However, it has come down from 20.22 in 2001.
- Gender gap in literacy exhibits male-bias, though gender gap has reduced over past 10 years.
- Gender parity index is more or less constant for Gujarat but shows fluctuations for Surat.

OPPORTUNITIES

- Hundred percent literacy rate can be achieved, as close to 100 per cent enrolment is taking place and there is close to zero drop-out rate.
- There are 4 universities, 4 university centres and 120 colleges for higher education in the district.

THREATS

- Compound walls requires to be constructed in schools, otherwise there is a threat of land encroachment.

3. HEALTH

HIGHLIGHTS

- Surat district has public health centres and health sub-centres as per the norms prescribed by the government of India. It comprises of 50 Public Health Centres (PHC) and 337 health sub centres. Surat City also has good public health infrastructure.
- Private health care facilities are lacking in remote areas. Shortages of medical and paramedical staff can have adverse impact on health and add to the suffering of people in rural areas.
- The percentage of people suffering from malaria and falciparum has reduced because of the systematic efforts by the government.
- The issue of Leptospirosis, Sickle Cell anaemia and Leprosy requires immediate attention.
- Leptospirosis is one of the dreaded diseases from which a large number of people in South Gujarat suffer. Cases of Leptospirosis occur mainly during August-September and young working population in the age group 26-45 are the most affected.
- More than 87 percent of the children registered under ICDS are normal. ICDS is one of the most important public programmes that tackles the issue of malnutrition.
- The government has taken number of initiatives to improve health status of the population. Infrastructure has improved, shortages of medicines are reduced, new recruitments are made and delivery of health care services improved.
- The services of 108 are extremely useful to the people residing in rural area. The services are largely availed for vehicular trauma cases and pregnancy-related cases. Thus, it can help in reduction of IMR and MMR.
- Institutional deliveries have increased because of Chiranjeevi scheme.
- Bal Sakha scheme is also implemented to tackle the issue of malnutrition.

Good health is desirable for its own sake, as it is a crucial part of living. Health is a primary means of achieving all our ends. Whatever humans aspire to do or achieve in their life, whether that is earning money, achieving fame, acquiring more knowledge etc., is only possible if they are keeping good physical as well as mental health. Without good health it is simply impossible to enjoy one's life fully. Health augments quality of life and effective freedom. Thus, health has an intrinsic value. Health also has incremental role of enhancing human capabilities. As is known to the economist, health forms a major component of one's accumulated stock of human capital[1]. And this stock of human capital helps an individual in enhancing his/her labour market earnings because human capital increases their productivity. Good health also helps security through contributing in economic growth. World Development Report (1993) identifies four ways in which improved health contributes to economic growth:

1. It reduces production losses caused by worker illness.
2. It permits the use of natural resources that had been totally or nearly inaccessible because of diseases.
3. It increases enrolment of children in school and makes them better to learn.
4. It frees for alternative uses of resources that otherwise have to be spent on treating children.

Not only health in its own sake is important but it is also important because it has a positive impact on other aspects of human development such as education. Good health is prerequisite for acquiring more human capital through activities like education, training etc. Good health increases life expectancy, which in turn enhances returns from education. And also the economic gains are relatively greater for poor people. The health improvements of the people few decades ago have significantly contributed in enhancing human welfare, both directly and indirectly.

3.1 HEALTH INFRASTRUCTURE IN SURAT

Access to health care and the quality of health care services largely depends on the number of hospitals, number of doctors, number of nurses and other ancilliary facilities. Quantitive indicators themselves are not good indicators of quality of services. Nevertheless, it gives fairly good idea about the accessibility of health care services. A brief overview of health care infrastructure can be obtained from Table 3.1:

Urban bias in health care infrastructure is clearly visible. Choryasi has greater number of health centres, number of doctors, nurses and other facilities. Very less facilities are available in rural areas. Urban centres will naturally have more facilities because of economies of scale. Remote rural areas do not have basic facilities of diagnostic tests.

[1] To see various components of human capital in the form of physical and mental health refer to, (David).

talukawise healthcare infrastructure in Surat Even in private sector one does not find such facilities. Table 3.1 gives details of district:

Table 3.1: Talukawise Health Infrastructure in Surat District as on March 31, 2015

Taluka / District	Infrastructure for Healthcare							
	CHC	PHC	Sub-Centres	Private-Hospitals	Dispen-saries	Beds	Doctors	Nurses
Surat District	14	50	337	112	50	720	106	448
Olpad	2	7	37	5	7	102	15	63
Mangrol	2	6	45	9	6	96	14	56
Umarpada	1	3	18	0	3	48	7	28
Mandvi	2	7	60	7	7	102	15	63
Kamrej	2	5	32	9	5	90	13	49
Choryasi	1	5	19	42	5	60	9	42
Palsana	1	4	25	10	4	54	8	35
Bardoli	1	7	54	28	7	72	11	56
Mahuva	2	6	47	2	6	96	14	56

Source: Health Department, CDHO, District Panchayat

One can see from Table 3.1 There are 14 Community Health Centres, 50 Primary Health Centres, and 337 sub-centres covering a total of 729 villages of Surat district. One can see that Healthcare deliveries are not adequate in tribal talukas like Mangrol and Umarpada. In Kamrej and Olpad also healthcare facilities are inadequate. However, their proximity to Surat city and accessibility to Surat city's healthcare infrastructure compensates for the inadequacy. Health is important component of human development and therefore, some special measures should be undertaken to improve healthcare deliveries in tribal and coastal regions.

Healthcare infrastructure in rural areas has been developed as a three-tier system. The sub-centre is the most peripheral unit and the first contact point between the primary healthcare system and community. Each sub-centre has one Female Health Worker (FHW) / Auxiliary Nurse Midwife (ANM) and one Male Health Worker. Sub-centres were assigned to perform tasks related to components of healthcare. They are provided with basic drugs for minor ailments needed for taking care of essential health needs of population.

Primary Health Centres (PHCs) remain the first contact point between village community and the Medical Officer. They are supported by one medical officer and 14 paramedical and other staff.

Table 3.23.2 gives the Government of India norms for setting up of sub-centers, PHCs and CHCs:

Table 3.2: Primary Health Structures and their Population Norms

Centre	Population Norms	
	Plain Area	Hilly / Tribal / Difficult Area
Sub-centre	5000	3000
Primary Health Centre	30000	20000
Community Health Centre	120000	80000
Source: Rural Health Statistics, MOHFW, Government of India, 2007		

Talukawise information on number of CHCs and on health care personnel like Male Primary Health Worker (MPHW), Female Health Worker (FHW), Accredited Social Health Activist (ASHA) etc. are not available for Surat district.

On the basis of absolute figures of PHCs and sub-centres in different talukas of Surat, it can be said that talukas like Mandvi, Bardoli and Mangrol are better off in terms of health care infrastructure whereas in talukas with urban areas like Choryasi and Kamrej, the number of PHCs and sub-centres are relatively less.

Table 3.3: Healthcare Facilities in Surat District for the Year ended March 31, 2015

Health Care Infrastructure	Numbers	Health Care Infrastructure	Numbers
PHC	50	**Female Supervisors**	32
CHC	14	**PP Units**	1
Sub-Centres	337	**Major Hospitals Allied with Medical college**	2
Mobile Health Care Unit	2	**ESIS Hospitals**	1
MPHW	289	**Grant in Aid Hospitals**	3
FHW	296	**Ayurvedic Hospital**	24
MPHS [Male]	50	**Homeopathic Hospitals**	8
ASHA Workers	1191		
Source: CDHO, District Panchayat, Surat			

It can be observed from Table 3.3 that there are 2 hospitals associated with medical colleges and one ESIS hospital. It would be worth mentioning that all these three hospitals are located in the Surat city. For all the health care indicators, the accessibility is less than one per village. This is certainly a cause of worry, especially for MPHW and FHW. Moreover, details of mobile health care unit are not available. It would be meaningful to have information on the frequency of mobile unit visiting those village without any health care facilities, the equipments available in the mobile unit, number of doctors / specialists etc. to discuss the utility of these mobile

units for remote rural areas.

Rural-urban disparities are observed in the preference for availing health care facilities. In rural areas, the option of private clinics or hospitals is clearly ruled out because of they are simply not available. But in urban areas, a clear preference for private health care facilities was observed and the major reason for this preference for private health care was the belief that the recovery is faster and the quality for service is better. However, our field visits to various health centres (PHCs, CHCs and sub-centres) revealed that the only problem is shortage of medical and paramedical staff. Latest equipments are available in CHCs for X-ray, sonography and pathological tests but absence of paramedical staff poses difficulties in operating these instruments and people from rural areas are forced go to the private health care centre in nearby urban area. Besides, specialists for anesthesia, obstetric care, paediatric care etc were also not available. The government has taken many initiatives to improve health care facilities in rural areas by recruiting new staff, monitoring existing human resources, planning and improving co-ordination at various levels. Use of information technology has improved communication and effective decision-making. Online attendance by bio-metric system is introduced to monitor the presence and punctuality of grass root workers in the district.

The problems faced by old age persons and migrants are different from the issues concerning the majority of the population. Existing health management system does not specifically address age- linked health problems. The needs of older persons living in rural area require special attention. Youth migrate to urban areas in search of better employment opportunities. As a result the old-age dependency ratio is rising. The ratio of population above 60 years to population between 15-59 years multiplied with 100 is the old-age dependency ratio.

Nature and complexity of old age health problems are significantly different for women as compared to men. Life expectancy of women is relatively higher than that of men. Therefore, the proportion of women in elderly population is higher compared to men. Besides, it is generally found that the percentage of married men is larger compared to married women, and proportion of widows is higher compared to widowers. In developing countries, women are likely to be economically worse off than men. The lower socioeconomic status of old-age women places them in relatively more vulnerable condition than their male counterparts. Moreover, the health issues of old-age women are also different from that of men.

Quality of health care available may be less than satisfactory in rural area compared to urban area. There are additional issues with regard to the health care provided to elderly. Geriatrics is still relatively less known health care of the older population. To meet the preventive, curative and restorative needs of older population and especially

for older woman is a difficult task. The aim of health care for elderly population should focus on providing quality services closer to their residential area. The government may think of increasing the number and frequency of Mobile Medicare Services to reach remote villages in rural and tribal areas. Separate counters for old-age women may be made, so that they do not have to wait for longer hours. Even separate time-slot may be allotted for elderly people. Provisions for equipments needed by older people may be made available in public health centres. Adequate facilities for conducting some pathological tests are not available and patients are often required to go to make out of pocket expenditure. Services of specialist of some diseases are not available in rural areas.

3.1.1 Private Healthcare Facilities

Private Health Care services play important role in the city. The spread of private health care in rural and remote areas is very less compared to public health care services. It is difficult to get statistics on private health care infrastructure in rural areas. We have got some information from CDHO, Surat.

Details of hospitals, including private hospitals is given in Table 3.1. Umarpada does not have any major private hospital. In other taluka places also, the number of private hospitals are very low. These figures indicate that private health care services in rural area are far from satisfactory. The information on number of private allopathic doctors with their specializations, ayurvedic doctors and homeopathic doctors in Surat is given in Table 3.4:

Table 3.4: Number of Private Doctors in Surat as on March 31, 2012

Sr. No.	Private Health care services	No.	Sr. No.	Private Health care services	No.
1	AIDS Consultant	1	25	Orthopedic Surgeon Arthroscopy Joint Replacement & Spine	69
2	Anesthesiologist	1	26	Pathologist	82
3	CT Scan Centre	5	27	Pediatric Intensives	1
4	Cardiac Anesthetist	1	28	Pediatric Surgeon	5
5	Cardiac Intensivist	1	29	Pediatric Cardiologist	1
6	Cardio Vascular & Thoracic Surgeon	5	30	Pediatric Nephrologists	1
7	Pulmonologist	1	31	Pediatrician	132
8	Consulting Physician & Clinical Cardiologist	164	32	Plastic Surgeon	10
9	Dermatologist & Venereologist	39	33	Psychiatrist	27
10	ENT Surgeon	34	34	Radiologist / Sonologist	61
11	GI & Laparoscopic Surgeon	6	35	Surgeon	120
12	Gastroenterologist	5	36	Urologist / Uro-surgeon	1
13	Family Physician	358	37	Dental surgeon	220
14	MRI Centre	3	38	Oral Pathologist	2
15	Nephrologists	1	39	Endodontist	5
16	Nephrologists & Transplant Physician	4	40	Periodontist	5
17	Neuro Physician	8	41	Prosthodontist	6
18	Neuro Surgeon	9	42	Ayurvedic Consultants	16
19	Nuclear Medicine Physician	1	43	Ayurvedic Practitioner	478
20	Obstetrician & Gynecologist	224	44	Homoeopathic Practitioner	500
21	Oncohaematologist	1	45	Physiotherapist	151
22	Oncophysician	4	46	Prosthetist & Orthotist	NA
23	Oncosurgeon	3	47	Trichologist	1
24	Ophtha lmologist	95			

NA: Data Not Available

Source: CDHO, District, Panchayat, Surat

The data on paramedical and nursing staff in providing healthcare in private sector in Surat district is not available. It is important to have information on paramedical and nursing staff engaged in private healthcare service sector.

Box 3.1: Performance of 108 EMRI Services

Emergency Management and Research Institute (EMRI) is a pioneer in emergency management services in India. EMRI is a non-profit organization and operates through the Public-Private Partnership (PPP) model. In Gujarat, emergency response services (108) was formally inaugurated on August 29, 2007 and it started its operations with 15 ambulances encompassing the cities of Ahmedabad and Gandhinagar. Today, 108 emergency services are available in all 26 districts of Gujarat with 403 ambulances. The ambulances are technologically equipped with Computer Communication Toolkit (CCT), Geospatial Information System (GIS) Maps and Geographical Positioning System (GPS) / Automatic Vehicle Locating Technology (AVLT). Each ambulance is equipped with a trained Emergency Medical Technician (EMT) who is responsible for pre-hospitalization care of the patient. EMT can be in contact with the Emergency Response Care Physician (ERCP), who is a qualified medical practitioner and can guide the EMT as and when required. EMRI provides emergency response services for medical, police and fire emergencies. These services are available 24X7 and it can be availed by dialing 108 which is tollfree.

Emergency response services of (108) are a boon to the healthcare infrastructure. These services of 108 were launched in Surat in June 2008. Since then usage of these services has increased in successive months. These services are availed largely for vehicular trauma cases and pregnancy-related cases. During June 2008 to April 2009, emergency response service attended 8816 vehicular trauma cases and 5626 pregnancy-related cases in Surat district.

Emergency response services have helped a lot in mitigating the problem associated with physical movement of patient and delay in medical treatment in event of natural calamities, accidents on national and state highways, rail accidents etc. People in remote rural area expressed their satisfaction over Emergency response services of 108.

3.2 SOCIAL INFRASTRUCTURE FOR HEALTHCARE

Social infrastructure has received very scant attention until now. The need to improve basic amenities affecting human development is receiving increasing attention of policy makers. Creation of physical infrastructure such as power, transport and irrigation is essential to increase economic growth but investment in social infrastructure cannot be ignored. The importance of social infrastructure is enhanced because it improves quality of human life.

The term 'social infrastructure' includes investment in health, education, drinking water supply, disease eradication, public hygiene etc. Social infrastructure helps increasing human capital formation. Creation of social infrastructure is in fact

essential to promote better utilization of physical infrastructure.

3.2.1 *Drinking Water*

A person requires around 20 to 50 liters of water for the purpose of drinking[2], cooking, cleaning and washing. The benefits of improved health are accrued in the form of lesser number of work days lost, enhanced productivity, greater opportunities and longer working lives. Therefore, apart from providing easy access to good health care infrastructure, it is necessary that hygienic conditions are provided to the citizens as a preventive measure. Access to safe drinking water is essential to prevent the water borne diseases. Moreover, provision of clean drinking water has been given priority in the Constitution of India, with Article 47 conferring the duty of providing safe drinking water and improving public health standards to the state.

Inadequate supply of safe drinking water could be the reason of many diseases like diarrhea, dysentery, cholera, typhoid etc. These water borne diseases account for over 90 percent of deaths, half of the inpatients in hospitals and a third of outpatient consultations. All these can be prevented by providing access to safe drinking water. These diseases are transmitted either by consuming contaminated water or through person-to-person contact.

Figure 3.1: Use of Hand Pump for Water Needs

The most vulnerable group are the children below the age of 5 years, more specifically, children below the age of 2 years (WHO and UNICEF 2000). Good quality drinking water can help preventing these diseases.

In developing countries, the need for access to health care is realized by increasing the expenditure on health care infrastructure. However, access to drinking water, drainage and sanitation are categorized as physical infrastructure. It is possible that appropriate and timely development of these facilities might reduce incidence of diseases and therefore, reduce the need to spend more on health care.

The accessibility to safe drinking water remained a problem for quite a long time. Though, more than 95 per cent households in Gujarat as well as Surat has access to safe drinking water, few people had access to tap water. With the implementation of Swajaldhara scheme, the situation of drinking water in Surat district improved significantly.

[2] Drinking water as defined in Census 2011.

Table 3.5 gives details of source-wise drinking water for rural and urban areas of Surat district.

Table 3.5: Drinking Water by Main Source and Location

State / District	Location	Tap Water	Well	Hand Pump	Tubewell / Borewell	Spring	River / Canal	Tank / Pond / Lake	Other Sources
Surat	**Total**	80.59	1.81	6.93	9.03	0.01	0.03	0.01	1.59
	Rural	55.21	6.71	27.85	9.51	0.01	0.05	0.00	0.65
	Urban	87.04	0.56	1.62	8.90	0.01	0.03	0.01	1.83
Gujarat	**Total**	69.03	7.09	11.62	9.60	0.09	0.34	0.22	2.00
	Rural	55.77	12.11	18.23	10.88	0.14	0.54	0.36	1.97
	Urban	85.58	0.83	3.37	8.01	0.03	0.09	0.05	2.04
Source: Census 2011									

One can see from Table 3.5 that more than 80 per cent of households have connection to tap water. This is followed by other sources. Only in rural areas, 55.21 per cent households are covered by tap water, whereas 27.85 per cent of households have access to hand pumps. Government has taken several initiatives in recent past to improve the condition of supply of drinking water to households. One can see that the percentage of population covered with piped water connection is much higher in Surat district in comparison with the percentage of state's population having access to piped drinking water.

Swajaldhara Scheme and its Impact

Government has implemented Swajaldhara and Sector Reform schemes. These schemes were implemented in December 2002. The Swajaldhara Scheme is a paradigm shift from supply driven to demand driven, centralized to decentralized implementation and Government's role from service provider to facilitator. It is based on empowerment of villagers to ensure their full participation in the project through a decision making role in the choice of the drinking water scheme, planning, design, implementation, control of finances, management arrangements including full ownership of drinking water assets. The community shares partial capital cost either in cash or kind or both and assumes full responsibility of operation and maintenance (O&M). An integrated service delivery mechanism is also promoted which includes taking up conservation measures through rainwater harvesting and ground water recharge systems for sustained drinking water supply. The details of percentage of households having access to different sources of drinking water are given in Table 3.6:

Table 3.6: Percentage of Households with Access to Safe Drinking Water Subsequent to Implementation of Swajaldhara Scheme as on June 30, 2015

Taluka	Total Household Connections (%)	Stand Post (Piped Water Supply) (%)	Hand Pump (%)
Surat District	77.34	55.60	42.11
Olpad	75.50	40.95	12.13
Mangrol	95.00	70.33	59.77
Umarpada	99.00	80.95	84.22
Mandvi	98.80	55.22	87.90
Kamrej	88.31	57.97	23.58
Choryasi	84.50	48.00	6.68
Palsana	80.92	67.35	33.61
Bardoli	91.01	74.39	27.78
Mahuva	60.35	60.87	85.42
Source: District Water and Cleanliness Committee, Swajaldhara-2, Surat			

Table 3.6 shows that, in all talukas there are piped water connections stand posts. Even in Umarpada, 99 per cent households have got piped water connections.

Vanbandhu Kalyan Yojana

Vanbandhu Kalyan Yojana, also known as the Chief Minister's 10-point programme for the development of tribal areas, was launched by the Chief Minister in February 2007. The strategy for the 10-point programme is result oriented with time-bound interventions and has a component of people's participation. The programme is quarterly reviewed by the Chief Minister. Provision of safe drinking water is one of the 10-points of the scheme. Under this programme, several new projects have been initiated to improve the quality of drinking water availability. These initiatives have made good impact in improving access to drinking water. As a part of the ten-point programme, Mandvi town has installed a Reverse Osmosis (RO) plant to provide drinking water to its citizens.

Assured and adequate supply of water to families reduces the drudgery faced by women in collecting water. In some cases, women are compelled to travel long distances, often in difficult circumstances, to meet the water requirements for their families.

Watershed Development for Conservation and Supply of Safe Drinking Water

The Department of Land Resources in the Ministry of Rural Development is administering three area- based watershed programmes for development of wastelands/degraded lands namely Drought Prone Areas Programmes (DPAP) since 1973-74, Desert Development Programme (DDP) since 1977-78 and Integrated Wastelands Development Programme (IWDP) since 1989-90 to check the diminishing productivity of wasteland and loss of natural resources.

The Department of Land Resources has brought out a new initiative called Hariyali with an objective of effective implementation of Watershed Development Programmes. The projects under this initiative are implemented in accordance with the guidelines for Hariyali from 1 April 2003. Projects sanctioned prior to this date shall continue to be implemented as per the Watershed Development Guidelines of 2001.

Government has initiated number of schemes to improve access to drinking water. During our field visits, we found that infrastructure is not properly maintained or utilized for various reasons. Hand pumps are not properly working. Hand pumps are installed under various schemes. In some schemes, the provision for maintenance is not made, so in even of technical or other fault, it is abandoned. Water storage overhead tanks are found unused in some villages. Necessary electrical work was not done to draw the water for overhead tanks. Carelessness or indifferent attitude of those who are responsible for such important task can frustrate the efforts of the government.

In coastal villages, where piped water was supplied to households, water was not regularly available. The people informed us that water was diverted to fish ponds. The government may think of developing some mechanism for the surveillance of water distribution system.

However, the quality of ground water is an important issue from the preventive health care perspective. The problems of salinity, fluorides, nitrates and arsenic are found in ground water, which poses serious health hazards. The issues associated with contamination and pollution of groundwater are discussed in ensuing chapter on environment.

3.2.2 Drainage and Sanitation

A well-designed and well-managed drainage[3] system is as important as access to safe drinking water and other preventive health measures. Open drainage leads to foul smell in the surroundings of the households and are a breeding site for mosquitoes. Absence of drainage leads to spilling of dirty water on the ground, of which some

[3] Households with drainage connection as defined in Census 2011.

water might get filled-in in some low-lying areas or pot holes on the streets / roads or may percolate with ground water, thereby causing threat to purity of ground water. Draining the water directly in rivers or other sources of drinking water like ponds can be harmful.

Sanitation[4], like drinking water and proper drainage, is crucial to hygienic living. Absence of sanitation facilities or inadequate facilities is likely to pollute land, water and air. Due to indiscriminate use of open space for sanitation, it leads to degradation and erosion of land, spread foul smell and it can be a fertile ground for reproduction of disease causing germs. In most communities, the play area of children are no different from the area of open defection. Children are more vulnerable to infection than elderly people. It is therefore, necessary to develop adequate infrastructure for sanitation.

Improvements in sanitation can also have a major impact on reduction in incidence of diseases like diarrhoea, particularly in urban areas where public defecation leads to faecal pollution throughout densely populated neighbourhoods. In rural areas, where public defecation sites are generally farther from homes, latrines (while still important) are likely to have less effect on occurrence of disease. It is difficult to directly measure the effect of excreta removal on incidence of diseases but households and communities with adequate sanitation tend to be more hygienic in all aspects of their lives. Access to proper sanitation facilities, protects the citizens from fecal pollution. Controlling fecal pollution is not only important from the perspective of reducing the probability of disease incidence but it can help providing children a better environment for playing.

Piped sewer system / water closet is the most hygienic form of sanitation. In Surat district, 68.77 per cent households have piped sewer connections. Septic tanks and Pit latrines are a slightly inferior facility for sanitation, though more hygienic than open defection. In Surat, 13.51 per cent households have latrines with septic tanks, 1.79 per cent have pit latrines and a very small percentage of households have open drain and service latrines. In rural areas, the percentage of households having latrines with septic tank is more than those having a water closet. Even today, 48.44 per cent households defecate in open space.

Total Sanitation Campaign and Nirmal Gram

Total Sanitation Campaign (TSC) is an initiative of the central government to ensure sanitation facilities in rural areas with broader goal to eradicate the practice of open defecation. TSC as a part of reform principles was initiated in 1999 when Central Rural Sanitation Programme was restructured where a nominal subsidy in the form of incentive is given to rural poor households for construction of toilets. TSC

[4]. Households with sanitation facilities as defined in Census 2011

emphasizes on Information, Education and Communication (IEC), Capacity Building and Hygiene Education. The key intervention areas are Individual Household latrines (IHHL), School Sanitation and Hygiene Education (SSHE), Community Sanitary Complex, Anganwadi toilets supported by Rural Sanitary Marts (RSMs) and Production Centers (PCs). To give fillip to this endeavour, the government has launched Nirmal Gram Puraskar to recognize the efforts of individuals and institutions who have contributed significantly in ensuring full sanitation coverage in their area of operation. A new scheme has been introduced in 2007-08 to ensure that village is properly cleaned, there may arise good spirit on cleanliness, level of cleaning as well as quality of rural life may improve. Campaign of sanitation and cleanliness is being done through Nirmal Gram Yojana. It has helped to sensitize people living in rural area about the importance of sanitation. The project is being implemented in rural areas taking district as a unit of implementation. In Surat district, 277 villages are declared Nirmal Gram.

During our field visits it was however observed that many anganwadis have baby toilets, which is suitable for use only by the kids below 5 years of age. In some anganwadis, the toilets are there but they are not in usable condition. Moreover, some of the school toilets are also in dilapidated condition or they are without doors and water connection. Many people used toilet for storage purpose. This defeats the whole purpose of constructing toilets to improve sanitation. Priorities of people should be reflected in any scheme meant for them. Scarce resources should be gainfully utilized for the welfare of the people.

3.3 HEALTH BURDEN

Government initiatives in the public health sector have shown noteworthy success over time. Many diseases like Smallpox and Guinea Worm Disease have been eradicated. Leprosy, Kala Azar and Filariasis are expected to be eliminated in the foreseeable future as envisioned by the national health policy. There has been substantial drop in the Total Fertility Rate (TFR) and Infant Mortality Rate (IMR). Despite the impressive public health gains, some of the indicators like morbidity and mortality levels in the country are still unacceptably high. These unsatisfactory health indices are in turn, an indication of the limited success of the public health system in meeting the preventive and curative requirements of the general population. Spread of virulent communicable disease like HIV/AIDS has posed great challenge for the health officials. Besides, common water borne infections – Gastroenteritis, Cholera and some of forms of Hepatitis continue to contribute to a high level of morbidity in population. Another area of grave concern in the public health care system is the persistent deficiencies of nutrient, especially among poor women and children.

3.3.1 *Vector-Borne Diseases*

Vector-Borne diseases are normally caused through the mosquitoes or ticks. They transmit the pathogen, responsible for causing disease, through the process of blood-feeding. The most common of vector-borne diseases in Surat are Malaria, Lymphatic Filariasis (Elephantiasis), Dengue and Chikungunya.

Malaria and Falciparum

Malaria is caused by a parasite called Plasmodium, which is transmitted via the bites of infected mosquitoes. In the human body, the parasites multiply in the liver, and then infect red blood cells. There are four types of malaria: Plasmodium vivax, Plasmodium falciparum, Plasmodium malaria and Plasmodium ovale. Plasmodium vivax and Plasmodium falciparum are the most common. Plasmodium falciparum is relatively more dangerous.

It is well-known that there is a wide gap between the reported incidence of malaria cases and malaria- attributable deaths and the actual burden of the disease. The main reasons for this include operational deficiencies in surveillance and reporting of the cases as well as omission of relevant data from private practitioners.

Lymphatic Filaraisis (Elephantiasis)

Lymphatic Filariasis, commonly known as elephantiasis, is transmitted into human body through mosquito bite. When a mosquito infected with filaria worm bites a human, it transmits the parasites into the lymphatic vessels of the human body. These filaria worms grow in the lymphatic vessels and develop into an adult worm. Lymphatic filarisis also spread from one person to another person by mosquito bite. The adult worms live in lymph – a fluid, and when they block the flow, it might result in the swelling of legs, hands and other parts of the body. Some of the early symptoms are pain and redness on the affected lymphatic vessels. However, the symptoms are not visible, in most cases, till the death of the adult worms. An adult worm lives for about 5 to 7 years. Filarisis can cause bacterial infections in skin and lymph system, hardening and thickening of skin, disfigurement and sexual dysfunction. In extreme cases, it may even lead to utricaria or pneumonia. It is therefore important to keep filarisis under control.

Dengue

Dengue is caused by the bite of aedes mosquito infected by one of the four dengue viruses. Symptoms range from mild fever to very high incapacitating fever along with severe headache, pain behind eyes, muscle and joint pain, and rashes. Other symptoms include bleeding gums, red palms and soles. Symptoms appear 3 to 14 days after the infectious bite. Dengue can spread from person to person via mosquito.

One unique characteristic of dengue is that it develops lifetime immunity. This means a person who has suffered from dengue once has little chances of recurrence of dengue throughout the lifetime. Since past few years dengue cases have also not declined. Nothing conclusive can be said about the prevalence of dengue – either in district or in city – and the reasons for this fluctuating trend requires to be examined.

Moreover, in comparison with other vector-borne diseases, dengue patients face a higher risk of mortality. It would be more meaningful to examine the pattern of deaths due to dengue, over and above the number of dengue cases. Even percentage of deaths out of total dengue cases would be more meaningful indicator to describe the dread of the disease.

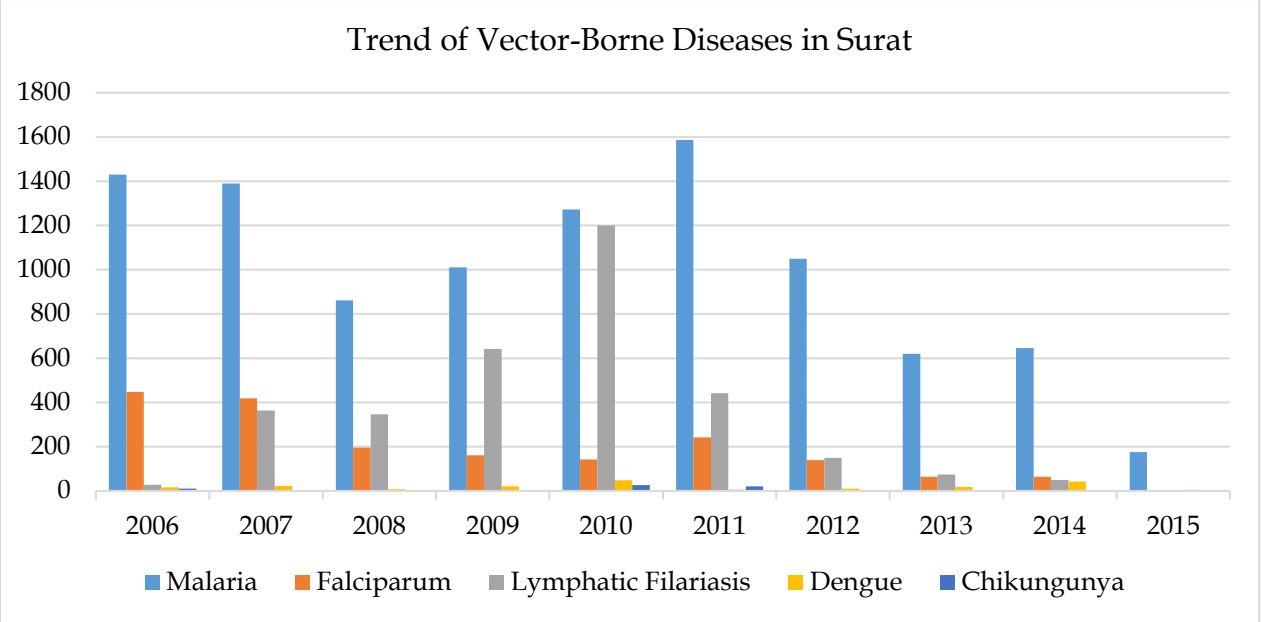
Anti-adult measures like fogging and anti-larval measures along with screening of symptomatic fever cases are undertaken at different areas in the district. Blood samples of suspected cases are taken and are sent for diagnosis. To control cases of dengue in the district active anti-larval measures that were taken only during monsoon season is now extended to throughout the year. Health workers carry out intensive anti larval activities in the last 10 days of every month to decrease the vector density of mosquitoes transmitting dengue virus.

Chikungunya

Chikungunya is caused by virus that is transmitted to human body by the infected mosquito. Major symptoms of chikungunya are severe and persistent joint pain, body rash, headache and fever. Some of the symptoms of chikungunya are similar to that of dengue. The major difference between dengue and chikungunya is that dengue can be life-threatening whereas chikungunya is not. One striking characteristic of chikungunya is that there is usually a gap of 7-8 years between two successive outbreaks of chikungunya and the chances of recurrence is rare, almost nil.

The details of vector-borne diseases in Surat are given in Figure 3.2:

Figure 3.2: Trend of Vector-Borne Diseases in Surat District [2006 to 2015]*



** Upto June 2015*

Source: CDHO, District, Panchayat, Surat

In rural areas of Surat district, 12 cases of chikungunya are recorded. The cases of chikungunya in Surat city were many more. However, since 2007, no cases of chikungunya are recorded till 2009. Once again in 2010 and 2011, 26 and 21 cases were recorded respectively. In 2011, 81 cases were recorded in Surat city. These are the highest number of cases since its outbreak in 2006.

National Vector-Borne Disease Control Programme

National Vector-Borne Disease Control Programme (NVBDCP) was introduced to cover a larger cross- section of diseases spread by mosquitoes like Dengue, Filariasis, Japanese Encephalitis, Chikungyuniea, Kala azar etc. The objectives of NVBDCP are to reduce mortality and morbidity due to malaria, to reduce percentage of plasmodium falciparum cases and to control other vector-borne diseases.

The entire district is covered under surveillance mechanism. Active surveillance is carried out with the help of different categories of health workers like MPHW, Malaria Link Volunteers (MLVs), FHW and ASHA to help early case detection. There are 99 Malaria Clinics in the district, which help in Early Detection and Prompt Treatment (EDPT). Along with, it Fever Treatment Depots (FTDs) and Drug Distribution Centres (DDCs) are also established in each village.

- The action plan for NVBDCP focuses on Early Detection and Prompt Treatment (EDPT) through:
    - Identification of high-risk areas,

- Active surveillance by health workers by visiting households allotted to him / her, at least once a month,
- Passive Surveillance through equipping the sub-centres, PHCs and CHCs for diagnosing, detecting and providing treatment,
- Setting up of Fever Treatment Depot (FTD) and Drug Distribution Centre (DDC): MPHW, FHW, ASHA also work as FTD and DDC by going door-to-door on regular basis. FHW and ASHA even club their visits with ANC / PNC visits to their patients. This activity is carried out on co-ordination with ICDS.
- Use of Rapid Diagnosis Stick (Dip Stick) to easily and quickly detect the chances of plasmodium falciparum.
- Setting up effective referral system from MPHW/ MLV/ FHW / ASHA to PHC and then to CHC depending upon the complexity of the case and the preparedness at each level to deal the complexity.

- Three-tier monitoring of Spray operations: Overall spray operation to be organized, monitored, and supervised by District Malaria Officer, Chief District Health Officer along with other District level officer. Spray related activities, day-to-day movement, monitoring of correct doses, technical guidance etc. to be monitored and supervised by malaria supervisor at taluka level in co- ordination with medical officer. Implementation and supervision at village level to be carried out by MPHW/MLV/FTD. Indoor residual spraying to be done in villages identified as high-risk areas.
- Supply of impregnated mosquito nets, to be tucked to the beds, to reduce man-mosquito contact during night. Till the end of 2007, 8198 individual mosquito-nets and 29730 community-owned mosquito-nets were supplied jointly by MCRP and the Tribal Sub-plan.
- Developing hatcheries and releasing larvivorous fishes in mosquito-breeding sites to control the growth of larva of mosquitoes. There are 4 natural hatcheries and 29 hatcheries have been developed in rural areas.
- Setting up a Computer-Based Management Information System (CBMIS) to record the information collected from sub-centre, PHCs and CHCs in format prescribed by NAMP.
- Training of all programme officers and health workers to work during epidemics and appointing counsellors on contract, depending upon the requirement.
- Promoting Information Education Communication (IEC) activities with an objective to create awareness about the spread of vector-borne diseases and precautions to be taken by individual households to prevent the breeding of mosquitoes. This awareness is created through advertisement campaigns on radio, television and hoardings, banners, posters and announcements on loudspeakers in different areas of the village.

- Setting up a Malaria Epidemiological Cell that would actively work for diagnosis, detection and treatment of the respective vector-borne disease during endemic conditions. The cell will also work for remedial measures to control the spread of epidemic.

National Malaria Control Programme

Government has taken various initiatives to control the spread of malaria. In 1953 the government introduced National Malaria Control Programme (NMCP) using Indoor Residual Spray (IRS), to minimize transmission. The success of NMCP inspired the government to devise a programme for eradicating malaria – National Malaria Eradication Programme (NMEP). The focus was to exterminate the malarial parasite from the community through active case detection (a surveillance mechanism) and bring the end of transmission with IRS. But for various reasons, malaria resurged. Moreover, the drug resistance problem was also noticed in plasmodium falciparum. This contributed a change in approach for controlling the spread of malaria and Modified Plan of Operation (MPO) was launched in 1977 with an objective of preventing mortality due to malaria and reducing morbidity. After successful operation of MPO for eight years malaria situation remained static. However, even after 8 years of implementation, the number of deaths due to malaria did not decline. In order to fight out the situation, Malaria Action Plan (MAP) was introduced in 1995. In MAP the high risk and low risk areas were identified and selective spray operation was introduced. Under MAP, the Enhanced Malaria Control Project (EMCP) was introduced in districts having more than 25 percent tribal population and high incidence of plasmodium falciparum.

It is observed that after 2007, the cases of plasmodium falciparum and dengue have reduced in rural areas of Surat district.

3.3.2 Leptospirosis

Leptospirosis is one of the dreaded diseases in South Gujarat region. It is caused by a bacteria called spirochete. Leptospirosis is transmitted to humans via urine or other fluids of dogs, rats, foxes, rabbits, cows, sheep etc. that can contaminate food, water or soil. Consuming contaminated food, water or exposure of contaminated soil to skin can cause leptospirosis. Symptoms of leptospirosis range from mild flu-like fever to meningitis, liver damage and renal failure. Diagnosis of leptospirosis is difficult because of wide range of symptoms. Moreover, initial phase of leptospirosis is asymptomatic. Symptoms appear only during the second stage of leptospirosis, in most cases. Treatment of leptospirosis is complicated and only animal vaccines are available, and that too for few strains only. Leptospirosis can be fatal, if timely treatment is not availed. The risk of leptospirosis is high for veterinarians, slaughterhouse workers, farmers, sewer workers, water-sport players. Table 3.7 shows talukawise incidence of leptospirosis:

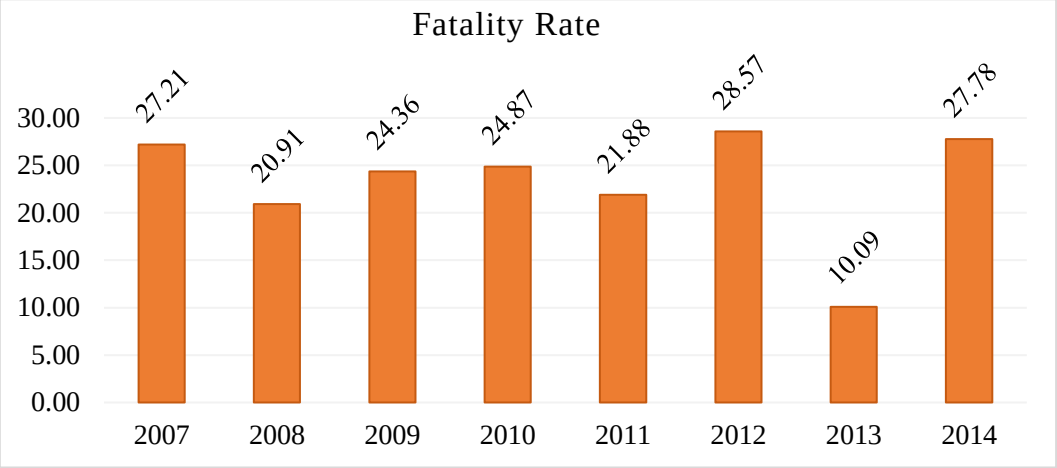
Table 3.7: Talukawise Leptospirosis in Surat District [2007-2014]

Taluka / District	2007		2008		2009		2010		2011		2012		2013		2014	
	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D
Surat District	**147**	**40**	**220**	**46**	**78**	**19**	**193**	**48**	**329**	**72**	**7**	**2**	**109**	**11**	**18**	**5**
Olpad	3	2	10	4	2	0	8	1	17	2	1	1	2	0	1	0
Mangrol	0	0	9	4	4	2	6	2	13	4	0	0	1	0	0	0
Umarpada	4	1	11	1	5	2	16	5	15	4	0	0	0	0	0	0
Mandvi	39	11	44	8	14	3	53	11	81	12	1	0	19	3	3	1
Kamrej	38	13	81	17	18	5	40	6	90	20	3	1	8	2	1	0
Choryasi	40	7	40	5	25	2	32	8	57	12	1	0	2	0	0	0
Palsana	22	6	22	6	10	5	35	13	53	17	1	0	9	1	3	1
Bardoli	0	0	1	0	0	0	2	1	2	0	0	0	30	1	6	1
Mahuva	1	0	2	1	0	0	1	1	1	1	0	0	38	4	4	2

C=Cases, D=Deaths

Source: Health Department, District Panchayat, Surat

Figure 3.3: Fatality Rate of Leptospirosis in Surat [2007 to 2014]



Source: Compiled from Data Collected from District Health Office, District Panchayat, Surat

It can be seen that the incidence of leptospirosis was higher in Mandvi, Kamrej and Palsana compared to other talukas upto 2012. In past two years, the incidence is observed to be more in Bardoli and Mahuva.

Leptospirosis is prevalent in rural areas of Surat district, where the major source of employment is agricultural labour. Large number of cases of Leptospirosis is recorded during August-September. The most affected age group is 26 to 45, i.e. the working population. Seventy two per cent of the victims are male and the mortality rate among the affected person is found to be the highest in 'above 66 years' age group. Mortality rate is found to increase with age.

The fatality rate for leptospirosis is alarming. Fatality rate is the percentage of deaths out of total cases of leptospirosis. Figure 3.3 shows that the fatality rate ranges from more than 20 per cent to 30 per cent.

Government has taken active steps to create awareness about the causes of leptospirosis and about the preventive measures. PHCs have advised people to wear gumboots and / or apply iodex while working on field so that bacteria does not enter into the body through cuts in the ankles or other exposed parts of legs. However, it was observed that agricultural workers did not prefer to put on gumboots as it would get stuck in mud while working on fields. Applying iodex was not only inconvenient but also expensive to those who barely meet their minimum requirements. Government may actively intervene to keep leptospirosis under control by developing vaccinations. Use of preventive drugs can also be administered to keep a check on leptospirosis.

3.3.3 Sickle Cell Anaemia

Sickle cell anaemia is a genetic disorder of haemoglobin, where the shape of the red blood cells is of sickle shaped. Normal blood cells are disc-shaped. Haemoglobin is the part of red blood cells that carry oxygen from lungs to different parts of the body. Because of the sickle shape, the flexibility of these cells is reduced and in extreme cases, they may even cause blockage. As a result, the patient experiences shortness of breath, fatigue, exercise intolerance and delayed growth and development of children. Children having sickle cell anaemia are at increased risk of getting infections, including life- threatening blood infections. Sickle cell anaemia's symptoms usually show up in childhood and the average life expectancy of sickle cell anaemic patients is 42 for males and 48 for females. Sickle cell disease is commonly observed in places where malaria is prevalent.

Sickle cell anaemia is present right at birth but many infants do not show any symptoms until the age of 4 months. The symptoms of sickle cell anaemia comprise symptoms of anaemia like dizziness, headache, shortness of breath, coldness in hand and feet; and of sudden pain throughout the body. The duration of pain is usually 5 to 7 days. Lack of awareness and timely diagnosis are major cause of deaths due to sickle cell anaemia. Talukawise incidence of sickle cell anaemia is shown in Table 3.8:

Table 3.8: Incidence of Sickle Cell Anaemia in Surat [2008 to 2015]

Year	Population	Sickle Cell Anaemia								Sickle Cell Anaemia per lac Population							
	2011	2008	2009	2010	2011	2012	2013	2014	2015	2008	2009	2010	2011	2012	2013	2014	2015
Surat	1613525	16	147	193	269	398	331	155	43	0.99	9.11	11.96	16.67	24.67	0.12	9.61	2.66
Olpad	196846	2	7	16	8	10	2	8	1	1.02	3.56	8.13	4.06	5.08	19.81	4.06	0.51
Mangrol	209054	4	19	14	16	74	39	13	8	1.91	9.09	6.70	7.65	35.40	15.31	6.22	3.83
Umarpada	83723	6	29	12	40	73	32	24	8	7.17	34.64	14.33	47.78	87.19	243.66	28.67	9.56
Mandvi	195949	0	19	36	158	131	204	55	14	0.00	9.70	18.37	80.63	66.85	3.06	28.07	7.14
Kamrej	184554	0	3	16	0	24	6	5	1	0.00	1.63	8.67	0.00	13.00	2.17	2.71	0.54
Choryasi	229277	0	5	8	2	3	4	5	2	0.00	2.18	3.49	0.87	1.31	0.44	2.18	0.87
Palsana	145052	0	9	2	2	9	1	6	0	0.00	6.20	1.38	1.38	6.20	8.27	4.14	0.00
Bardoli	224164	0	19	14	20	19	12	19	2	0.00	8.48	6.25	8.92	8.48	13.83	8.48	0.89
Mahuva	144906	4	37	75	23	55	31	20	7	2.76	25.53	51.76	15.87	37.96	0.00	13.80	4.83

Source: CDHO, District Panchayat, Surat

In Surat district, 31% of the Gamit tribe and 4.4% of the Kolis are either carriers or victims of Sickle Cell Anaemia. It is difficult to say anything meaningful, since the reliable information is not available. Moreover, temporal data on sickle cell anaemia is not available.

The problem of sickle cell anaemia prevalent in some tribal areas needs many sided and long term programs. Concerned over the high incidence of this genetically linked disease, the state health department has now set up screening and counselling centres in Surat. As part of the drive, authorities distributed three types of laminated colour coded cards depending on the shape of the haemoglobin cells. An all-white card indicated normal haemoglobin, half white-half yellow, sickle cell trait and all yellow, sickle cell disease. To ensure that children with sickle cell trait or disease were not born, unmarried boys and girls, yellow cardholders have been advised against marrying among themselves. Councilors have advised that a half-white half yellow cardholder or an all yellow cardholder should marry only to an all-white cardholder. Special emphasize has been given in 10 point programme envisaged by the chief minister to tackle the problem of sickle cell anaemia.

3.3.4 Leprosy

Leprosy is referred as *kusht rog* in India. In this critical disease patient suffers from physical, psychological and social pains. Traditionally society has been very hostile towards leprosy patient and they are force to remain isolated, increasing their suffering. Government of India initiated National Leprosy Control Programme in 1955 to control prevalence of leprosy in India. In 1991 WHO and its member states committed themselves to eliminate leprosy as public health problem by year 2000 and bring down leprosy cases below 1 case per 10000 populations. In spite of this, the incidence of leprosy in Surat district has remained high. The talukawise incidence of leprosy from 2007 to 2015 is given in Table 3.9:

Table 3.9: Incidence of Leprosy in Surat [2007 to 2015]

Taluka / District	2007	2008	2009	2010	2011	2012	2013	2014	2015
Surat District	727	796	717	756	809	1054	303	1156	940
Olpad	68	50	51	62	64	75	19	81	86
Mangrol	90	100	75	66	79	100	44	140	110
Umarpada	48	90	72	71	78	112	37	129	98
Mandvi	99	116	120	117	140	168	46	161	100
Kamrej	99	95	75	106	95	105	27	109	90
Choryasi	55	41	52	44	50	77	20	90	66
Palsana	60	71	87	94	102	137	39	150	136
Bardoli	142	184	135	153	151	205	55	212	155
Mahuva	66	49	50	43	50	75	16	84	99
Source: Health Department, District Panchayat, Surat									

Government had started the National Leprosy Elimination Programme (NLEP) – a World Bank assisted programme – in 1983 in a phased manner. Under this programme, Multi-Drug Therapy was introduced at district level. Moreover, high endemic districts were identified and a Special Action Plan for Elimination of Leprosy (SAPEL) was devised to detect leprosy cases in these districts and in urban slums. Treatment for leprosy is now available at all PHCs, CHCs and sub-centres and MDT is made available absolutely free of cost to the patients. Government has also launched Block Leprosy Awareness Campaign (BLAC), under which Leprosy Counseling Centres (LCC) are set up they work for the detection of leprosy cases and providing treatment to leprosy patients. Government of Gujarat has launched a *Kushtrog Kayakalp Karyakram*. Leprosy is known for deformities and late detection of leprosy adds to this problem. Kushtrog Kayakalp Karyakram focuses on Reconstructive Surgery and provision of micro-cellular rubber footwear to patients having foot ulcer deformities. Disability Care Programme is implemented in a phased manner to prevent the development of disabilities and to provide quality disability care to old-age patients.

3.3.5 Swine Flu

Swine Influenza (swine flu) is a respiratory disease of pigs caused by type A influenza virus that regularly causes outbreaks of influenza in pigs. Swine flu viruses do not normally infect humans. However, sporadic human infections with swine flu have occurred. Most commonly, these cases occur in persons having direct exposure to pigs. In addition, there have been sporadic cases of one person spreading swine flu to others.

Recently, human cases of swine influenza A (H1N1) virus infection have been recently reported in several countries. This is a novel influenza A virus that has not been identified in people before, and human-to-human transmission of the virus appears to be ongoing and thus represents a real pandemic threat. Gujarat recorded its first swine flu case and death in August 2009.

Information available from District Health Office revealed that by the end of February 2010, 153 cases of swine flu were recorded in the state out of which 137 (89.54 per cent) cases were recorded in Surat district. Though area under SMC recorded highest number of swine flu cases, the mortality rate was higher in rural Surat. The fatality rate in urban area under SMC was 15.97per cent (19 deaths out of119 cases) where as for rural area it was 22.22 (4 deaths out of 18 cases). The trend of Swine Flu cases from 2009 to 2013 is given in Table 3.10:

Table 3.10: Swine Flu Cases in Surat District [2010 to 2015]

Year	Cases	Deaths
2010	8	0
2011	0	NA
2012	0	NA
2013	3	0
2014	0	NA
2015	91	17
NA = Not Applicable		
Source: District Health Office, District Panchayat, Surat		

Swine flu has not affected rural Surat till 2014. In 2015, the number of cases and deaths due to swine flu are worrisome.

3.3.6 Tuberculosis and Revised National Tuberculosis Programme (RNTCP)

Tuberculosis (TB) an infectious air-borne disease is caused by bacteria – mycobacterium tuberculosis. It is contagious and can spread from person to person when tuberculosis patients cough or sneeze. Tuberculosis mainly affects the lungs; but it can also affect other parts of the body like brain, bones and glands. Tuberculosis is a major public health problem in India and WHO estimates that one-fifth of the total tuberculosis cases in the world are from India. Each year nearly 2 million people in India develop tuberculosis, out of which, 0.87 million are infectious. In order to control the spread of tuberculosis, National Tuberculosis Control Programme was introduced in 1962 and was subsequently revised in 1993. The Revised National Tuberculosis Control Programme (RNTCP) was then introduced in 1997. Phase – II of RNTCP was implemented in 2005 with an objective to achieve the TB-related targets of Millennium Development Goals. By 2006, all 633 districts of India are covered under RNTCP. The structure of the RNTCP comprises of five levels – National, State, District, Sub-district and Peripheral health institutions. At the State level, the State Tuberculosis Officer is responsible for planning, training, supervising and monitoring the programme in their respective states. The District TB Officer has the overall responsibility of physical and financial management of RNTCP in the respective districts. An innovation of RNTCP is the creation of sub-district "Tuberculosis Unit" supervisory and monitoring team, for an approximate population of 500,000, (250,000 in tribal and difficult areas), comprising of a designated Medical Officer – TB Control, a Senior Treatment Supervisor and a Senior TB Laboratory Supervisor, based in either a Community Health Centre, Taluka Hospital or Block Primary Health Centre. WHO has recommended to adopt "The Stop TB Strategy", over and above Directly Observed Treatment Short Course (DOTS).

In Surat district, many NGOs like Sanjivni Hospital (Chalthan), Sardar Smarak Hospital (Bardoli), Sadhnakutir Hospital (Kim), Datyasadan Hospital (Zankhvav), B.R.S.S. Hospital (Bamni), Damodar Das Gandhi Hospital (Kadod) and Reliance Dispensary (Moragam). Apart from NGOs, private practitioners are also involved to facilitate the implementation of RNTCP in the district. Out of 160 private practitioners in the district, 74 are involved in the RNTCP project. There is scope of involving more private practitioners in the district. This can be done by giving some incentives to the private practitioners to increase their involvement.

The DOTS programme, recommended by WHO is also implemented by Surat Municipal Corporation since June-2000. All the key staff, including medical college staff are trained for this programme. There are Five TB Units in City and 33 Designated Microscopy Centres including two in private hospitals. All 28 Urban Health Centres and both the medical colleges are having all diagnostic support and facilities required for DOTS. In spite of this, there is little difference in mortality rate of TB patients. This can be seen from Table 3.11:

To increase awareness, various programmes are arranged like video shows, community meetings, patient – service provider interaction meetings, DOTS-Prachar by audio van, school children quiz, puppet-shows, public announcements through auto- rikshaw, radio-talks, TV programmes, press-notes, articles in Indian Medical Association (IMA) bulletin etc..

Table 3.11: Talukawise Tuberculosis Cases and Resultant Deaths under the RNTCP (Surat Rural) [2007 to 2015]

Taluka / District	2007		2008		2009		2010		2011		2012		2013		2014		2015	
	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D
Surat	**2190**	**115**	**2289**	**139**	**2407**	**78**	**2445**	**54**	**2277**	**73**	**2259**	**60**	**1641**	**44**	2124	78	3818	115
Olpad	254	7	255	16	265	10	231	9	231	13	229	4	138	7	227	10	115	0
Mangrol	235	10	268	17	292	16	246	9	240	13	244	8	172	6	236	11	567	12
Umarpada	68	5	90	3	100	0	77	3	85	0	107	5	70	2	100	0	63	0
Mandvi	275	16	190	14	190	3	271	1	162	7	182	4	120	1	343	7	624	19
Kamrej	311	15	347	19	349	18	450	15	391	15	361	12	270	6	237	12	754	27
Choryasi	244	14	217	15	233	5	240	4	264	7	229	8	188	2	229	10	570	25
Palsana	151	9	232	7	271	13	291	9	255	3	239	7	183	6	278	5	227	0
Bardoli	210	6	251	15	297	3	317	2	325	6	339	5	255	8	315	16	777	32
Mahuva	442	33	439	33	410	10	322	2	324	9	329	7	245	6	159	7	121	0

Source: Health Department, District Panchayat, Surat

3.3.7 *Nutrition*

Human physical stature is one of the indicators of well-being. Good health of children provides a wide array of benefits to children, families and society as a whole. India has the dubious distinction of having the largest number of anaemic women and children in the world. The situation in Gujarat is no different. Undernutrition is a condition resulting from inadequate intake of food or more essential nutrients. Under-nutrition is an important factor contributing to the death of young children. If a child is malnourished, the mortality risk associated with respiratory infections, diarrhoea, malaria, measles, and other infectious diseases is increased. According to NFHS – III, 5 per cent of children under age five had an acute respiratory infection, 73 per cent children had fever and 13 per cent had diarrhoea in two weeks preceding the survey. Seventy per cent of children in age of 6 months to 59 months and 55 per cent of women in Gujarat are anaemic. Out of these anaemic women, 36 per cent suffer from mild anaemia, 17 per cent from moderate anaemia and 3 per cent from severe anaemia. Among the pregnant women and lactating mothers, 61 per cent are anaemic. Moreover, anaemia is more common in women of schedule tribe. Seventy four per cent of schedule tribe women are anaemic. Thus, undernutrition and anaemia are major issues concerning women and child health.

The percentage of children breastfed within one hour of their birth out of the reported live births and percentage of newborns weighing less than 2.5 kg are given in Table 3.12:

Table 3.12: New Born Care

New Born care	Surat	Gujarat
Newborns breastfed within 1 hr of birth (to reported live births)%	98.60 %	97.66 %
Newborns weight less than 2.5 kg (to total newborns weight at birth)%	12.24 %	17.06 %
		Source: HIMS 2014

One can see that percentage of newborns who are breastfed within one hour of their birth are 98.6 per cent in Surat, which is higher than that of Gujarat, which is 97.66 per cent. Similarly, newborns weighing less than 2.5 kg at birth are less in Surat as compared to that of overall Gujarat.

Integrated Child Development Services

The National Rural Health Mission and the Integrated Child Development Services (ICDS) programmes are expected to prevent the incidence of severe malnutrition of the kind that has been reported in the state. The ICDS seeks to provide young children

with an integrated package of services: supplementary nutrition (SNP), health services, and pre-school education (PSE). Under this scheme, children in age- group 6 months to 3 years are given ready to eat food, which contains 300 gram calorie, 8 to 10 gram of protein in powder form. This is called supplementary nutrition and is given to the child at his / her residence in the form of packets of 900 gram per child, which is sufficient for 15 days. Children get this nutritious powder twice a month. Balbhog scheme is launched in 2007 under ICDS to provide nutritious candies (a kind of chocolate) to children registered under the ICDS. Children between the ages of 3-6 years are imparted non-formal pre-school education and pregnant mothers are provided the ANC care including Titanus Toxide injection and iron tablets or Folic Acid. Anganwadis are set up to facilitate the implementation of ICDS. An Anganwadi is set up in rural area or urban low-resource area covering a population of 1000 and in tribal area covering a population of 700. The details of children registered under ICDS and number children receiving supplementary nutrition are given in Table 3.13:

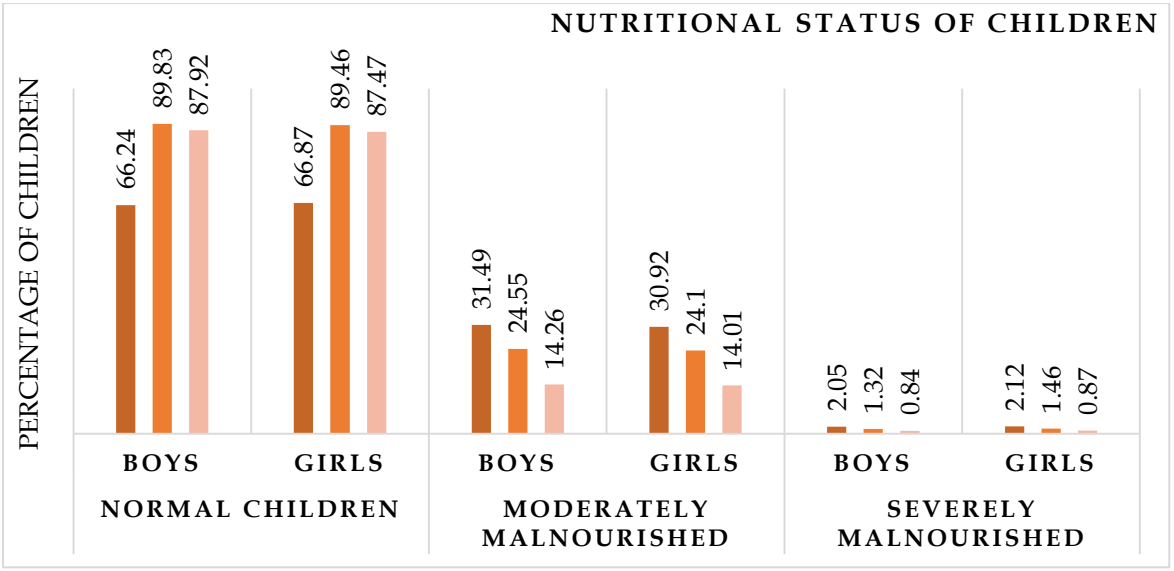
Table 3.13: Children Registered under ICDS and Getting Supplementary Nutrition [2012-13 to 2014-15]

Year	Number of Children Registered		Children Getting Supplementary Nutrition	
	Boys	Girls	Boys	Girls
2012-13	43271	41710	36619	34921
2013-14	46462	44547	44480	42664
2014-15	44833	43107	42818	41065
Source: Office of ICDS, District Panchayat, Surat				

Though more number of children are registered under ICDS in Surat city compared to rural areas, the number of children receiving supplementary nutrition in Surat city is less compared to that in rural areas.

Genderwise nutritional status of children receiving supplementary nutrition under ICDS is given in Figure 3.4.

Figure 3.4: Nutritional Status of Children Registered Under ICDS [2012-13 to 2014-15]



Source: Office of ICDS, District Panchayat, Surat

It can also be seen that number of severely undernourished children have declined significantly in 2014-15.

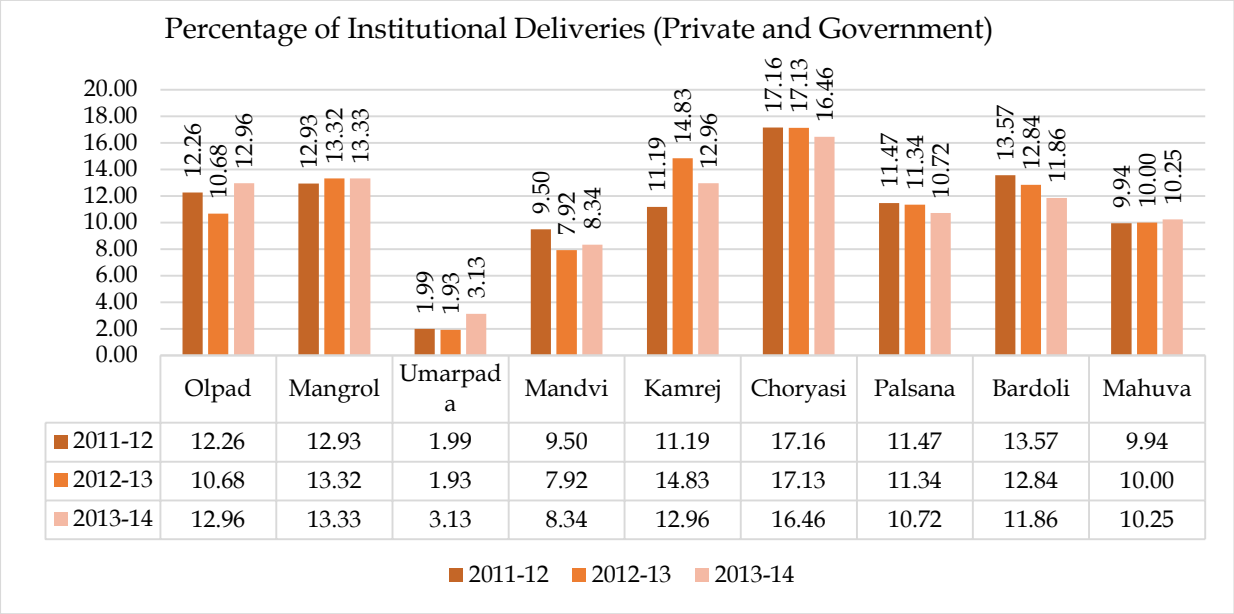
ICDS is one of the most important public programmes to reach the most neglected sections of the society. This scheme has been extended to adolescent girls, pregnant women and lactating mothers, over and above children.

A key issue in ICDS is the absence of designing appropriate interventions for children in the various age cohorts between 0–6 years, and the lack of attention to children below three years which is the time when nutrition interventions have the most effect. The second issue that hampers the working of ICDS is the lack of attention paid to providing the anganwadi worker (AWW) with the capacity and skill to deliver services. Anganwadi worker does not have incentive for high performance. Main concerns of the anganwadi worker include inadequate infrastructure; lack of training; low and irregular salaries; excessive work overload and lack of community support. Motivating the *anganwadi* worker through monetary or in kind incentives to deliver high quality services may yield better results.

3.3.8 Mortality

Infant mortality, maternal mortality, crude birth rate and crude death rate are some of the indicators to know the health of the society. Improvement in these indicators and better health care management will indicate improved health status of a population. Government has launched many schemes like Chiranjeevi, Bal Sakha, Janani Suraksha etc. to reduce the MMR and IMR. Institutional deliveries, as taluka's percentage to overall deliveries in Surat district over a period of past three years is given in Figure 3.5:

Figure 3.5: Talukawise Institutional Deliveries (Government and Private) [2011-12 to 2013-14]



Source: Commissionerate of Health & Medical Services, Medical Education and Research, Gujarat

One can see that number of institutional deliveries is increasing over a period of time. Percentage of institutional deliveries are maximum in Mangrol (13.33 per cent) and minimum in Umarpada (3.13 per cent).

The percentage of institutional deliveries as well as home deliveries for the year 2012-13 is given in Table 3.14:

Table 3.14: Percentage of Deliveries for the Year 2013-14

District / State	Percentage of Institutional Deliveries			Percentage of Home Deliveries
	Government	Private	Total	
Surat	***40.50***	***59.50***	***96.09***	***3.91***
Gujarat	***42.12***	***55.74***	***96.30***	***3.70***

Source: Health Statistics, 2013-14

It can be seen from Table 3.14 that 96.09 per cent deliveries are institutional whereas on 3.91 are home deliveries. Out of these 96.09 institutional deliveries, 40.40 per cent are performed in Government hospitals or health care units. It was observed during our field visits that people avail the facilities of 108 EMRI services for deliveries.

Chiranjeevi Scheme

Maternal Healthcare issues are mentioned in Millennium Development Goal no. 5. In order to reduce the MMR to less than 100 per 1 lac live births, reproductive rate to 2.1 and IMR to 30, chiranjeevi scheme is introduced.

The Chiranjeevi scheme is a Public-Private Partnership (PPP), in which the woman can go to private nursing homes that are empanelled in the scheme. The beneficiary has not to make any payment to the private nursing home. The government bears the cost. Moreover, the woman eligible for availing the benefit of Chiranjeevi scheme is entitled to receive Rs.200 as travelling allowance and Rs. 50 is given to the person accompanying the beneficiary woman. This model has been developed with an objective to provide timely treatment to women with complications in delivery, so that both IMR and MMR decrease. Talukawise deliveries performed under this scheme are given in Table 3.15:

Table 3.15: Deliveries under the Chiranjeevi Scheme for the Year 2014-15

Taluka	Units	APL (Tribal)	BPL			BPL Total	Total
			SC	ST	General		
Surat	Number	1105	23	851	35	909	2014
	Percentage	54.87	2.53	93.62	3.85	45.13	100
Bardoli	Number	655	23	646	35	704	1359
	Percentage	48.20	3.27	91.76	4.97	51.80	100
Mahuva	Number	450	0	205	0	205	655
	Percentage	68.70	0.00	100.00	0.00	31.30	100
Source: CDHO, District Panchayat, Surat							

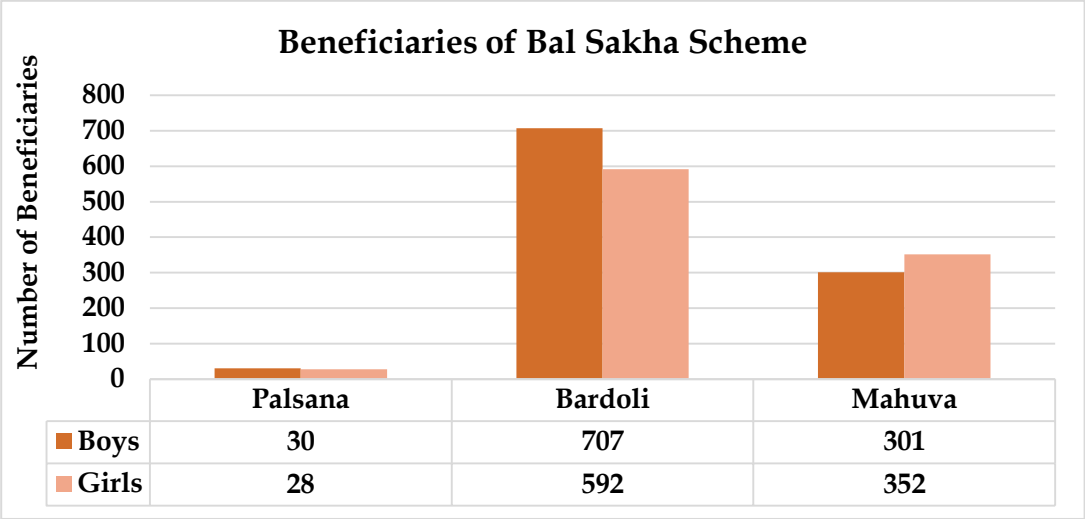
It can be seen from Table 3.15 that in Mahuva, the percentage of women belonging to APL tribal families is much higher than the percentage of women from BPL families. In Mahuva, 68.70 per cent belonged to APL tribal family and 31.30 per cent belonged to BPL families.

Chiranjeevi scheme has been conferred the "Asian Innovation Award – 2006" by the Wall Street Journal, Singapore. However, active participation of gynaecologist and obstetricians to widen the coverage and expand the benefits of this scheme. There are few private nursing homes in remote, rural areas. So question of their involvement in the scheme is ruled out. As a result, people from remote, rural areas have to come to the nearby town or urban centre to avail the facilities under the Chiranjeevi scheme. Thus, government should take more stringent steps to implement this scheme, to increase participation of private doctors.

Bal Sakha Scheme

It is an integral part of Chiranjeevi scheme, where the facilities are created for regular check-ups for newborns and infants by pediatricians. The objective of this scheme is to reduce the infant mortality rate. The beneficiaries of this scheme are all children born in BPL families and children born in government health institutions. The talukawise details of beneficiaries of Bal Sakha scheme are shown in Figure 3.6 and Figure 3.7

Figure 3.6: Genderwise Beneficiaries of Bal Sakha Scheme for the Year 2015

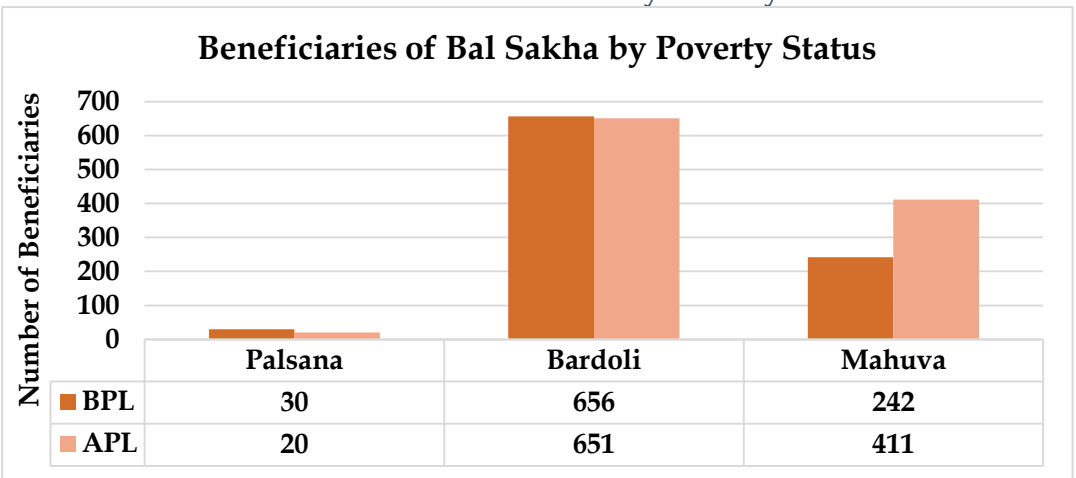


	Palsana	Bardoli	Mahuva
Boys	30	707	301
Girls	28	592	352

Source: CDHO, District Panchayat, Surat

It can be seen from Figure 3.6 and Figure 3.7 that Bardoli has maximum number of beneficiaries. There are no beneficiaries of this scheme in Mandvi, though the scheme is already implemented there. In Figure 3.12, it can be seen that in Choryasi there are no BPL beneficiaries where as in Bardoli there are no tribal APL beneficiaries. The number of APL beneficiaries in Palsana is also slightly higher than the number of BPL beneficiaries.

Figure 3.7: Beneficiaries of Bal Sakha Scheme by Poverty Status for the Year 2015



	Palsana	Bardoli	Mahuva
BPL	30	656	242
APL	20	651	411

Source: CDHO, District Panchayat, Surat

Janani Suraksha Scheme

Janani Suraksha Scheme was launched in 2005 by the Ministry of Health and Family Welfare through the National Rural Health Mission (NRHM). The objective of this scheme is to reduce infant mortality, maternal morbidity and mortality by promoting institutional deliveries. Under this scheme, all pregnant women of age 19 years and above, and those from BPL families were given cash incentives, who went for institutional deliveries. Though in its year of inception, women were eligible to receive cash incentive only for their first two deliveries and for a third delivery, if they have undergone sterilization. However, due to weak participation, the restrictions were removed and cash incentives are given to all women who delivered at health institutions. The government provides maternal health services through a network of CHCs, PHCs and sub-centres in rural areas. The centres would provide preventive and curative health care services to pregnant rural women. The connecting link between beneficiaries and health institutions are Anganwadi Workers (AWW), Female Health Workers (FHW) and Accredited Social Health Activists (ASHA). The talukawise details of women availing the benefits of Janani Surksha Scheme are given in Table 3.16:

Table 3.16 shows that maximum institutional deliveries are there in Choryasi followed by Mangrol. Minimum institutional deliveries are in Umarpada. This taluka is identified as backward by the Cowlagi committee.

Table 3.16: Percentage of Institutional Deliveries under the Janani Suraksha Scheme

Taluka	2007	2008	2009	2010	2011	2012	2013	2014	2015
	Percentage of Institutional Deliveries								
Surat	**24**	**27**	**29**	**31**	**37**	**36**	**11**	**35**	**35**
Olpad	20	22	24	23	28	27	30	31	23
Mangrol	27	29	31	31	39	37	32	35	48
Umarpada	19	22	23	24	24	21	25	30	69
Mandvi	27	30	30	31	33	32	33	40	47
Kamrej	25	27	28	28	66	35	30	31	41
Choryasi	34	37	39	38	60	41	38	40	10
Palsana	24	26	27	28	28	26	27	27	24
Bardoli	23	25	26	24	24	25	26	28	44
Mahuva	24	26	24	20	26	28	27	29	46
									Source: CDHO, District Panchayat, Surat

Government has already taken steps to improve the infrastructure in rural healthcare institutions. The performance of this scheme can be improved by recruiting

pediatricians and adequate para-medical staff to operate the instruments purchased for pathological tests, sonography and X-ray.

Reproductive Child Healthcare (RCH) Programme

Reproductive Child Healthcare program focuses on the issues pertaining to women's reproductive health – from puberty to menopause, i.e. their effective reproductive cycle. RCH program focuses on addressing overall health needs of women and children. One of the major focuses of RCH is to increase the proportion of institutional deliveries. The scheme also addresses the issues of controlling reproductive tract infection and adolescent health.

Table 3.17: Percentage of Institutional Deliveries under the RCH Scheme

Taluka	Percentage of Institutional Deliveries															
	Government								Private							
	2008	2009	2010	2011	2012	2013	2014	2015	2008	2009	2010	2011	2012	2013	2014	2015
Surat	**21**	**30**	**32**	**32**	**33**	**38**	**45**	**47**	**79**	**70**	**68**	**68**	**67**	**62**	**55**	**53**
Olpad	11	25	24	21	19	21	26	25	89	75	76	79	81	79	74	75
Mangrol	14	36	64	59	49	50	59	51	86	64	36	41	52	50	41	49
Umarpada	51	41	100	66	66	68	74	84	44	29	0	34	34	32	26	16
Mandvi	31	41	30	35	36	38	35	39	69	59	70	65	64	62	65	61
Kamrej	19	27	35	44	26	35	33	27	81	73	65	57	74	65	67	73
Choryasi	12	19	13	28	29	26	31	39	88	81	87	72	71	74	69	61
Palsana	23	21	26	42	42	49	56	62	77	79	74	58	58	51	44	38
Bardoli	24	20	25	32	39	48	63	70	76	80	75	68	61	52	37	30
Mahuva	15	23	41	30	19	31	52	54	85	77	59	70	81	69	48	46

Source: CDHO, District Panchayat, Surat

Percentage of institutional deliveries was maximum in Choryasi. However, more than 70 per cent of these deliveries were performed by private healthcare organizations. This could be because of vicinity to urban areas and easy accessibility to private healthcare organizations. However, in most of the talukas, the percentage of institutional deliveries performed by private healthcare organizations is higher than that of government healthcare organizations. In Umarpada and Mandvi, institutional deliveries have considerably increased because of conscious efforts put in by the government. Thus, it has brought perceptible decline in home deliveries. Effectiveness of these measures should get reflected in infant mortality rate.

3.4 SUMMARY

Surat is a huge district with vast health infrastructure both in urban and rural areas. Public health care and private care system is well developed and the quality of service is also good. Infrastructure and equipments needed for routine health care is also available. But regional variations in health care system and delivery do exist.

Both rural and urban areas bear the load of migrants .The rural health care system is enormous but it needs strengthening as the aim is to bring health gains with most efficient uses of resources. To reach the outcomes rural health care needs to upgrade their buildings, equipments and training of staff in line with the targets of National Rural Health Mission from sub centers up to District hospital and ensuring that all necessary workers are recruited and imparted the necessary training .However the measure of success will be health outcomes and not mere the achievement of required number of building or manpower.

The government has taken many initiatives to improve health care facilities in rural areas by recruiting new staff, monitoring existing human resources, planning and improving Inter-sectoral coordination at various levels .Use of information technology has improved communication and effective decision making. Online attendance by biometric system is introduced to monitor the presence and punctuality of grass root workers in the district .It is being implemented since 2006-07. NGOs and private clinics are involved to overcome shortfalls in providing health care to vulnerable groups.

Existing health management system does not specifically address age-linked health problems. The needs of older persons living in rural area require special attention. Geriatrics is still relatively less known health care of the older population. To meet the preventive, curative and restorative needs of older population and especially for older woman is a difficult task. The aim of health care for elderly population should focus on providing quality services closer to their residential area. The government may think of increasing the number and frequency of Mobile Medicare Services to reach remote villages in rural and tribal areas.

SWOT Analysis of Health in Surat

STRENGTHS

- Services of 108 EMRI is very effective. It can be reached through one phone call on the number 108. The ambulance reaches the patient within 30 minutes from the phone call.
- More than 80 per cent of households have tap water connections at home.
- Implementation of Swajaldhara, Vanbandhu Kalyan Scheme and Watershed development is effective for providing safe drinking water.
- Sixty eight per cent of households have a piped sewer connection.
- Total Sanitation Programme is successful in many villages.
- Cases of vector-borne diseases have reduced in past few years.
- Implementation of Revised National Tuberculosis Programme (RNTCP) helps in early detection of TB cases.
- A large proportion of children registered under the Integrated Child Development Scheme (ICDS) are receiving supplementary nutrition. Large proportion of the children registered under ICDS are normal.
- Chiranjeevi Scheme, Bal Sakha Scheme and Janani Suraksha scheme have helped in increasing institutional deliveries.

WEAKNESS

- Inspite of implementation of ICDS, there are still some scattered cases of severely malnourished children, though the number is declining.

OPPORTUNITIES

- Health infrastructure is good but can be increased to meet the standards of WHO.
- Augmented with well-developed infrastructure of Surat, there are opportunities to develop health centres with facilities for telemedicine.
- There are opportunities of putting kiosks to spread awareness about Vector-borne diseases, TB, Malnutrition etc. in remote areas of Surat district.

THREATS

- Prevalence of leptospirosis, sickle cell anaemia and leprosy.

4. POVERTY AND LIVELIHOOD

HIGHLIGHTS

- In the remote tribal areas, the livelihood opportunities are less and fragile. Economic activities that promote use of local resources should be encouraged.
- Out of total 24.05 lac main workers, 11.42 per cent agriculture labourers and 82.98 per cent are engaged in other activities for livelihood.
- Net sown area has remain more or less constant in past four years.
- The share of irrigated area of Surat district is 56.43 per cent.
- Among horticulture fruits, yield of Banana and Papaya is high and among vegetables, Onions and tomatoes have high yield.
- Increase in agricultural production would generate both – farm and non-farm employment.
- There are milk co-operatives in all talukas. Dairy co-operatives are helpful to nearby villages to generate livelihood opportunity.
- Forty seven per cent of total fishermen are from Olpad.
- Except Umarpada, fish production has declined in almost all talukas.
- There are large opportunities of Shrimp Farming in Olpad and Choryasi, where brackish waters are available near sea coast.
- Skill development programmes, marketing of rural production, promotion of self-employment activities will improve livelihood opportunities.
- Government has allocated 271.66 hectares land among 782 families under the Land Ceiling Act.
- Production of Brick Clay is maximum and highest royalty is generated from Black Trap.
- Thirty four thousand seven hundred and forty four MSME units are generating an employment of 201764 persons.
- Banking infrastructure in Mandvi and Umarpada is meagre.
- People are taking benefits of social security scheme and Garib Kalyan Melas. However, awareness about social security schemes requires to be increased.
- Lot of work is undertaken in rural areas under MNREGA and all those who want to work are provided employment under this scheme.
- Different categories of people are given houses under India Awas Yojana, Sardar Awas Yojana and Dr Ambedkar Awas Yojana.
- Houses and surrounding of landless labourers in rural areas is very poor.
- Government initiatives have increased support base and improved living conditions. There is a scope to improve the living conditions of poor. Better governance and accountability could enhance the benefits to the poor from public expenditure.

4.1 AGRICULTURE AND ALLIED ACTIVITIES

The economic activities can be broadly categorized into agriculture and allied activities, animal husbandry and fishing, industry, trade and commerce, banking sector and co-operatives. First we shall discuss the pattern and issues of livelihood in agriculture and allied activities.

The primary sector, especially agriculture provides livelihood to large number of people in rural area. The rural economy has a diversified base with agriculture and allied activities as the mainstay, accompanied by non-farm activities.

Table 4.1: Occupation-wise Proportion of Main Workers

Taluka / District	Cultivators		Agricultural Labourers		Household Industries		Other workers		Total Main Workers
	Number	Percentage of Total Main Workers	Number	Percentage of Total Main Workers	Number	Percentage of Total Main Workers	Number	Percentage of Total Main Workers	
Surat	**101747**	**4.23**	**274736**	**11.42**	**32933**	**1.37**	**1995872**	**82.98**	**2405288**
Olpad	13169	16.39	26631	33.14	618	0.77	39941	49.70	80359
Mangrol	11271	14.75	29307	38.34	645	0.84	35210	46.07	76433
Umarpada	7254	22.42	21769	67.28	346	1.07	2986	9.23	32355
Mandvi	25074	30.05	39631	47.50	1398	1.68	17330	20.77	83433
Kamrej	7888	10.48	32631	43.34	735	0.98	34034	45.21	75288
Surat City	7135	0.41	13261	0.77	26159	1.51	1683588	97.31	1730143
Choryasi	4744	4.35	10900	9.99	742	0.68	92672	84.97	109058
Palsana	4248	6.67	20964	32.90	789	1.24	37715	59.19	63716
Bardoli	7816	8.38	44667	47.87	960	1.03	39869	42.73	93312
Mahuva	13148	21.49	34975	57.16	541	0.88	12527	20.47	61191

Source: Census 2011

Table 4.2: Number and Area (Ha) of the Operational Holder According to Size Class and Social Groups [2010-11]

Size Class	Year	Institutional		SC		ST		Others		All Social Group		Avg. Land Holding Per Person (All Social Groups)	% Size Against Total Area	% Holding Of SCs	% Holding Of STs
		No.	Area	No.	Area	No.	Area	No.	Area	No.	Area				
Marginal (Below 1 Hect.)	2005-06	257	105	2312	996	13206	6165	38275	17971	54050	25237	9.32	9.32	16.06	8.06
	2010-11	3	2	4143	1667	15717	7361	87097	34279	106960	43310	13.81	13.81	22.28	10.86
Small (1.00 To 1.99 Hect.)	2005-06	114	163	1112	1574	10555	15296	26358	38183	38139	55216	20.38	20.38	25.38	19.99
	2010-11	1	2	1545	2207	11317	16468	37772	54152	50635	72829	23.23	23.23	29.5	24.31
Semi Medium (2.00 To 3.99 Hect.)	2005-06	91	264	684	1889	8473	23978	21973	61672	31221	87802	32.41	32.41	30.46	31.34
	2010-11	0	0	932	2495	8306	23011	27126	74775	36364	100281	31.99	31.99	33.35	33.96
Medium (4.00 To 9.99 Hect.)	2005-06	77	476	279	1548	4600	26443	10144	56867	15100	85334	31.5	31.5	24.96	34.56
	2010-11	0	0	180	951	3343	18552	10486	58137	14009	77640	24.76	24.76	12.71	27.38
Large (10.00 & Above Hect.)	2005-06	60	1809	14	196	358	4630	689	10647	1121	17282	6.38	6.38	3.16	6.05
	2010-11	0	0	3	161	175	2359	781	16932	959	19452	6.2	6.2	2.15	3.48
All Classes	2005-06	599	2817	4401	6203	37192	76512	97439	185340	139631	270871	100	100	100	100
	2010-11	4	4	6803	7481	38858	67751	163262	238276	208927	313511	100	100	100	100

Source: Agriculture Census 2010-11

Table 4.1 shows that in Surat 15.65 per cent population (Cultivators + Agricultural Labourers) directly derive livelihood from agriculture. Mandvi has maximum percentage of cultivators and Umparpada has maximum agriculture labourers. Mandvi has 30.05 per cent cultivators and Umarpada has 67.28 per cent agriculture labourers. Percentage of people giving their labour in household industries is very less. Their percentage ranges from 0.68 in Choryasi to 1.68 in Mandvi. Percentage of main workers belonging to categories other than these three is found to be maximum in Choryasi. Their percentage is 84.97.

Table 4.2 gives details of operational holding of land by size as well by caste. Highest percentage of land holding is in the semi-medium category that is 2 to 3.99 Ha of land. Percentage of land holding in semi-medium category for SC population is 33.35 and that for ST is 33.96.

The major crops cultivated in Surat district are Paddy, Wheat, Jowar, Bajri, Gram, Sugarcane, groundnut and cotton. These crops are categorized as food crops (Paddy, Wheat, Jowar, Bajri and Gram) and cash crops (sugarcane, groundnut and cotton). The total area for cultivating – both cash and food crops is 315687 hectares (DSA 2010-11). Among the cash crops, maximum area sown was under sugarcane (127480 hectares) and among the food crops, maximum area sown is under paddy (68260 hectares).

Cropping intensity is important in the wake of rising population and increased requirement for food. Table 4.3 gives details on cropping intensity in different talukas of Surat district. One can see that cropping intensity is more than 100 for all talukas and has remained constant since past 3 years. This means that more than one crop is sown every year. Highest cropping intensity is found in Olpad (121.32) and lowest is in Mangrol (104.98 per cent). It may be noted that Olpad is a coastal taluka and has hard water.

Four types of soil – Khar lands, black cotton soil, light soil and gorat soil are found. Khar soil is found on the land 1 to 2 miles wide from the sea coast of Arabian Sea. This soil is characterized by salt content and is found in Choryasi and Olpad talukas. Black cotton soil is known for its fertility and is found in Kamrej, Choryasi, Palsana, Mangrol and Mandvi. Gorat soil is found along the banks of four rivers flowing towards the Arabian Sea.

Access to water and irrigation is major determinant of agricultural production and the stability of yields. Expansion of irrigation facilities is the major livelihood interventions by the government. The major source of irrigation is the government canals. The other sources of irrigation are tanks and wells. The area under irrigation through government canals is 13122 hectares. Expansion of irrigation helps in increasing livelihood opportunities many ways. Agricultural yield and cropping intensity increases because of expansion of irrigation and that leads to increase in demand for labour. The details of net area under irrigation are given in Table 4.:

Table 4.3: Talukawise Cropping Intensity

Taluka / District	2011-12		2012-13		2013-14		2014-15	
	Net Area Sown (Ha)	Cropping Intensity (%)	Net Area Sown (Ha)	Cropping Intensity (%)	Net Area Sown (Ha)	Cropping Intensity (%)	Net Area Sown (Ha)	Cropping Intensity (%)
Surat District	286039	110.49	286084	110.49	286139	110.50	285916	110.50
Olpad	45168	121.32	45171	121.31	45182	121.32	54189	121.32
Mangrol	50928	104.97	50931	104.97	50942	104.98	50938	104.98
Umarpada	14884	110.83	14889	110.83	14896	110.84	14902	110.84
Mandvi	43625	111.54	43629	111.54	43632	111.55	43630	111.55
Kamrej	30529	111.44	30531	111.44	30537	111.45	30540	111.45
Choryasi and Surat City	24391	109.23	24394	109.22	24399	109.22	24205	109.22
Palsana	17062	105.23	17068	105.23	17072	105.23	17080	105.23
Bardoli	31151	107.4	31165	107.49	31168	107.49	31117	107.49
Mahuva	28301	108.02	28306	108.02	28311	108.03	28315	108.03

Source: Directorate of Agriculture, Gandhinagar

Table 4.4: Net Area under Irrigation (Ha) as on December 31, 2015

Talukas	Net Area Under Irrigation (Ha)	Share of Irrigated Area (Ha)	Share of Irrigated Area (Percentage)	Net Area Under Irrigation (Ha)	Share of Irrigated Area (Ha)	Share of Irrigated Area (Percentage)	Net Area Under Irrigation (Ha)	Share of Irrigated Area (Ha)	Share of Irrigated Area (Percentage)
	Surat Irrigation Circle			Panchayat Irrigation Circle			Total		
Surat District	37750	25512	67.58	13643	4437	32.52	162571	91739	56.43
Olpad	16808	7454	44.35	2860	1990	69.58	40610	27502	67.72
Mangrol				1271	162	12.75	18079	7616	42.13
Umarpada	7413	7389	99.68	1647	470	28.54	1647	470	28.54
Mandvi	22204	16113	72.57	3228	678	21.00	10641	8067	75.81
Kamrej	26859	5277	19.65	172	46	26.74	22376	16159	72.22
Choryasi	13195	4636	35.13	141	93	65.96	27000	5370	19.89
Palsana	17226	15071	87.49	119	35	29.41	13314	4671	35.08
Bardoli	7473	5850	78.28	1674	207	12.37	18900	15278	80.84
Mahuva	37750	25512	67.58	2531	756	29.87	10004	6606	66.03

Source: Executive Engineer, Surat Irrigation Circle and Executive Engineer, Panchayat Irrigation Circle, Surat

Moreover, increase in agricultural income result in demand for wage goods. Since production of wage goods are normally labour intensive, it has greater potentiality to create employment opportunities. Component of employment is higher in rural income in comparison to urban income, both through forward and backward linkages in consumption and production. If cropping pattern change in favour of long duration crops, it may reduce demand for labour.

Mechanization may cause reduction in demand for labour, which may adversely affect livelihood opportunities. The use of traditional instruments of agriculture has declined in the district and the use of tractors has increased significantly in recent years. These kinds of changes are associated with increase in non-farm activities. The rural non-farm economy is intimately linked to agriculture. It requires to be studied that what determines economic diversification. Is it primarily agriculture led or are the growth impulses urban based?

Rapidly expanding markets, institutional innovations in markets, innovations in finance and collective actions; and revolutions in biotechnology and information technology can offer good opportunities to promote development through agriculture.

Promotion of agriculture has bad implications for environmental outcomes. Agricultural production can be increased through either bringing more land under cultivation or increasing cropping intensity. Area under land cultivation is increased through deforestation or developing degraded land. Deforestation can have adverse impact on environment and livelihood of those people who are dependent on forest. Increase in cropping intensity requires greater use of water. Development of irrigation potential by constructing big dam can disturb ecology of the region and it can damage biodiversity. Moreover, well irrigation causes underground water depletion. Agriculture can also contribute to environment outcomes by causing agro-chemical pollution and over exploitation of soil.

Watershed development has provided better alternative to tackle the issues of water shortage and livelihood. Harvesting rainwater for purposes of irrigation, plantations including horticulture and floriculture, pasture development, fisheries etc. helps in creating sustainable sources of income for the village community as well as for drinking water. The details of horticulture crops are given in Table 4.5 and Table 4.6:

Table 4.5: Area, Production and Yield of Fruits in Surat District [2009-10 to 2014-15]

Name of Crop	2010-11			2011-12			2012-13			2013-14			2014-15		
	Area	**Prodn.**	**Yield**	**Area**	**Prodn.**	**Yield**	**Area**	**Prodn.**	**Yield**	**Area**	**Prodn.**	**Yield**	**Area**	**Prodn.**	**Yield**
Mango	7135	57793	8.10	7277	58216	8.00	8850	64400	7.30	8931	75914	8.50	8975	76288	8.50
Chiku	2040	21012	10.30	2044	18396	9.00	2106	22213	10.60	2118	22345	10.60	2122	22387	10.55
Lemon & Limes	62	620	10.00	62	589	9.50	60	450	7.50	66	521	7.90	75	592	7.89
Bananas	10815	670530	62.00	10889	696896	64.00	8150	589450	72.30	6968	473824	68.00	7497	509796	68.00
Guava	0	0	0	0	0	0	7	81	11.60	30	345	11.50	52	598	11.50
Pomegranate	0	0	0	0	0	0	18	181	10.10	32	304	9.50	35	333	9.50
Papayas	1340	77720	58.00	1348	79532	59.00	1680	90240	53.70	366	20862	57.00	615	35055	57.00
Coconut	146	1124	7.70	147	1147	7.80	228	1710	7.50	219	1839.6	8.40	224	2000	8.93
Others	150	675	4.50	152	684	4.50	25	500	20.00	30	225	7.50	75	563	7.50
Total	**21770**	**829760**	**38.11**	**22001**	**855746**	**38.90**	**21686**	**772599**	**35.63**	**18760**	**596180**	**188.9**	**19604**	**647078.7**	**184.46**

Area in Ha., Prod. In Metric Tonnes (MT), Yield in Metric Tonnes/Ha

Source: District Horticulture Office, Surat

Table 4.6: Area, Production and Yield of Vegetables in Surat District [2009-10 to 2014-15]

Name of Crop	2010-11			2011-12			2012-13			2013-14			2014-15		
	Area	Prodn.	Yield	Area	Prodn.	Yield	Area	Prodn.	Yield	Area	Prodn.	Yield	Area	Prodn.	Yield
Onion	40	1200	30.00	43	873	30.00	760	18080	23.79	0	0	0	825	19635	23.80
Brinjals	4870	97887	20.10	4928	101517	20.30	5325	70540	13.25	4856	92264	19.00	4915	93385	19.00
Cabbage	325	6500	20.00	345	3795	20.60	650	12350	19.00	745	13783	18.50	820	1517	18.50
Lady Finger	5260	55230	10.50	5390	84893	11.00	10050	118035	11.74	10010	125125	12.50	10840	135500	12.50
Tomato	1140	17100	15.00	1234	22027	15.75	1540	28200	18.31	1568	36064	23.00	1645	37835	23.00
Cauliflower	810	14175	17.50	875	16125	17.85	1545	25250	16.34	1220	24400	20.00	1340	26800	20.00
Cluster Bean (Guar)	524	3510	6.70	601	4207	7.00	1294	7986	6.20	1315	9863	7.50	1250	8120	6.50
Velavala	2906	28200	9.70	3015	30150	10.00	5215	95882	18.40	4150	56025	13.50	4265	58420	13.70
Others	2395	26584	11.10	2248	22255	9.90	3950	125820	31.90	3950	125820	31.9	3811	70504	18.5
Total	**19520**	**258636**	**13.25**	**19914**	**284486**	**14.29**	**30329**	**30329**	**502143**	**158.8**	**27675**	**428028**	**132.5**	**37225**	**557307**

Area in Ha., Prod. In Metric Tonnes (MT), Yield in Metric Tonnes/Ha

Source: District Horticulture Office, Surat

Table 4.5 shows that Bananas and Papayas are having a very high yield. The yield of Bananas is 68 MT/Ha and that of Papaya is 57 MT/Ha. In case of vegetables, Onions have the highest yield. This is followed by Cabbage and Brinjals. The yield of Onions and Tomato are 23.80 and 23 MT/ Ha respectively.

The government has initiated watershed development project, which aims at increasing soil and moisture conservation and productivity of the degraded land, and thereby increase the income of people. The programs seek to promote the overall development of the project area while maintaining a special focus on the weaker sections. With the implementation of the watershed programs, several outcomes are expected with increase in healthy living with better income, education and resources.

Gujarat government has introduced innovations in state action to develop agriculture sector. It has issued Soil Health Card scheme for every land to farmers. It has helped farmer to verify the soil specimen through scientists who examine the mineral composition in the soil. Based on the report, they can provide the fertilizer with appropriate mineral percentage. Detailed study is required to know how this has helped in soil enrichment and in preventing soil erosion.

The Krushi Mahotsav campaign infuses new spirit of change and it reaches to farmers with experts and they interact with the farmer and provide necessary information regarding soil health, organic farming, technology and inputs, irrigation and the use of fertilizer.

4.2 ANIMAL HUSBANDRY, POULTRY

A large proportion of the Indian population still depend on agriculture. But the next most important activity for earning livelihood is animal husbandry, poultry and fishing. Many households, irrespective of their landholding, rear animals such as cows, buffaloes, sheep, goat and poultry birds. A brief overview of changes in the population of animals and poultry birds is provided in this section. In addition, information on milk co-operatives and milk collection is also provided.

There are 225572 cows, 248908 buffaloes and 105879 sheep and goats in Surat district as per 18th livestock census undertaken in 2007. Other animals like horses, donkeys, camels, pigs, dogs, rabbits and ponies add up to a total of 556680. The total number of other animals like horses, donkeys, camels, pigs etc. is 27964. Moreover, there are 832282 poultry birds in Surat district. The details of livestock in Surat district are given in Table 4.7:

Table 4.7: Talukawise Animals and Poultry Birds in Surat District

Taluka	Total Animals				Total Poultry Birds			
	1997	2002	2007	2012	1997	2002	2007	2012
Olpad	55575	65864	59967	55474	21562	29823	37981	23124
Mangrol	69753	69858	64987	61178	30359	33602	36797	46591
Umarpada	40482	49540	53662	58252	16859	19401	41436	70061
Mandvi	101387	116951	132487	123898	37407	66125	96905	95325
Kamrej	41058	53330	47740	44867	19255	39749	72934	17328
Choryasi	83418	95557	29592	20269	189725	59883	69872	10753
Palsana	25753	30043	31557	18877	29406	34942	96313	15042
Bardoli	50302	54952	50467	40762	28200	210503	223609	39726
Mahuva	54318	60700	57150	62245	42843	36370	31358	44941
Total	522046	596796	527609	488002	415616	530398	707205	362891

Source: District Statistical Abstracts and Animal Husbandry Branch, District Panchayat Surat.

In Surat district, there is large number of milch animals and milk collection is one of the major activities, after agriculture, in villages of Surat district. Milk co-operative societies are formed at the village level where milk is collected and supplied to the dairies located in towns / city area. Individually, it becomes difficult as well as financially unviable to supply milk to the dairies. The milk co-operative societies provide the logistic and other support to the members of the societies. Over and above this, the milk co-operatives also procure fodder for the animals of the co-operative society members and sell it to them at reasonable rates. Thus, milk co-operative societies play an important role in mobilizing the resources for animal husbandry activities and providing a source of livelihood to the members of the societies.

Table 4.8: Talukawise Milk Co-operatives and Milk Collection (in Litres) from 2007-08 to 2013-14

Taluka	Milk Co-operatives						Milk Collection (in litres)					
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
SURAT	519	519	523	528	529	559	100.00	100.00	100.00	100.00	100.00	100.00
Olpad	31	31	34	35	36	41	17.91	17.25	16.76	18.65	19.71	12.40
Mangrol	90	90	90	90	90	98	12.02	11.60	10.58	9.77	9.32	11.51
Umarpada	75	75	75	75	75	75	4.88	5.04	5.12	4.86	4.71	4.76
Mandvi	137	137	137	138	138	148	20.60	19.99	18.48	17.21	16.50	18.93
Kamrej	22	22	22	22	22	27	4.47	4.17	3.61	3.31	3.15	0.33
Choryasi	16	16	17	18	18	18	0.58	0.29	0.21	0.72	1.00	0.82
Palsana	5	5	5	6	6	8	2.39	2.21	2.25	2.38	2.45	2.40
Bardoli	73	73	73	73	73	73	6.56	6.72	6.40	5.88	5.58	5.70
Mahuva	70	70	70	71	71	71	30.59	32.74	36.59	37.22	37.32	40.14

Source: Animal Husbandry Branch, District Panchayat, Surat

Moreover, the disparities in number of milk co-operatives and total milk collection could result because of differences in number of milch animals, its breed, health as well as medical and other treatment given for producing milk. The details of veterinary services provided to the animal owners of Surat district is given in Table 4.9:

Table 4.9: Details of Veterinary Services Provided to Animal Owners in Surat District as on June 30, 2015

Sr. No.	Service Provided	No. of Animals Benefitted/ Units	No. of Owners Benefitted
1	Total Animals Treated	80461	NA
2	Artificial Insemination	6270	NA
3	Vaccinations	794680	NA
4	Deworming Medicines Supplied	36484	8451
5	Life Saving Drugs Supplied	750	521
6	Fodder Seeds Supplied	780	780
7	Animal Treatment Camps Organized	186	NA
8	Total Castrations	7515	NA
9	No. of Laboratory Samples Checked	3624	NA
10	Total Calf Rallies Organized	3	NA
11	Ambulance Services	5	NA
12	Mobile Services Run by District Panchayat	2	NA
13	Mobile Services Run by Milk Co-operative District Union	15	NA
14	Feed Producing Units in the District	3	NA
15	Cattle Shed Subsidy	NA	27
16	Goat Unit Subsidy	NA	26
17	Chaff Cutter Subsidy	NA	15
18	Animal Husbandry Training to Farmers	NA	10644

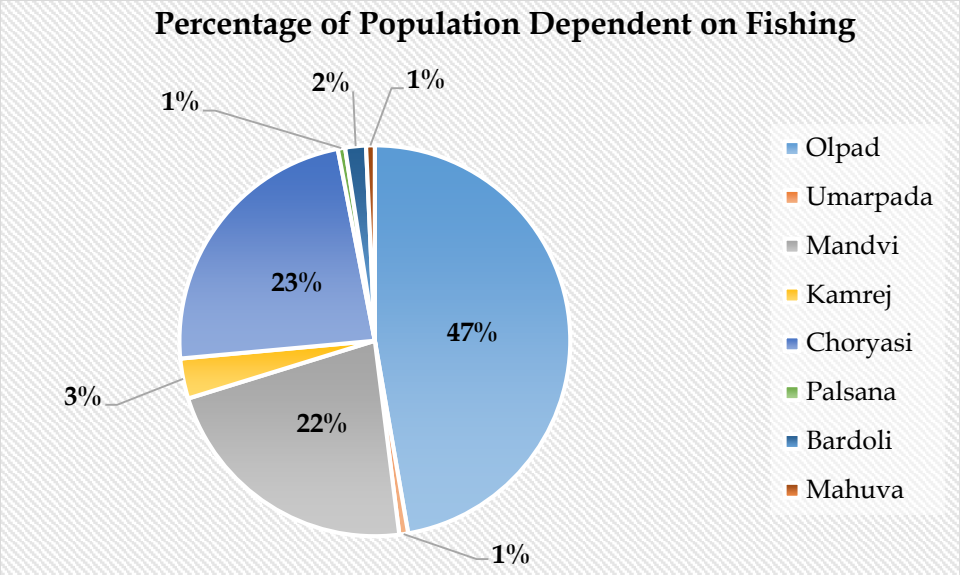
Source: Animal Husbandry Branch, District Panchayat, Surat

In order to increase the number of both milch and male animals, the government has set up animal breeding farms. The Kankrej Cow Breeding Centre is set up by the State Government in Mandvi and Central Surati Breeding Farm set up by the Central Government. In these farms breeding of different cows and other animals is done and the bred animals are supplied to the farmers.

4.3 FISHING

Surat has a long coastline. Total coastline of Olpad and Choryasi is 80 km. Large number of villages in these two talukas are coastal villages. The population of these villages are largely dependent on fishing activities for their livelihood. Surat district also has large number of rivers, out of which Tapi and Ambika are perennial rivers. There are opportunities for fresh water fishing in these rivers as well. **Error! Reference source not found.** gives details about percentage of population dependent on fishing activities for their livelihood:

Figure 4.1: Percentage of Population Dependent on Fishing for Livelihood for 2014-15



Source: Fisheries Department, District Panchayat, Surat and Census 2011

Figure 4.1 shows that 47 per cent population of Olpad is dependent on fishing, which is maximum among all talukas of Surat district. Olpad is a coastal taluka and has a unique characteristic of a mix of fresh and saline water. This type of environment is suitable for shrimp production. Over past few years, shrimp farming has flourished in Olpad taluka.

In all other talukas, very negligible proportion of population is dependent on fishing. There are several reasons for lower percentage of people involved in fishing activities in these talukas. One of the reasons is vicinity to urban area and therefore, more employment opportunities are available in industries, factories and other sectors in these areas. These alternative employment opportunities are more financially rewarding and therefore, people might prefer that to fishing activities. One major factor that has hampered the marine fishing activities in these talukas, especially Choryasi, is the development of industrial belt along the Hazira coastline. As more and more industries were set up in these areas, the entry to sea water became difficult

for fishermen. Moreover, they have to go into deeper waters, as fishes are not found near the shore because of industrial encroachment in sea waters.

The case study of shrimp farming under the Sagarkhedu Sarvangi Vikas Yojana is given in Box 4.1:

Box 4.1: Case Study: Shrimp Farming under Sagar Khedu Sarvangi Vikas Yojana[1]

The pioneering work in shrimp farming was done in 1994 when 88 fishermen families were allocated 2 hectare land by the government. In 2007, under the sagar khedu scheme, 15000 hectare land has been allocated for shrimp farming. Over and above this, government has undertaken measures to provide training for scientific shrimp farming. Training for scientific method of farming and preserving is provided in collaboration with West Coast Water-Based Frozen Food and Marine Products Exports Development Agency. Sagar Khedu scheme has been helpful to fishermen families in getting them boats, fish nets and insulated boxes for preserving the shrimps. The fishermen families are also offered loans and subsidies, financial assistance to purchase necessary instruments in order to effectively utilize the land allocated to them for this activity.

The constitution of water in Olpad and Choryasi is very suitable for shrimp farming. Shrimps require a mix of sea water and fresh water to develop and multiply. In Olpad and Choryasi there are some areas where river Tapi meets the sea. Moreover, in some areas, a mix of sea water, river water and canal water is found. This is ideal for shrimp farming.

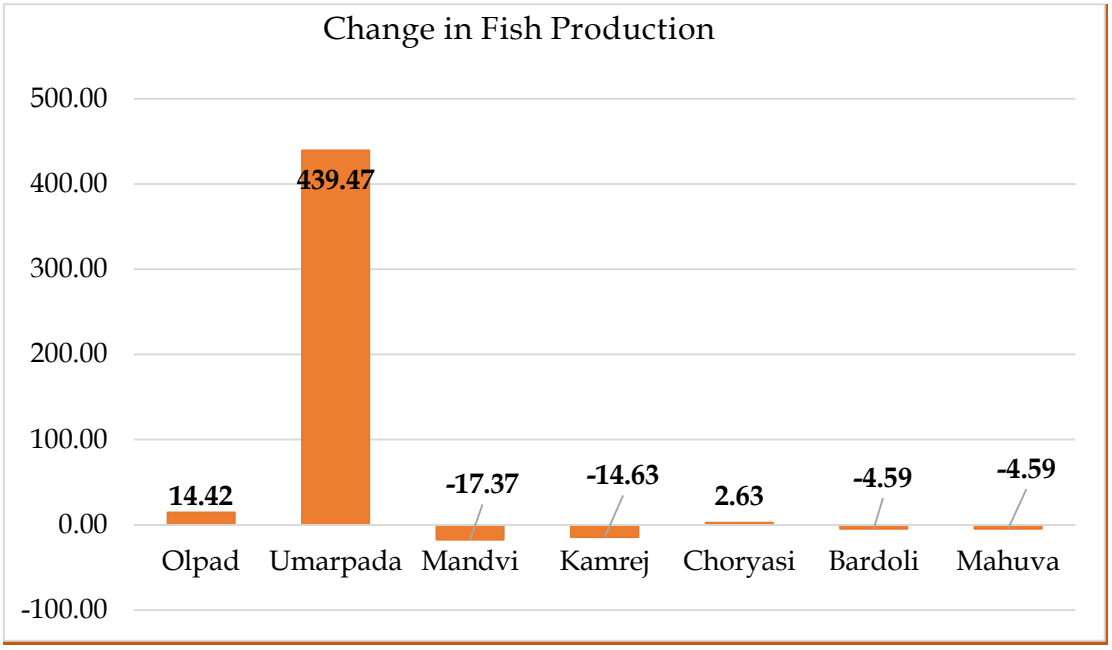
With the encouraging efforts of government, shrimp farming is presently done in 20 villages of Olpad and Choryasi taluka. These villages are Pinjrat, Lavachha, Admor, Kundiyana, Kapasi, Saras, Kuvad, Aurma, Hathisa, Delasa, Mor, Bhagwa, Karanj, Pardi, Zankhari, Koba, Mandroi and Dumas. This activity has provided employment to around 15000 persons. The yearly foreign investment in shrimp farming is Rs. 200 crores. The price of shrimps range from Rs.100 to Rs. 200 per kilogram. The average annual turnover ranges between Rs.60 crores to Rs.65 crores per year and the net income is Rs. 35 crores. Shrimps produced in Olpad and Choryasi talukas of Surat are in demand in Mumbai, Kolkata and Chennai in India. Shrimps are also exported to other parts of world like Europe, Africa and Gulf countries. These shrimps are well-known in the world as "Cambay Tigers".

[1] The figures for price, turnover, income, beneficiaries, land allocated etc. is obtained from the District Planning Office, Surat.

However, water pollution is a major threat to life of marine fishes near the shoreline of Surat. In the recent past, sudden and massive death of fishes on the Surat shores has become a major concern to the livelihood of those engaged in production of marine fishes.

Figure 4.2 shows that fish production has decreased in most of the talukas. Only in Olpad and Umarpada, fish production has increased in these five years. Maximum increase in fish production is in Umarpada. In absence of other sources of livelihood, people might have resorted to fishing activities, more for their consumption rather than generating income.

Figure 4.2: Percentage Increase in Fish Production 2009-2014



Source: Fisheries Department, District Panchayat, Surat

Sagar Khedu Sarvangi Vikas Yojana

Government has taken initiative to help the fishermen to develop community / individual pond by contributing 50 per cent of the expenses. Government has launched a special scheme – Sagar Khedu Sarvangi Vikas Scheme – for welfare of people living in coastal areas, engaged in fishing activities and salt pan workers.

Sagar Khedu Sarvangi Vikas Yojana was launched in 2007-08, with an objective to foster overall development of coastal villages. This scheme is intended to generate self-employment, educational facilities, healthcare infrastructure, safe drinking water, water storage, housing, handling the problems of salinity in soil, electrification etc. More specifically, this scheme is targeted towards upliftment of salt pan workers and fishermen. Some of the major achievements under this scheme are:

- Providing residence to fishermen families under Indira Awas Scheme.
- Development of road connecting two villages under NREGA.
- Formation of self-help groups, compulsory saving, providing bank loans and purchase of boats, fishnets and insulated boxes through the Integrated Rural Development Scheme.
- Providing nutrition under ICDS and awareness for health.
- Holding of employment fairs.
- Supply of fertilizers and seeds at subsidized rate and developing facilities for irrigation.
- Setting up facilities for safe drinking water.
- Developing infrastructure facilities in primary schools.
- Provision of loan and giving training for setting up small business under Jyotirgram Vikas Yojana and Vajpayee Bankable Scheme.

4.4 FORESTS

Livelihood of people belonging to tribal region depend largely on forest, irrespective of their land holding and agricultural activities. Forests provide wood for fuel and for building construction. Non-Timber Produce (NTFP) like honey, gums, spices, herbs, seeds, oils and animal products. It is therefore, important to examine the changes in forest cover.

Surat has moist deciduous forests. These forests are not evergreen. They shed the leaves during March – April. These forests are dominated by teak trees and thus, serve as a supplier of teak wood for construction and furniture. These forests form the main source of commercial timber in the state. Teak wood is resistant to changes in weather and rain. Therefore, it has more acceptability in furniture making and making of boats.

Depletion of forests not only causes imbalances in ecological cycle but also has a bearing on the livelihood of people dependent on forest produce. Table 4.10 gives information on forest cover in different talukas of Surat district:

Table 4.10: Talukawise Forest Cover of Surat District as on March 31, 2015

Taluka	Protect Area (km)	
	Road	Canal
Surat District	1393.21	409.83
Olpad	49.6	0
Mangroal	371.83	52.4
Umarpada	0	0
Mandvi	355.03	52.5
Kamrej	98.5	49.5
Choryasi	204.8	79.5
Palsana	81.35	36.3
Bardoli	132.3	97.84
Mahuva	99.8	41.96
Source: Office of the Dy Conservator of Forest, Social Forestry Division, Surat		

Large number of poor people stays in rural area. Lack of access to land and lack of employment opportunities are two major determinants of rural poverty. The district has strictly implemented the Forest Rights Act, 2006. The Act gives individual property rights to the tribals and other forest dwellers in the forest land under their occupation for cultivation and dwellings and community rights on forest resources, including right to manage them, and total ownership rights on Non-Timber Forest Produce (NTFPs). In Umarpada and Mandvi taluka, property rights are given to 3390 families and 6500 acres of land is distributed according to the provisions of the Forest Rights Act, 2006.

Government also distributed land acquired under the Land Ceiling Act of Gujarat. The government distributed a total of 271.66 acres of land to 782 families in different talukas of Surat. The details are given in Table 4.11

Table 4.11: Land Allocated Under the Land Ceiling Act of Gujarat as on March 31, 2015

Taluka	Beneficiaries	Land Allotted (Ha)
Surat District	782	271.66
Olpad	115	99.01
Mangrol	188	39.54
Umarpada	5	1.54
Mandvi	43	9.11
Kamrej	80	25.9
Choryasi	0	0
Palsana	27	53.24
Bardoli	260	33.23
Mahuva	64	10.09
Source: Dy Collector of Respective Division, Surat		

4.5 MINING AND QUARRYING

Mining and quarrying activities form an important part of employment generation. Minerals like limestone, sand, black trap, ordinary clay, brick clay and lignite are produced in Surat. According to the district statistical abstract, limestone and lignite are the major minerals produced in Surat where as others are categorized as minor minerals. The details of production and royalty received from these minerals are given in Table 4.12:

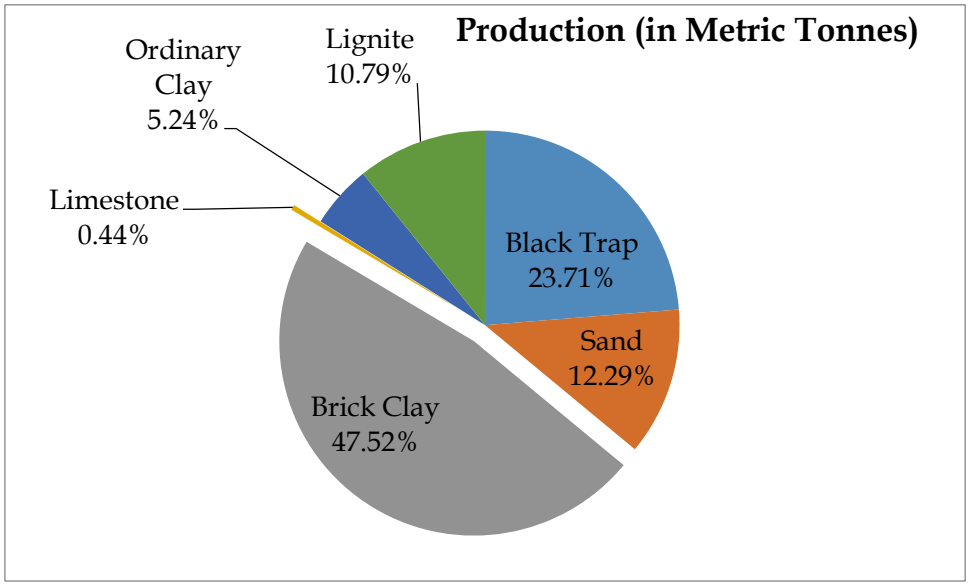
Table 4.12: Mineral Production and its Royalty Income from Surat District [2010-11 to 2012-13]

Minerals	Production (in Metric Tonnes)			Royalty Income (Rs)		
	2010-11	2011-12	2012-13	2010-11	2011-12	2012-13
Black Trap	3156725	5884510	11427837	80294514	107004780	177107924
Sand	9794385	2536362	5924596	67294904	158782952	137491814
Brick Clay	34600000	32100000	22900000	1245600	3469600	2470000
Limestone	167940	218463	211515	7316815	18924251	13451418
Ordinary Clay	1483000	2864200	2527000	20527200	34370385	30329141
Lignite	3466713	5253348	5200923	296378473	332437083	320678184

Source: District Statistical Abstract (2010-11) and Geologist, Geology and Mining, Surat

Figure 4.3 and Figure 4.4 show the contribution of each of the minerals in terms of their production as well as the royalty income generated thereof:

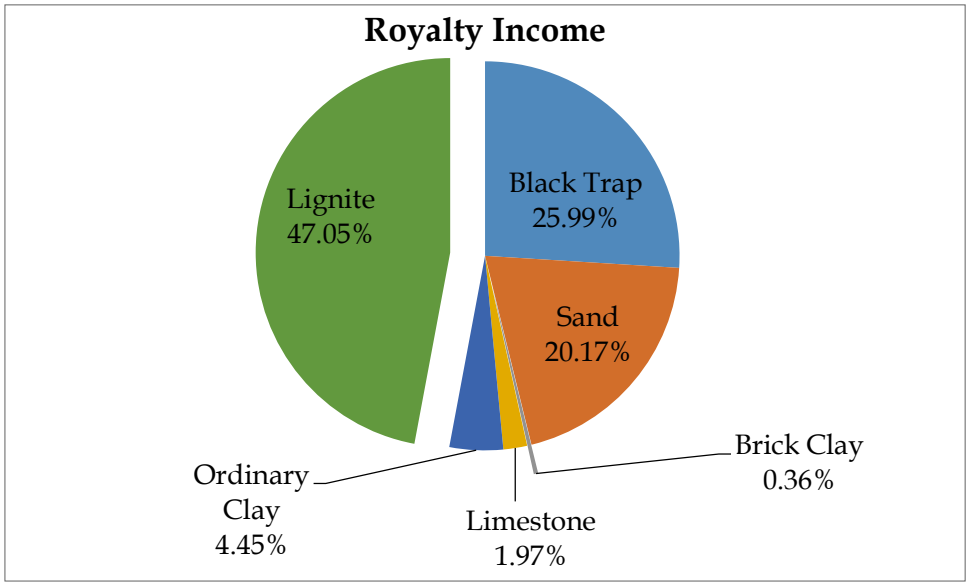
Figure 4.3: Proportion of Different Minerals in Total Mineral Production [2012-13]



Source: Geologist, Geology and Mining, Surat

It can be seen from Figure 4.3 that brick clay constitutes 47.52 per cent of total mineral production but it constitutes only 0.36 per cent of royalty income. Whereas, lignite constitutes only 10.79 per cent of total mineral production, its contribution to royalty income is as high as 47.05 per cent:

Figure 4.4: Proportion of Different Minerals in Royalty Income Generation [2012-13]



Source: Geologist, Geology and Mining, Surat

4.6 INDUSTRY, TRADE AND COMMERCE

In the early years of formulation of Five Year Plans (FYPs) the focus was more on developing the industrial sector. It was believed that industrialization would induce self-reliance, generate more employment opportunities and would lead to infrastructure development. Right from the second five-year plan of India, high priority was accorded to heavy and metal industries. Setting up of these industries made the country self-reliant, unemployment was reduced and infrastructure development was also expedited. However, there were already many khadi, handloom and cottage industries in the country. The major commodities manufactured and traded in Surat district are silk cloth, polyester yarn and fabric, diamonds, zari, fertilizers, natural gas, plastic and PVC products. Major items imported are fertilizers, sulphur, iron scrap and rock phosphate. Major items exported are salt, bentonite, onion and oil cake. The exports from Magdalla port of Surat district is 18.16 lac tones and imports are 115.06 tonnes of cargo. The section explains the importance of present status of industries – Large Scale Industries (LSIs) and SSIs for employment generation.

The state of Gujarat was formed in 1960. Since then, industrial development has remained the prime focus. As per the Annual survey of Industries (2004), Gujarat has remained at top so far as industrial development is concerned, especially in the post-liberalization period. Gujarat has made a considerable progress towards development of Small Scale Industries (SSI).

4.6.1 Small Scale Industries

The New Industrial Policy 1991 has made provisions for development and sustenance of Small Scale Industries in India. Some provisions for Small scale Industries (SSIs), excise exemption, soft loans, reserved list of products manufactured by SSI for purchase by Large and Medium scale industries as well as scarce indigenous resources for disbursement to SSI on priority basis, mass marketing of products by co-operatives under a common brand name etc. were made in the Industrial policy. SSIs are the major backbone of Surat economy. SSIs in the area of GIDC Sachin, Pandesara and Kadodara are major hubs of employment for unskilled labour.

Micro, Small and Medium Enterprise Development (MSMED) Act was enacted by the Government of India under the Ministry of Micro, Small and Medium Enterprises Development Ministry in October 2006. The details of units registered under the MSMED Act are presented in Table 4.13:

Table 4.13: Talukawise Cumulative MSMEs, Investment, and Employment as on March 31, 2015

Taluka	No. of Units	Investment (Rs Lac)	Employment
Surat District	**34744**	**388187.18**	**201764**
Olpad	381	27226.76	3456
Mangrol	227	17187.15	2069
Umarpada	1	197.29	17
Mandvi	39	6378.85	412
Kamrej	372	18451.40	3158
Choryasi	288	12961.42	3292
Surat City	33203	282814.20	186665
Palsana	206	22130.78	2531
Bardoli	22	467.20	129
Mahuva	5	372.14	35

Source: District Industrial Centre, Surat

Table 4.13 shows that there is unequal expansion in terms of number of units, investment, production and employment during 2006 to 2014. Kamrej taluka has maximum and Umarpada has minimum number of MSME units. There are 381 MSME units in Olpad where as there is only 1 units in Umarpada. The investment and employment in MSMEs of Olpad is Rs.27226.76 lac and 3456 respectively and in Umarpada, investment in MSMEs is 197.29 lac and employment generation is 17.

4.6.2 Banking

Banking sector plays important role in economic growth of a region. It helps in mobilizing savings and providing credit. Prior to nationalization of banks, there was urban bias in nationalization of banking sector. Because of this, rural population is exploited by private money lenders. The expansion of banking sector can help in reducing exploitation by money lenders. In absence of clear property titles and availability of collateral, banks will not lend money. This will continue dependence on private money lenders. Number of banks, amount of savings, growth in loan does provide some broad idea of overall economic growth in the region. Talukawise details of commercial and co-operative banks are given in Table 4.14

Table 4.14: Talukawise Nationalized and Private Bank Branches as on June 30, 2015

Taluka	Nationalized Bank Branches	Private Bank Branches
Olpad	20	4
Mangrol	18	6
Umarpada	2	1
Mandvi	9	6
Kamrej	21	8
Choryasi	36	4
Palsana	18	6
Bardoli	40	10
Mahuva	10	8
Surat District	174	53
Surat City	340	25

Source: Lead Bank Cell, Surat

It can be seen from Table 4.14 that the number of banks in Surat city is more than the total number of bank branches in all talukas of Surat district. Bardoli has maximum number of nationalized and private banks' branches. The number of nationalized and private bank branches in Bardoli is 40. Umarpada has minimum number of bank branches (2 nationalized and 1 private).

4.7 CO-OPERATIVE SOCIETIES

There are 2818 cooperative societies in the district, out of which, 458 are primary milk co-operatives. Sumul and Choryasi dairies have developed quite well during last few years. Surat district cooperative Bank and Surat Peoples cooperative Bank provide necessary finance for the development of the co-operative sector in the district.

4.8 SUPPORT SYSTEM

Poverty begets poverty. Public support system is essential to break the vicious circle poverty. The task of eradication of poverty cannot be left entire to the market. Economic growth does not trickle down. Hence, public support system is required to tackle the issue poverty.

4.8.1 Social Security Schemes

Ageing is inevitable and thus of concern to each of us. Old age is a time of multiple illness and general disability. Besides increased level of illness, there are many other things like deafness, loss of mobility, arthritis and a general debility severely restricts oneself to care for oneself. Women also spent majority of their time in domestic labour, which is unremunerative and unrecognized. Thus, women become marginalized in

their old age in comparison to their male counterparts. Therefore, it becomes necessary to specially focus on issues of old women in formulation of social security measures. Article 41 of Indian Constitution deals with the state's role in providing social security to the aged.

Social security measures by the state are intended to provide some financial support to persons affected by events like old age, widowhood, physical disability, sickness etc. Practically, all the states in India have introduced schemes that support the destitute, old and widows since the early 1960s. Direct transfer of income to poorest among the poor is required to provide them livelihood.

Scheme for Destitute Old and Disabled

This scheme was implemented in 1995 with an objective to provide financial support to old and disabled people in the age group 60 years and above, and he / she should not have a son of 21 years or above age. However, if the son is physically or mentally disabled or suffering from serious illness like tuberculosis, cancer etc. the later condition is relaxed. Under this scheme, the beneficiaries receive Rs.200/- per month till the age of 65 years and then they receive Rs. 400/- per month.

Indira Gandhi Old Age Pension Scheme (IGNOAPS)

The Government of India instituted Old age pension to destitute older persons several years ago. The pension amount was raised from Rs 75 per month to Rs 200 couple of years ago. Under the latest scheme called India Gandhi National Old Age Pension Scheme (IGNOPS) any senior citizens above 65 in BPL category is eligible for a pension of Rs 200 pm from GOI contribution. The centre has recommended that each state may supplement this with a minimum of Rs 200 per month from its own resources.

Recently the scheme has been revised and is implemented by the Department of Social justice and Empowerment of Government of Gujarat via a resolution on August 10, 2009. The states are required to furnish a certificate to the central government that all eligible persons have been covered under IGNOAPS. The eligibility criteria to qualify as beneficiary of this scheme are the applicant should belong to the age group 65 years and above, and should be a BPL card holder. The beneficiaries receive Rs. 400/- per month. In this scheme, Rs. 200/- is equally contributed by the state and central government.

National Family Welfare Scheme (Renamed as Sankat Mochan Scheme)

This scheme was implemented by the Social Welfare Department vide a resolution on September 9, 1995. This scheme was renamed as Sankat Mochan Scheme vide resolution dated January 6, 2001. As the name "Sankat Mochan" suggests, the objective of this scheme is to help rehabilitate the survivors of the deceased sole

breadwinner of the family. In order to qualify as beneficiary under this scheme, the applicant should be living below poverty line (BPL), the main breadwinner of the family has died a natural or accidental death and, the application is filed within two years from the death of the main breadwinner. The deceased main breadwinner of the family could be male or female with age 18 years or above and below 65 years. The beneficiary is entitled to get a one-time payment of Rs. 10000/- for the purpose of rehabilitation.

Destitute Widow Rehabilitation

The major objective of this scheme is to give financial support to the destitute widows living BPL and her dependent children. The applicant becomes eligible for benefit if she is a widow, living below poverty line (BPL) in age group 18 to 60 years, and the application is filed within 2 years from the death of her husband. Her individual income is less than Rs. 2400 /- per annum and the family income is less than Rs. 4500 /- per annum, and she does not have a son of 21 years or above age. However, similar to other schemes, this condition is exempted if he is physically disabled or mentally unstable.

The amount of benefit is Rs. 500/- per month plus Rs. 80/ - per month per child, up to two children, up to a maximum of four years. Under this scheme, the widow is provided training for self-employment and is given a one-time financial help of Rs. 3000/- under the Manav Garima Scheme or is provided a loan of Rs. 3000/- as margin money under the for the purpose of rehabilitation. If the widow continues to receive the benefits under this scheme up to the age of 60 years, under other provisions of this scheme, she automatically becomes the beneficiary of the Destitute Old and Disabled Scheme. Moreover, the widows receiving benefits under this scheme get additional benefit of personal accident policy, by paying a premium of just Rs. 15 /- per annum.

The details of beneficiaries of these schemes are given in Table 4.15:

Table 4.15: Beneficiaries of Social Security Schemes as on March 31, 2015

Division	Destitute Old and Disabled	IGNOAPS	Destitute Widow Rehabilitation
Olpad	201	523	1292
Mangrol	538	1484	310
Umarpada	76	2356	123
Mandvi	245	1914	412
Kamrej	420	893	200
Choryasi	23	8	60
Palsana	384	614	174
Bardoli	616	1665	158
Mahuva	250	1322	811
Source: Taluka Development Officer, Respective Divisions **** Destitute Widow Rehabilitation scheme is now a part of Sankat Mochan Scheme***			

If steps are undertaken to create awareness about the rights and the scheme to these people, the implementation could be more effective. Involvement of NGO, *gram mitra* and local self-help groups can help improving the effectiveness of these schemes. Government can also consider increasing the frequency of payment and the amount being disbursed under these schemes.

4.8.2 Garib Kalyan Mela

Garib Kalyan Mela campaign was launched on December 23, 2009 with an objective of empowerment of poor by educating them about various government schemes and the eligibility criteria for availing benefits through these schemes. Sanctioning and disbursement of loans for starting a small business or distributing a tool-kit for the same is also done through Garib Kalyan Melas. Thus, Garib Kalyan Melas help in creating awareness as well as providing livelihood opportunities to the poor people. This scheme eliminates the role of any middlemen / intermediary and thus, the benefit reaches the beneficiary without any procedural delays.

Garib Kalyan Melas were organized in all talukas of Surat district. The number of beneficiaries and the amount of benefit distributed under Garib Kalyan Mela is presented in Table 4.16:

Table 4.16: Benefits through Garib Kalyan Mela in Surat District [2013 to 2015]

Taluka / District	Number of Beneficiaries	Amount of Benefit (Rs.)	Number of Beneficiaries	Amount of Benefit (Rs.)	Number of Beneficiaries	Amount of Benefit (Rs.)
	2013		2014		2015	
Surat District	37445	869133034	22561	527415127	28346	525228873
Olpad	3460	145588003	1844	70967150	2192	56489899
Mangrol	3029	109942084	2637	52519002	6026	104987665
Umarpada	6526	216889557	2413	26906052	4645	101268941
Mandvi	4516	51624930	5643	759500333	3511	126847506
Kamrej	5533	78724706	1665	94777367	2138	24516334
Choryasi	1576	60646565	794	8612976	1245	3124431
Palsana	2648	84562033	1079	55550010	1453	12877256
Bardoli	4463	59095340	2597	91932498	4270	50268917
Mahuva	5694	62059816	3934	50200039	2866	44847924
Source: Dy District Development Officer, Surat						

Table 4.16 shows that in 37445 beneficiaries of Surat district have received benefits worth more than Rs.52.52 crores through the Garib Kalyan Melas.

4.8.3 MNREGA

The Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) was implemented in 2005 with an objective to enhance the livelihood security of people in rural areas by guaranteeing hundred days of wage-employment in a financial year at the rate of Rs.100 per day per person to a rural household whose adult members volunteer to do unskilled manual work. The local authorities should provide work to the applicant within 15 days of receiving the application otherwise, an unemployment allowance is to be paid to the applicant by the state government. Under MNREGA, contractors and machines are banned on the worksites for manual labourers. This was done in order to ensure work to the job card holder and to reduce delay in assigning of work. Moreover, to bring about transparency in implementation, government encourages public audit of MNREGA and puts the records on the ministry's website. The details of employment generated, total funds available, total expenditure incurred, total works identified and total works completed is given in Table 4.17:

Table 4.17: Details of Employment Generation, Funds Allocated, Expenditure Incurred and Work Done under MMNREGA for 2014-15

Progress Indicators	Bardoli	Choryasi	Kamrej	Mahuva	Mandvi	Mangrol	Olpad	Palsana	Umarpada
No of Jobcards Issued	17420	3287	11945	17962	28239	17937	9815	8196	17602
Employment provided to households	1918	252	1084	1944	3218	1599	409	939	4673
Employment provided to Individuals	2439	317	1258	2999	4263	2118	689	1286	6509
No.of persons to whom empolyment was not provided	0	0	0	0	0	0	0	0	0
Unemployment allowance paid	0	0	0	0	0	0	0	0	0
Works completed	4	18	6	45	25	183	0	204	269
Works in progress	455	103	197	346	552	125	375	421	708
Expenditure (Rs.Cr)	2.08	0.27	0.84	2.12	1.36	2.41	0.49	1.84	6.55
Persondays (In Lakhs)	0.57	0.09	0.3	0.75	0.59	0.66	0.12	0.55	2.12

Source: District Rural Development Agency, Surat

4.8.4 *Skill Development and Generating Self-Employment*

Jan Shikshan Sansthans are non-formal vocational educational institutions for adults. The scheme of Jan Shikshan Sansthan (JSS) is a unique scheme floated by the Government of India. JSSs are institutes that focus on the poor, the illiterates, the under-privileged and the un-reached to provide quality vocational skills. They do not work in isolation but their objective is to look for collaboration with other stakeholders in society. The Jan Shikshan Sansthans offer a large number of vocational training programmes from candle making to computer courses. Their main objective is to organise educational and vocational training programmes with special concern for deprived sections, women/girls and unemployed youth to provide new skills, refine/sharpen/upgrade the existing skills leading to employment, self-employment and income generation.

Gujarat government has announced similar scheme *Kaushalya Vardhan Kendra Yojana* with a goal of providing employment to the youth of Gujarat. In Surat, district administration has taken very commendable initiatives by providing training to 621 youth. Currently 1187 youths are being trained and 1580 more will be provided training by the end of December 2010. Kutir Mandir on ITI campuses are being set up for imparting training in trades and occupations covered under the unorganized sector and cottage industry.

In Surat city Swarna Jayanti Shaheri Rozgar Yojana (SJSRY) is being implemented to address the issues of employment creation and income generation by providing resource base and developing latent potential of poorest of poor.

Table 4.18: Categorywise Beneficiaries of Swarna Jayanti Shaheri Rozgar Yojana [2009-10 to 2013-14]

Year	Beneficiaries of Subsidy by category						
	SC	ST	Disabled	General	Minority	Total	Women out of Total
2009-10	4	11	0	4	3	22	7
2010-11		1	0	8	0	9	1
2011-12	1	0	0	0	1	2	0
2012-13	1	1	0	5	0	7	2
2013-14	0	0	0	1	1	2	1
*** This scheme is discontinued from 2013-14.** *Source: District Municipal Officer, Surat*							

There is no clear discernable pattern in number of beneficiaries of SGSRY during 2009-10 to 2013-14. Table 4.18 shows that there are very few beneficiaries of this scheme.

Categorywise bifurcation reveals that maximum beneficiaries belong to general category and many of them are women.

4.9 POVERTY AND LIVING CONDTIONS: GOVERNMENT INITIATIVES

India has completed 67 years of independence and poverty still persists. Poverty has substantially come down but still a lot is to be done to ameliorate the conditions of the poor. On the eve of independence, the then prime minister, Jawaharlal Nehru reminded the country that the task ahead included, "the ending of poverty and ignorance and disease and inequality of opportunity". The performance of our economy is still far away from achieving these desirable goals.

4.9.1 Indira Awas Yojana

Under centrally sponsored programme "Indira Awas Yojana (IAY)", rural poor are being assisted for construction of new houses and for upgradation of existing houses. With a view to meeting the housing needs of the rural poor, Indira Awas Yojana (IAY) was launched in May 1985 as a sub-scheme of Jawahar Rozgar Yojana. It is being implemented as an independent scheme since 1 January 1996. The Indira Awas Yojana aims at helping rural people below the poverty-line belonging to SCs/STs, freed bonded labourers and non-SC/ST categories in construction of dwelling units and upgradation of existing unserviceable kutcha houses by providing grant-in-aid. From 1995-96, the IAY benefits have been extended to widows or next-of-kin of defence personnel killed in action. Benefits have also been extended to ex-servicemen and retired members of the paramilitary forces as long as they fulfil the normal eligibility conditions of Indira Awas Yojana. Three per cent of funds are reserved for the disabled persons living below the poverty-line in rural areas.

Table 4.19: Houses Constructed under the Indira Awas Yojana [2007-08 to 2012-13]

Year	SC	ST	Minority	Others	Total
2009-10	122	8669	107	249	9147
2010-11	39	8339	26	266	8670
2011-12	2	2270	0	18	2290
2012-13	0	503	0	0	503
2013-14	7	1031	2	43	1083
2014-15	26	2117	38	62	2243
Total	196	22929	173	638	23936

Source: District Rural Development Agency, Surat

Under the Scheme, allotment of the house is done in the name of the female member of the households or in the joint names of husband and wife. A minimum of 60 per cent of funds are to be utilized for construction of houses for the SC/ST people. Sanitary latrine and smokeless chulha are integral to an IAY house. Selection of beneficiaries under IAY is done by the Gram Sabha. Selection of construction technology, materials and design is left entirely to the choice of beneficiaries.

4.9.2 *Sardar Awas Yojana*

A scheme of providing financial assistance for the construction of houses was introduced in State from 1976. From 1st April-1997 a new scheme namely "Sardar Patel Awas Yojana" (SPAY) has been introduced in the State. Under this scheme unit cost has been raised from Rs.36000 + Rs.7000 as beneficiary's contribution in terms of labour component for providing earthquake resistant *puca* house with effect from 2nd September-2003. The scheme has been modified from 2nd March- 2005, house can be built by hollow block, stone and beneficiary can build their own house as per norms. The details of houses constructed during 2005-06 to 2013-14 are given in Table 4.20:

Table 4.20: Sardar Awas Houses in Surat District [2005-06 to 2014-15]

Taluka	Sardar Awas Houses
2005-06	4132
2006-07	1602
2007-08	1619
2008-09	896
2009-10	778
2010-11	NIL
2011-12	NIL
2012-13	3157
2013-14	6681
2014-15	3222
Source: Dy. District Development Officer, Surat	

One can see that the number of Sardar Awas houses has drastically declined from 2005-06 to 2009-10. One of the reasons for this declining trend could be that most of the houses might have got constructed during 2005-06. The city limits got expanded in 2007. So, the total area covered under Sardar Awas Yojana for Choryasi taluka might have reduced. Choryasi is one of the largest talukas in terms of population as well as area. However, the number of house constructed during 2012-13 and 2013-14 shows a sharp increase.

4.9.3 *Dr Ambedkar Awas Yojana*

Dr Ambedkar Awas Yojana is launched for providing housing facilities to families belonging to Scheduled Caste. The scheme is implemented through the department of Social Justice and Empowerment of the Government of Gujarat.

Social Justice and Empowerment Department primarily focuses on socio economic welfare measure for empowerment of backward section of society. The department implements several developmental and welfare schemes for education, economic upliftment, health, housing, etc. for the scheduled castes, nomadic tribes, denotified

tribes, socially and educationally, economically backward class and minorities. It implements Special Component Plan with schemes to promote incentives to SC farmers, Housing plans, Panchayat and community development, Gramin Yojanas, mid-day meal schemes, education, forest and environment schemes, etc.

The beneficiaries of Dr Ambedkar Awas Yojana comprise those families which satisfy the following criteria:

- They belong to Scheduled Caste,
- They are houseless, and
- They are categorized as Below Poverty Line (BPL) families having their score between 0 and 20.
- Their annual income is less than or equal to Rs. 24000. Families belonging to extremely backward category are exempt would get benefit irrespective of their annual income.

If all these four conditions are satisfied, then that family can avail the benefit of Ambedkar Awas Yojana.

Widowed, disabled and labourers can also avail the benefits of this scheme. The priority is accorded to these categories of beneficiaries while disbursing the subsidies under this scheme.

The beneficiaries are given a subsidy of Rs. 43500 by the government under the condition that they contribute labour worth Rs.7000, thus the unit cost is Rs.50500. The Department of Social Justice and Empowerment, Government of Gujarat plays an instrumental role in channelizing the grants received for construction to the beneficiaries.

The subsidies are disbursed in two instalments – 50 per cent of the amount (Rs.21750) at the time when the request is sanctioned and the remaining 50 per cent on producing the certificate of the supervisor from Social Welfare Branch, after the construction till lintel level is completed. Number of houses constructed and allotted in this scheme is given in Table 4.21:

Table 4.21: Houses under Dr Ambedkar Awas Scheme

Year	Permitted Houses	Completed Houses	Pending Houses
2009-2010	44	32	12
2010-2011	0	0	0
2011-2012	0	0	0
2012-2013	38	34	4

2013-2014	8	5	3
2014-2015	2	1	1
Source: District Social Welfare Officer, District Panchayat, Surat			

One can see that the number of houses constructed under this scheme is declining since past three years. This could be because, the target to allot houses might be close to complete.

4.10 Living Conditions in Rural Areas

South Gujarat region has a fertile land which enables cultivation of wide variety of crops and that requires substantial supply of labour throughout the year. Irrigation through canals and well provides ample opportunity for intensive cultivation. There is stark contrast in the life of land owning class and landless farm labourers. Majority of landowners in the Surat district are *Leuva* Patels and Anavil Brahmins. They live very comfortable life. Many families are migrated to USA and they take active interest in development of their native places. The project team visited many such villages where the internal roads of the villages are *pucca* and people drink mineral water. They send their children to good private schools that are run by local landowning class and donations received from non-resident Indians (NRI) belonging to *Leuva* Patel community.

People belonging to landowning class reside in centre of the village. Most of the households have refrigerator, television, telephone connections, two-wheeler / car and other modern gadgets that are required for modern living. While talking to the members of Gram Panchayat, they informed that some of the households also have internet facilities. These facilities are used mainly to remain in touch with their kin and kith staying far away in USA.

In stark contrast to the life of land owning class, the life of landless agricultural labourers in the same village is different. They live in hut type of structure. The large majority of houses occupied by Halpatis / Dubla have only one room. The family live and sleep in the front part of the room. Cooking place is separated by half wall. One can find the poor quality of materials for building. The housing structure is usually very small and low with walls of mud or twigs. Quite often they lack drainage and sanitation. They live on outskirts of the village. One such Halpati niwas visited by the team in Tundi had good internal road. They also had a lighting facility.

Most Halpatis depend upon agriculture for their livelihood. The project team visited Halpati Niwas and interacted with Halpatis who stayed back home because of their old age, infirmity or non-availability of work on that particular day. They informed us they work as khet majoor (agricultural labourers). The farm labourers can be

divided into two main categories – those employed as attached labour (farm servants) and those who work as casual labourers as and when they are needed by land owners.

The farm servants ensure labour supply to the farmer. Farm labourer has benefit of assured employment. Normally, the task of attached labourer goes beyond field operations. Besides, his working hours are longer than other labourers. He is also entrusted a job of maintenance of equipments used in cultivation and often he supervises the work of causal labourers. He does not receive higher wages for longer working hours and for extra work but in most of the cases, he is given a cup of tea, bidis, meal etc. In event of sickness or any other difficulty, land owner helps him financially.

Casual labourers do not have permanent employment and work as and when opportunity arises for anyone who wishes to employ them. Their working hours are less than that of attached labour. Casual labourers directly go to the work place and usually stop work by 5:00 PM. In busy season, they work for longer hours. The interesting thing is that they hardly go out in search of work. Work is normally found through network of contacts, friends and neighbours. Both permanent and casual labourers go on foot to their work places even if the locations are very faraway places. Mostly, men work as permanent farm labourer.

Income and quality of life depends on volume of work in agriculture and agricultural wages. There are large variations in working days available for both men and women. They get very low wages and often for many years, the wage rates are unchanged. The project team tried to probe the issue related to payment of wages to agricultural labourers in prosperous villages. The farm labourers informed us that they receive Rs.30 per day and they don't get any perquisite like meal, tea or bidi. A person from land owning class had different story to narrate us. He told us that Rs. 30 are paid for half-day's work, normally 4 -5 hours. The version of farmers appeared to be closer to reality.

4.11 SUMMARY

India is an agrarian economy. A large proportion of people depend on agriculture even today. Access to water and irrigation is major determinant of agricultural production and the stability of yields. Watershed development through rainwater harvesting can help augmenting the water needs for agricultural development. Rapidly expanding markets, innovations in finance, market institutions and collective actions, revolutions in biotechnology and information technology can offer good opportunities to promote development through agriculture. Animal husbandry and poultry are also allied to agriculture and people are involved in milk production and production of poultry birds. Large number of milk co-operatives facilitate the milk

producers in fetching a market for milk in Surat district. There are good veterinary services in the Surat district to cater to the healthcare needs of cattle and other animals A Few people depend on forests by sale of wood and non-timber wood products, for their livelihood.

Government has taken initiatives to develop the coastal regions and to improve the livelihood and living conditions of fishermen and salt pan workers through the Sagar Kedu Sarvangi Vikas Yojana. Under this scheme, fishermen have benefitted through purchases of boats, fishnets and getting training to scientifically harvest shrimps. The shrimps of Surat district are demanded across the country as well as abroad. However, due to development of industries in Hazira area, fishermen are facing problems in having access to fishes.

People have been employed in mining and quarrying activities in Surat district. However, reliable data on employment of mining and quarrying is not available. There are large number of Small Scale Industrial units in the district. Surat is developing at a very fast pace. It absorbs a large number of people from different parts of the state and the country.

Government has devised various schemes keeping in mind those people who are not capable of earning their livelihood themselves. Old age people, people with physical disability etc. find difficulties in earning a livelihood. Rehabilitation schemes are implemented for destitute and widows whose sole breadwinner of the family has deceased. There are schemes for those who are willing and capable to work. MNREGA is introduced to provide guaranteed employment for 100 days. The impact assessment results reveal that the success of MNREGA is mixed. It has used a large proportion of funds allocated for undertaking work but very few works are completed. SGSRY is another scheme for providing urban employment to people. Categorywise data on beneficiaries of SGSRY reveal that people belonging to general category and women constitute a major proportion of beneficiaries.

There is stark contrast in the life of land owning class and landless farm labourers. Majority of landowners in the Surat district are *Leuva* Patels and Anavil Brahmins. Most of them have migrated to USA and they take active interest in development of their native places. Their family members staying in the village use mineral water for drinking purpose and send their children to good private schools. The internal roads of the villages in the localities dominated by these landowners are paved. In stark contrast to the life of land owning class, the houses of landless agricultural labourers in the same village are hut types, which lack even basic amenities like drainage and sanitation. Their houses are small, poor quality, kachcha or semi-pucca houses, usually of one room and a part of that room is used as kitchen and for sleeping purpose.

SWOT Analysis of Poverty and Livelihood in Surat

STRENGTHS

- Implementation of social security schemes, Garib Kalyan Mela, MMNREGA etc are quite successful.
- Indira Awas Yojana, Sardar Awas Yojana, Dr Ambedkar Awas Yojana and measures undertaken by the Surat Municipal Corporation to provide Low Income Group (LIG) housing to slum dwellers is also successful.
- The district is replete with rich mineral resources.
- It also receives good rainfall. The district has good irrigation facilities. Surat district has a long coastline.
- All these factors contribute to economic development of the district.

WEAKNESS

- Due to lack of property clearance titles and availability of collaterals, banks are not able to lend money in rural area, resulting in higher dependence on private money lenders.

OPPORTUNITIES

- There is still a possibility to increase the cropping intensity.
- Horticulture is gaining importance over last one decade. There is a possibility to develop market for bananas, papayas, onions, brinjals and similar such horticulture crops.
- Development of animal husbandry, milk co-operatives, poultry, fishing and shrimp farming has huge opportunities.
- Land is allocated to tribals under the Land Ceiling Act and the Forest Rights Act, which is expected to create livelihood opportunities for them.
- Bric clay is available in abundance and lignite generates a large proportion of royalty.
- There are ample employment opportunities because of textile, zari and diamond industries. Special Economic Zones provide opportunities to export oriented units.

THREATS

- Forest areas require to be preserved and more trees require to be grown, especially in rural areas.

5. SURAT CITY

HIGHLIGHTS

- Surat city is well-connected through all modes of transportation - road, rail and sea route. Even interior areas are well-connected by all- weather roads. Air connectivity is poor which can be a major constraint for further accelerating growth. Well-developed port and airport can help in boosting export and import.
- Surat attracts large number of people from other parts of the state and the country. The people are peace loving. For decades, the district has remained calm and free from major riots. This helps in promoting economic activities.
- Good educational institutions can accelerate the growth in long-term. The district does have large number of schools and colleges but it requires good educational institutes to provide quality education and cater to the needs of local industries.
- Health care infrastructure in the city is good. Vector-borne diseases have reduced but leptospirosis, sickle cell anaemia and leprosy are still a cause of concern.
- ICDS is performing well and SMC is boosting the efforts of ICDS by providing incentives to anganwadi workers and helpers. SMC is also constructing anganwadi buildings.
- There are ample employment opportunities in textile, zari and diamond sectors in the city. Thus, the city has a lot of migrant workers.
- Surat has five Special Economic Zones (SEZs).
- There is a problem of air and water pollution in the city but the door-to-door garbage collection system is very helpful in keeping the city clean.
- There are industrial hazards, problems of floods and threat from Ukai and Kakrapar dams.

Surat city was originally established on the southern bank of river Tapi. The city was protected by constructing a wall on its periphery and all the population resided within the walled area. The area of the city within the walls was 8.2 sq. km. The wall was constructed in 1664 and the entry to the city was through 12 gates in different directions – Navsari gate and Majura gate in south, the Mecca and Badshahi gates in west, Dacca Owara, Custom House water gate, Mirbehar and Latigate along the riverside. The real growth of Surat city began in 1960 with expansion of trade in diamonds, shifting of economic base to zari and textile industry, introduction of power-looms and increase in activities pertaining to exploration of oil and natural gas. Apart from the expansion of industrial base, there has been a tremendous growth in the informal sector.

The actual revamping of the Surat city took place after outbreak of pneumonic plague in 1994. The city is known for its strength to convert adversity into advantage. The outbreak of pneumonic plague in Surat during September 1994 created worldwide panic and severely affected the city as well as its economy. There was a massive exodus, where about 60 per cent of the population left the city. Since majority of the industrial workers are migrant labourers, the industrial production was largely hampered and the industries suffered an estimated loss of Rs. 12 billion. Though the disease was controlled within a week, it raised many serious issues of public health and of the local governance. However, the city authorities undertook one of the most massive clean-up operations in recent times and revamped the entire city. Within two years, Surat had been transformed from the one of the filthiest cities to the second cleanest city in the country and the city governance is recognized as an example of a good governance system.

To ensure the systematic and planned development of the Surat city and its surrounding areas, Surat Urban Development Authority (SUDA) was constituted on 1.2.1978 by the state Government having its jurisdiction on 722 Km^2 covering the area of erstwhile Surat Municipal Corporation and surrounding 148 villages under the provisions of the Gujarat Town Planning and Urban Development Act, 1976. The SUDA area is located between latitudes 21°03' and 21°19' North and longitudes 72°41' and 73°00' East. Surat city is divided into seven zones for the purpose of administration. These are: Rander zone, Athwa zone,Katargam zone, Central zone, Limbayat zone, Varacha zone and Udhna zone.

As per the requirement of the said Act, the first Development Plan came in to force in 1986 which is called the principal Development plan. It was revised in the year 1996 which got the sanction of the State Government in 2004 and is in force from 15.9.2004.

5.1 DEMOGRAPHIC CHARACTERISTICS

The population of Surat city, according to the Census 2011, is 44.68 lac. The growth rate of population during the decade 2001-2011 is 83.57 per cent, which is highest among all the districts of Gujarat state. The sex ratio of Surat city is 756 females per 1000 males. The sex ratio of Surat district is lowest among all the districts of Gujarat. The cause of this low sex ratio could be attributed to migrating male population, leaving their families in their respective hometowns. However, the sex ratio in 0-6 years' age group is better and it is 808 females per 1000 males. Overall literacy rate in Surat city is 87. 3, the literacy rate for males is 91.22 and that of females it is 83.44. According to Census 2011, the decadal growth rate of SC population is 21.94 per cent and that of ST population is 52.34 per cent. The sex ratio of SC population and ST population are 905 and 922 females per 1000 males respectively.

The summers are quite hot with temperatures ranging from 37.78^{o}C to 44.44^{o}C. The climate is pleasant during the monsoon while autumn is temperate. The winters are not very cold but the temperatures in January range from 10^{o}C to 15.5^{o}C. The average annual rainfall of the city has been 1143 mm.

5.2 INFRASTRUCTURE

Surat city has good quality roads, bridges, fly overs and Bus Rapid Transit System (BRTS). In Surat city, there are 37 major and minor bridges and two underpass ways. Of them eight bridges are across River Tapi at various locations. One of them is a weir-cum-causeway and another is a railway bridge. The rest of the six are major roadway bridges. Another roadway bridge is proposed to be constructed on the River Tapi near Dabholi. There are six fly over bridges in the Surat city. Of these, two fly-over bridges are on the Ring road, one at Athwa gate junction and another from Man Darwaja junction to Sahara Darwaja. There is one fly-over bridge on Varachha road. There is one over-bridge on Sumul Dairy Road. One fly-over bridge at Majura Gate Junction on Ring Road got constructed recently and one road over-bridge above Railway Culvert at Dindoli are under construction. Two major bridges across the River Tapi are planned to be constructed within a span of three years each – one at Ved-Dabholi and the other one near Paanch Pandav bungalow, Athwalines. Two small bridges shall be constructed across Kankhara Khadi near Althan and Gandhi Kutir to improve connectivity in the south and south-west zone. A bridge is being constructed on Mithi Khadi near Limbayat in South-East Zone to improve connectivity. In addition, several fly overs and bridges are proposed on major and busy junctions/routes to ease traffic congestion and for easy movement of vehicles; thereby reducing air/noise pollution also. In Surat Urban Development Authority (SUDA) area there are two major bridges across river Tapi and 15 bridges across various creeks.

Surat airport is located near Magdalla on the Surat-Dumas road. The airport is spread over 312 hectare of land with a runway of 1400 meter. The airport is connected to the Gaurav path through city buses. BRTS will be operational soon on that route. Surat Airport was inaugurated on May 06, 2007. The objective of developing the Surat airport was to boost the industrialization of the Gujarat state, over and above providing air travel accessibility to the people of Surat.

There are very few flights at present from Surat Airport but it is being planned to make Surat a major cargo hub and to provide parking facilities to as many as 70 aircrafts. Night landing facilities are also being created with the help of Instrument Landing System imported from Germany. In fact, it is more than 25 years that businessmen of Surat, especially in the Diamond sector, have been demanding international flights to and from Antwerp, Tel Aviv, New York and Johannesburg.

5.3 EDUCATION IN SURAT CITY

Overall Literacy Rate of Surat city is 87.9 which is higher than that of Gujarat. The literacy rate in Surat has increased from 83 in 2001 to 87.9 in 2011. Details are given in Table 5.1:

Table 5.1: Literacy Rate in Surat city

Overall Literacy Rate		Male Literacy Rate		Female Literacy Rate		Gender Gap	
2001	**2011**	2001	2011	2001	2011	2001	2011
83.0	**87.9**	88.0	91.2	76.4	83.4	11.6	7.8
Source: Census 2001 and 2011							

There are many private schools, grant-in-aid schools and Municipal Corporation run schools in Surat. Zone-wise number of primary schools managed by Nagar Parthmik Shikshan Samiti is shown in Table 5.2:

Table 5.2: Zonewise Schools in Surat City

Zone	2012-13	2013-14	2014-15	2015-16
Rander zone	25	25	25	31
Athwa zone	18	18	17	32
Katargam zone	40	40	40	42
Central zone	66	61	52	49
Limbayat zone	64	64	64	69
Varacha zone	37	37	37	48
Udhna zone	45	45	45	55
Total	295	288	280	326
Source: Nagar Parthmik Sikshan Samiti				

Nagar Prathmik Sikshan Samiti is managing the schools. They make sure that all the municipal schools have proper building with modernized computer lab, playground, sports equipments, facilities to do science experiments and other basic facilities. These schools have access to pure drinking water with RO plant, liquid soap dispensers for washing hands, facilities for mid-day-meals. Students of these schools get notebooks, pen, pencil and other stationery, shoes – socks etc. These are purchased and distributed from the amount received by the way of donations. Each school has facilities of a telephone and an Internet connection. Nagar Prathmik Sikshan Samiti and Sarva Shiksha Abhiyaan (SSA) has their own websites and SSA has its mobile application as well. Each school has its unique e-mail id.Extra-curricular activities are organized and students are encouraged to participate in the same. Number of teachers, number of students and student-teacher ratio of Surat City are given in Table 5.3

Table 5.3: Student Teacher Ratio [2012-13 to 2014-15]

Year	Teachers	Students	Student: Teacher Ratio
2012-13	3465	140787	41
2013-14	3480	140435	40
2014-15	3384	137617	41
2015-16	3860	158204	41
Source: Nagar Parthmik Sikshan Samiti			

Student-to-teacher ratio has consistently remained around 40 in past four years.

There are two universities in Surat city - Veer Narmad South Gujarat University located on the Udhna- Magdalla road and Jamia Islamic University situated right in the centre of the Surat city.

Agricultural University of Navsari district has a centre as well as agricultural farms in Surat city. SNDT has an affiliated college in Surat city. Two open universities – Indira Gandhi National Open University and Dr. Babasaheb Ambedkar Open University have also opened up their centres in Surat city. This indicates that there are good opportunities for higher education in Surat.

5.4 Health Infrastructure in Surat City

Health care facilities in Surat city are good. The health care facilities improved after the Plague in 1994. SMC made good efforts and undertook number of measures in improving health facilities in the city. High population growth in the city is expected to put pressure on existing health care facilities. The city has three major public hospitals run by SMC and Government of Gujarat. The Surat Municipal Institute of Medical Education and Research (SMIMER) has 750 beds, a Civil Hospital has 1040 beds and Maskati Hospital has 330 beds.

Number of hospitals indicates access to health care infrastructure. More number of hospitals in per 100 sq km indicates that people have to travel lesser distance to avail health care facilities and probably less time for the consultation. In event of epidemic / pestilence capacity of the hospital in terms of number of beds become more important. Surat city has been divided into 7 zones for administration.

Private Health Care services play important role in the city. Details of hospitals, including private hospitals is given in Table 5.4:

Table 5.4: Health Care Infrastructure in Surat City (2014-15)

Zone	UHC & MH	UHC	Pri Hospitals	Beds	Doctors	Nurses
Central	5	4	115	3387	22	42
East	2	4	36	692	10	20
West	1	2	66	1320	7	10
South West	1	3	39	2138	6	10
Nort	1	5	60	1400	9	15
South West	1	5	40	797	9	13
South east	1	6	20	377	13	16
Total	12	29	376	10111	76	126
UHC = Urban Health Centre **Source: Health Department, Surat Municipal Corporation**						

Central Zone, which is the oldest and most densely populated area of Surat city, has currently 115 hospitals and 3387 beds, the maximum among all the zones of Surat city. This is followed by west zone, which has 66 hospitals.

In urban area health care mainly depends on private medical practitioners. As per the information available Indian Medical Association (IMA) there are about 1800 doctors who are registered with them. The numbers of private practitioners are likely to be in the range of 2300 to 2500. Besides there are homeopathic doctors and practitioners of *Ayurveda, Unani* and naturopaths. These medical practitioners also play crucial role in health care services.

5.5 Diseases in Surat City

Malaria, Falsiparum and other vector-borne diseases are generally observed in Surat city. SMC has undertaken steps to prevent vector-borne diseases by undertaking different activities to control the mosquito-breeding sites, prevent mosquito growth and by educating people about the symptoms of vector-borne diseases, so that Early Detection and Prompt Treatment (EDPT) is possible. The vector-borne disease control activities undertaken by SMC are divided in three broad phases: Anti- larval measures,

Anti-adult measures and providing health education. Anti-larval measures include carrying out surveillance of prospective mosquito-breeding sites. Surveillance is undertaken at two levels: peri-domestic and intra-domestic. At peri-domestic level, water storages, tanks and other sites that are prone to mosquito-breeding, in public places are checked and at intra-domestic level, water-storage vessels, underground and overhead tanks are checked by the health workers of SMC on a regular basis.

The households are advised to get their water-storage bodies (tanks and other vessels) cleaned, and take care to avoid stagnation of water. SMC also sprays insecticides in those water-bodies at regular intervals. However, if the households do not implement the advice given by SMC, they are levied a fine by SMC and if they fail / avoid to pay the fine, the complaints are lodged against those households with the district court. SMC undertakes measures to create awareness among the people through different means.

Anti-adult Measures include entomological activities like collection of mosquitoes to examine the vector-density for malaria, filaria and dengue. Larval susceptibility status is examined, female mosquitoes are dissected to examine the infection rate and special surveillance of some specific categories of mosquitoes is undertaken and are sent for the investigation at National Institute of Virology, Pune.

The trend of vector-borne diseases in Surat city is given in Table 5.5:

Table 5.5: Vector-Brone Disesases in Surat City [2010 to 2015]

Year	Malaria	Falciparum	Lymphatic filariasis	Dengue	Chikungunya
2010	13593	4147	39	426	9
2011	12369	3545	43	69	85
2012	11641	2345	30	166	17
2013	9209	1834	25	344	3
2014	7737	1304	110	363	3
2015 (up to May)	1491	95	28	25	0
Source: Health Department, Surat Municipal Corporation					

One may observe that the number of malaria and falciparum cases have declined in past five years. The cases of Lymphatic filariasis and dengue requires to be controlled. SMC has taken initiatives to di stribute door-to-door, preventive medicines for controlling filariasis. Moreover, advertisement campaigns, hoardings and banners are used to create awareness about filariasis among the people. There was an epidemic of Chikungunya in 2011 but now it is under control.

Government has taken initiatives to control the cases of Leprosy and Tuberculosis.

DOTS programme recommended by the WHO is implemented by the SMC since June 2000. There are 18 TB units and 45 designated microscopy centres in the city. Forty two urban health centres and 1500 private practitioners involved in this programme. To increase the awareness among the citizens and practioners, programmes like video shows, community meetings, patient-service provider interaction meetings, DOTS awareness by audio van, quiz programme in school, puppet shows, public announcements through auto-rikshaws, TV, radio, newpapers etc. have been initiated for better results.

The trend in cases of Leprosy and TB are given in Table 5.6:

Table 5.6: Cases of TB, Leprosy and Swine Flu in Surat City [2009 – 2015]

Year	TB Cases	TB Deaths	Leprosy	Swine Flu
2009	5761	149	49	109
2010	5503	138	40	22
2011	5471	106	53	0
2012	5430	169	67	0
2013	5893	151	69	18
2014	6145	185	91	10
2015	3464*	97*	26*	931**

*** Upto June 2015**
**** Upto December 2015**
Source: Surat Municipal Corporation

Leprosy continues to be a cause of worry and Swine flu cases do not show a clear trend.

5.5.1 Nutrition

As per the Government GR, ICDS activity stated in Surat city in 1982 with 100 anganwadis under one block. ICDS activity was put under the management of SMC health department since inception and at present, there are 1004 anganwadis under five blocks located in different seven zones of the city. SMC has deputed one medical officer for management and supervision of ICDS programme. SMC provides additional remuneration (from its budget, since 1997) to aganwadi workers and helpers as an appreciation to their contribution for out-reach RCH services in urban poor area.

The strengths of Surat city ICDS are: local ownership, governance and management of ICDS programme by SMC. It facilitates very crucial need of convergence between health and ICDS. In pre-NRHM phase, anganwadi workers were exclusive support

for out-reach RCH – health services of SMC. Medical Officer for ICDS is deputed for better management, supervision and co-ordination. Two local Mahila Mandals and Akshaypatra Foundations are providing support to the programme by preparing Sanitary Napkins in hygienic condition and supplying it to aganwadis. Community participation for additional nutritious food supplementation is being motivated.

SMC has launched a campaign to build all houses for all rented anganwadi centres. Till now, around 210 anganwadi centres are build and 200 more centres will be constructed in near future. SMC is paying additional Rs 1.75 per child per meal to Akshaypatra Foundation for providing nutritive and hygienic food to the children of Anganwadis. Around 25100 children are beneficiaries to this scheme.

Details of children registerd under ICDS are given in Table 5.7:

Table 5.7: Children Getting Supplementary Nutrition [2012-13 to 2014-15]

Year	Children Registered		Children getting supplementary nutrition	
	Boys	Girls	Boys	Girls
2012-13	31000	30104	25535	24901
2013-14	31868	30756	23765	23135
2014-15	38698	36548	25666	24718
Source: Health Department, Surat Municipal Corporation				

One can see that the number of children registered under ICDS programme are increasing in past three years. One of the basic objective of this scheme is to reduce the incidence of malnutrition among children. Details of normal and malnourished children is given in Table 5.8:

Table 5.8: Percentage of Normal and Malnourished Children [2012-13 to 2014-15]

Year	Normal		Moderately Malnourished		Severely Malnourished		Total Children Weighed	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
2012-13	64.22	63.82	32.64	32.84	3.14	3.34	52662	48594
2013-14	68.08	67.68	28.92	28.96	2.99	3.37	52129	47728
2014-15	73.00	72.21	23.87	24.35	3.13	3.44	50043	45735
Source: Health Department, Surat Municipal Corporation								

One may see that the percentage of normal children have increased in past three years and that of moderately malnourished children have decreased. However, the percentage of severely malnourished children have remained more or less same in these three years. Schemes like Bal Sakha and Janani Suraksha add to the efforts of

ICDS in maintaining and strengthening the health of adolescent girls, pregnant women and children. Details of beneficiaries registered under the Bal Sakha Scheme is given in Table 5.9:

Table 5.9: Genderwise and Poverty Status-wise Beneficiaries Registered under Bal Sakha Scheme [2010 to 2015]

Year	Bal Sakha			
	Boys	Girls	BPL	APL
2010	124	169	264	29
2011	78	64	131	11
2012	130	143	91	182
2013	254	225	134	345
2014	500	427	259	668
2015	102	114	52	164

Source: Health Department, Surat Municipal Corporation

Emphasis is given on Institutional Deliveries by the Government in pursuit of reducing Maternal Mortality Rate and Infant Mortality Rate. Janani Suraksha Scheme is one of the schemes that promotes institutional deliveries. Percentage of Institutional Deliveries under Janani Suraksha Scheme are given in:

Table 5.10: Percentage of Institutional Deliveries under Janani Suraksha Scheme [2010 to 2015]

Year	Percentage of Institutional Deliveries		Percentage of Home Deliveries
	Government	Private	
2010	22.28	74.23	3.49
2011	22.65	75.25	2.10
2012	22.29	76.25	1.46
2013	29.38	69.59	1.03
2014	24.68	74.49	1.00
2015	28.37	70.73	1.00

Source: Health Department, Surat Municipal Corporation

One may see that percentage of institutional deliveries are increasing since 2010. However, percentage of deliveries in private hospitals are higher than that of Government hospitals. Percentage of home deliveries is close to 1 per cent.

5.6 LIVELIHOOD: INDUSTRY, TRADE AND COMMERCE

Nature of livelihood opportunities in urban area differ largely in comparison with rural areas. Urban areas offer more jobs in industries where as the opportunities in rural areas are more in agricultural sector. Surat is known for diamonds, textiles and zari. There are many small units involved in manufacturing of textiles and zari. Surat is known for diamonds. More than 90 per cent of cutting and polishing of world's diamonds are in Surat. People from Saurashtra region migrate in search of jobs in diamond firms. In textile industries, one may see migrants from different states of north India.

The major commodities manufactured and traded in Surat district are silk cloth, polyester yarn and fabric, diamonds, zari, fertilizers, natural gas, plastic and PVC products. Major items imported are fertilizers, sulphur, iron scrap and rock phosphate. Major items exported are salt, bentonite, onion and oil cake.

The state of Gujarat was formed in 1960. Since then, industrial development has remained the prime focus. The industrial development in Surat city is largely because of:

1. Industrial Development in the Hazira Area.
2. Textile Industry
3. Zari Industry
4. Diamond Industry and the Diamond Bourse
5. Special Economic Zones
6. Small Scale Industries

5.6.1 Industrial Development in the Hazira Area

A large number of Large Scale Industries (LSI) is set up in Hazira area. The locational advantage of Hazira is its nearness to the Arabian Sea. Surat was a port since pre-colonial era. In recent years, a port is developed in the Magdalla area, which is around 4km from Hazira. A new port is being developed in Hazira itself. Because of the industries' accessibility to ports, it is convenient to transport the raw materials and finished products to and from the industry premises. Many LSIs like ONGC, GAIL, IOC, NTPC, KRIBHCO, RIL, ESSAR, GSEG, Shell etc. are set up in Hazira area.

The positive externality of these industries is that these industries provide employment to the unskilled labour of the nearby villages like Bhatpor, Mora, Bhatha, Suvali etc. Over and above this, development of infrastructure, educational facilities, health care facilities in the surrounding villages are also positive externalities of the industries in the Hazira Area. Industries like Cyanide India Ltd. in Olpad and Gujarat Ambuja Cement on the Dumas road further contribute to economic development of Surat economy.

5.6.2 *Textile Industry*

Textile is one of the oldest industries in the country and continue to be a significant contributor to value of industrial production, employment generation and thus to national income. An estimated 4 percent of GDP is contributed from the sector (CDP 2006). Gujarat is considered to be the hub of textile industry. Over 30 per cent of the woven fabric from the organised sector and 25 per cent of fabric from the unorganised sector come from Ahmedabad and Surat which are the major producers of textile products within Gujarat. More than 18 per cent of Gujarat's labour force is directly employed in the textile sector. There are more than 350 textile units in Surat, and 250 units in Ahmedabad.

Surat is known as textile city of India. The textile industry in Surat is mainly engaged in the activities of yarn production, weaving, processing and embroidery. Surat is one of the largest centres in the world for production of synthetic fibre fabrics, mainly nylon and polyester. Textile processing units are the major backbone of the Surat city's economy. Each unit, with a turnover of nearly Rs.5.0 crores, produces about 35,000 to 1.5 lac meters of Sari and dress materials every day. The Indian Government's policy since 1956 of providing incentives and protection to small-scale industries boosted the power-loom industry in the city. Weavers took advantage of the incentives and converted their handlooms into power-looms. At present, there are 450000 power-looms, employing 700000 workers. The low ratio of number of workers to the number of power looms is because most of the power looms are installed in the houses and they employ family labour.

There are 46182 small, medium and large scale units in Surat city with an investment of Rs. 918414.95 lac, generating an employment for 335957 workers.

There are large scale units like Garden Silk Mills Pvt. Ltd. and Himson Textiles Pvt. Ltd. Among the small scale units are Parag, Prafful, etc. The manufacturing units for textile yarn and fabrics are located in Katargam, Magdalla and Udhna. There are a large number of family-owned power looms. They are located in the residential area of the city like Gopipura and Wadi Falia and owned by people belonging to Modh Vaniks / Ranas and Kshatriyas. There are dyeing and printing units in the area of Pandesara. There are wholesale markets for selling textile products right from gray cloth, to dyed yarn and fabric, saris and dress materials. These markets are located at Ring Road, Zampa Bazaar and Bombay Market. The Textile Market, JJ Textile Market and Jash Market are among the well-known wholesale markets. Thus, Surat has a supply chain right from raw material to finished product. According to a report in Business Standard (2004):

- Rs 600 crores of synthetic fabrics to Dubai are exported from Surat alone. Eighteen per cent of the country's man-made fibre exports are from Surat.

- Twelve per cent of country's total fabric production is done in Surat. Forty per cent of the man-made fabric and 28 per cent of man-made fibre produced in the country is from Surat.
- Umbergaon area in Surat is the hub of the modern power looms, which mainly produces synthetic suiting and shirting fabric for exports and has earned a specialisation in the field. The filament yarn and the Partially Oriented Yarn (POY), used as raw material, constitutes over 60 per cent of the raw material and the state is largest producer of the raw materials used in the textile industry.
- Around 90% of polyester used in India comes from Surat.

5.6.3 Zari Industry

The silver and gold brocade (zari) industry, embroidery, and weaving of textiles in Surat have a 300-year old history. In the early days, zari was manufactured by drawing gold and silver strings. Later on, the production of copper zari was started. These zari was in turn, used to manufacture laces to decorate saris as well as to manufacture saris by interweaving it with the fabric. It might be worth noting that gold, silver and copper zari laces and zari woven saris had resale value equivalent to the per gram prices of the respective metals on that day. But as the prices of gold, silver and copper started rising, plastic zari and chemical zari (Khadi) was introduced. Since the 1980s, the industry got some boost due to growing exports.

There are about 777 zari units that employ approximately 4568 workers. Total investment in Zari industry is Rs 95.19 lac. The low ratio of number of workers to number of zari units is because majority of the units employ family labour. This is a family business and is dominated by the people from Kshatriya community of Surat. Zari units are located in Udhna, Sagrampura areas of the city.

Difficulties in availability of skilled labour, high cost of raw material, outdated technology and changing preferences of the consumers have led to a severe contraction of the industry. Innovations through improvements in technology, alternative product design and development may enable long term sustenance of the industry.

Zari industry started facing troubles in 2003. This was the phase during which there was a deep recession in Information Technology (IT) industry across the world. It was during this period that the demand for Zari declined. As a result, the zari production was slashed by 40 per cent. The average production reduced from 80-90 tonnes of zari per day to 50-55 tonnes. This had an impact on livelihood of workers of zari industry. Around 1.50 lac workers are directly associated with production of zari. After implementation of Geographical Indication Act (GIA), and the increased credibility of zari manufactured in Surat, once again the demand for zari has gone up. Geographical

indication is the newest addition to the Intellectual Property Rights and it refers to the place of origin of the product. It represents quality, reputation and distinctiveness of the product. Registration of zari units with GIA has directly benefitted 1.50 lac workers associated directly with the zari industry.

5.6.4 Diamond Industry and the Diamond Bourse

The history of diamond industry in Surat can be traced back to 1901, when the Gujarati diamond cutters emigrated from South Africa and set up their diamond cutting and polishing units in Surat. The industry started doing well much later in 1960s and 1970s. By that time, Surat based diamond cutters had already started exporting diamonds to the United States. In early days, there were problems pertaining to the working conditions of diamond cutters and polishers, but in recent years, the conditions have improved significantly. Out of 13000 units of diamond cutting and polishing, 10000 units are in Surat. The average daily turnover of these 10000 units is US$ 10 million and employs nearly 1.5 million people. Out of 12 diamonds polished in World, 11 are polished in India, out of which 90 per cent are polished in Surat (The Times of India 2005). Forty two per cent of the world's and 70 per cent of India's total rough diamond cutting and polishing is done in Surat. Moreover, 40 per cent of the India's total diamond exports are from Surat. There are diamond cutting and polishing units in Mahidharpura and Saiyadpura areas of the city, amidst the residences. The diamond bourse is also in one of the busiest area of Mahidharpura. Government has introduced skill development programmes to enhance the skills of workers involved in cutting and polishing of diamonds.

There are 3771 diamond cutting and polishing units in the city with an investment of Rs. 60271.42 lac. These units generate an employment for 57484 people.

A diamond bourse is soon going to be launched in Surat. The bourse's proposed area is 1.8 million sq ft. Surat Diamond Association claims that 15000 applications are received so far for setting up their units in the bourse (Business Standard 2014). The diamantaries are of the opinion that trading from Surat will reduce their trading costs by one-third in comparison with trading from Mumbai bourse. Moreover, transporting diamonds from Surat to Mumbai was not free from risks. This risk will be averted because trading can be done from Surat. The project cost is estimated to Rs 2000 crore but this is certainly going to benefit the diamantaries, as Surat is the diamond capital.

5.6.5 Special Economic Zones

Special Economic Zones (SEZs) are developed with an objective to provide facilities to the small scale industries and to help those industries by providing tax benefits and sharing a common infrastructure. SEZ provides incentives to the investors in the form of:

- Exemption from Central Sales Tax and Service Tax.
- Exemption of Industrial License requirement for essential items set aside for Small Scale Industries.
- Corporate tax holiday on export profits – 100 per cent for first five years, 50 per cent for next 5 years and up to 50 per cent for next five years equivalent to retained earnings for investment.
- Exemption from Customs duty, Central Excise Duty, Stamp Duty, Electricity Duty.
- Relaxation in labour laws.
- Foreign Direct Investment allowed up to 100 per cent in manufacturing.
- Provision for setting up offshore banking unit in SEZ.

Some of the sophisticated Special Economic Zones in Surat district are SURSEZ, Surat Apparel Park, Gem & Jewellery Park.

SURSEZ

Surat Special Economic Zone (SURSEZ) located at Sachin, is a multi-product zone with manufacturing, trading and servicing units of Textiles, Garments, Made ups like pillows, quilts, bed sheets etc., IT, hardware, engineering goods, pharmaceuticals, chemicals, gems and jewellery, diamond, tobacco etc. SURSEZ is located near the Mumbai- Ahmedabad National Highway and is connected through the road as well as the Mumbai-Ahmedabad railway line. It is outside the municipal limits of Surat city but is very much a part of Surat city. SURSEZ has full-fledged infrastructure facilities like roads, water supply lines, drainage and sewer connections, electricity etc. It has a well-developed colony with a shopping complex, restaurant and an English-medium school. The zone is equipped with inland container depot, with latest material handling equipments.

Surat Apparel Park

Surat Apparel Park is located in Sachin, near the Mumbai-Ahmedabad National Highway. It is developed with an objective to provide boost to one of the Surat's oldest industry – Textiles. The park is established by the joint participation of the Centre and the state government. Both the Centre and the state government are expected to jointly bear 66 per cent of the total project cost. The remaining would be shared by industrialists who would be setting up there units in the park. The state has granted of Rs 18 crores towards the project and the Central Government has allocated about Rs 17.5 crores, and might contribute even more, depending upon the requirement.

Gems & Jewellery Park

Spread over an area of 97 hectares, the Gems and Jewellery Park is located at Ichchhapore, Hazira. It is developed with an objective to facilitate the forward

integration process, i.e. from diamond cutting, polishing to jewellery manufacturing, trading and export. If all the units involved in different activities like cutting, polishing, jewellery manufacturing, trading and export come together at one place, considerable amount can be saved on transportation cost. Transportation of diamonds – whether rough or polish – involves high risk. All units functioning at one location reduce the risk involved in transportation of diamonds. At present there are more than 280 members, who are registered members of this Gem & Jewellery Park SEZ. The SEZ provides infrastructure facilities like IT and communication technologies to facilitate exports, water supply, storm water drain network and marketing network in the form of trading bourse for processed diamonds.

5.6.6 Small Scale Industries

There are 1524 Small scale units in Surat city with Rs 173.97 lac investment and providing employment to 27897 people.

Surat city has 340 nationalized and 25 private banks.

5.7 Schemes to Increase Livelihood Opportunities in the City

Mission Mangalam scheme aims at bringing together, the poor households and provide skill development programmes, encourage them to save and then to make them self-reliant. Formation of Sakhi Mandals to encourage saving and then using that capital to lend the person for starting a new venture.

National Urban Livelihood Mission (NULM) is reincarnation of Swarna Jayanti Shehri Rojgaar Yojana (SJSRY) also provides skill development programmes to poor people and helps them in starting their own venture by providing them with proper space in the city for hawking, offering joint loans and providing them social security. NULM operates through the following six components towards enhancing the standard of living of poor.

1. Social Mobilization and Institution Development
2. Capacity Building and Training
3. Skill-Based Training and Employment through Placement
4. Self-Employment Programme
5. Support to Urban Street Vendors
6. Shelter for Urban Houseless

5.8 Urban Poverty and Slums in Surat City

Surat city has experienced unprecedented growth in last couple of decades registering one of the highest growth rates in the country. The city is now the 9th largest city in the country. The turnaround of the city occurred after the plague in 1994. After the plague, the city authorities undertook massive clean-up operations and revamped the

entire administration of the city to take up the challenges. Within a short span of two years, the city was transformed from one of the filthiest cities to the second cleanest city in the country.

The Surat is major industrial city contributing major shares of output especially in diamond and textile sector. The city has made an important position in the world and national economy. Surat is one of the largest centers in the world of production for synthetic fibre fabrics, mainly nylon and polyester. Surat is also one of the world's largest centers for diamond processing.

While Surat is generating more than proportionate share in the state income, seasonal labourers also come to the city to supplement their income when there is no work in their native places. It needs special focus for provision of basic amenities to them. We shall also discuss the remedial steps taken by government and SMC to ameliorate the conditions of the people living in slums.

5.9 DEVELOPMENT OF SLUMS IN SURAT

Urbanisation is a part of the development process. Owing to rapid industrialisation in and around the city, the volume of economic activities has increased. This has provided possibilities of absorption of labour in industrial and allied activities. Moreover, it has provided scope of employment in trade and business, hawking, retailing and other such possibilities has attracted a large number of poor migrants mainly from UP, Bihar, Maharashtra, MP, Orissa and Rajasthan which has resulted in formation of slums. Migrant households mainly come from rural area. The majority of Maharashtrian migrants come from Khandesh region which includes the districts of Dhule, Jalgaon and Nashik. Migrant labours from UP largely come to Surat from the districts of Varanasi, Jaunpur and Pratapgarh. Majority of migrant labour come from Ganjam district of Orissa. However, the number of slums have come down from 397 in 2009-10 to 339 in 2014-15 due to housing and rehabilitation program.

Table 5.11: Number of Slums

Period	Number of Slums Added	Cumulative
2009-2010	-7	397
2010-2011	-16	381
2011-2012	-11	370
2012-2013	-3	367
2013-2014	-5	362
2014-2015	-23	339

Source: Surat Municipal Corporation

Identification of Slums under Surat Municipal Corporation							
Zone	**Total Available slum pockets**	**Recently demolished /shifted**	**Slums less than 20 HHs**	**Slum under PPP development**	**Existing Balance Slums**	**HHs**	**Population**
South West	32	4	3	-	25	5061	23301
Central	39	1	0	-	38	8443	38838
North	62	9	2	-	51	9167	42168
South East	65	4	0	16	45	17215	79189
West	56	11	2	-	43	6343	29178
South	104	15	9	-	80	24307	111812
East	73	11	5	-	57	11314	52044
Total	**431**	**55**	**21**	**16**	**339**	**81850**	**376531**

Most of the slum dwellers are engaged in unskilled jobs or semi-skilled jobs such as diamond cutting, polishing, and organized/semi/unorganized textile (power) looms. Migrant labours work as wireman, printers, drivers, and workers in small shops in textile markets and in other industrial areas, coolies at the railway and bus station. They also work as casual labourers, packers in shops and godowns. They are also found doing supervisory jobs in factories and mills located in and outskirt of the city. Large numbers of migrant workers are self-employed and work as *rikshaw* driver, plumbers, fitters, watchmen, securities, attendants', ward boys, cooks etc. They are also engaged in activities like puncture fixing, garage workers, vegetable vendors, hawkers, fruit sellers, running small tea *laris*, *pan-bidi* shops, purchase and resale of scraps etc. Many migrant labourers work in the construction sector and do the job of painters, layer of gutter lines, brick layer etc. Some of them make good living by becoming *thekedars*.

5.9.1 Seasonal Labour Migration in City

Textile and diamond industry are the major employment providers in the city and thus important source of livelihood for the people dependent on these sectors. There are large variations in the kind of economic activities and job that migrant population is doing. Migrants from Orissa and Andhra Pradesh are concentrated mainly in textile sector. Migrants from Panchmahal district and Maharashtra are concentrated in construction activities.

The seasonal or temporary labour migrants in the city are quite visible. The problems of seasonal migrants and permanent migrants are quite different. Seasonal migrants come to the city for very short period when there is a lean season in their native and work is not available. The city provides them some opportunity to supplement their earning in this lean season. The statistics on the number of seasonal migrants and their living conditions is not available for the Surat district. Permanent migrants have a specific location (settlements or slum) to stay. Access to drinking water and other basic necessities are available to them but such facilities are not available to seasonal migrants. Moreover, permanent slum dwellers develop local social linkages that can be helpful to them in event of difficult period. Government help is also available to them when natural disaster strikes them.

5.9.2 SMC Measures

Surat Municipal Corporation (SMC) initiated number of measures to ameliorate the living conditions of slum dwellers. Living conditions in the city and slums in particular was very bad prior to outbreak of plague. SMC undertook massive exercise to revamp the outlook of the city and earned a distinction of one of the cleanest city in the country. All basic services like water supply, drainage lines, stone paved foot paths, road with carpet, hand pumps, street lights etc have been provided in majority of slum as part of slum improvement programme.

Surat Municipal Corporation has successfully initiated and completed a number of Housing schemes in Surat. As evident from the table given below, slum rehabilitation efforts were intensified after 2006.

Slum rehabilitation measures by SMC under various schemes

Name Of Scheme	No Of Units
Tenements (Before Year 1980)	6,243
Site & Services (Year 1991 to 1998)	12,388
LIG-EWS Housing Schemes (Year 2001 to 2006)	7,537
VAMBAY (Year 2003 to 2006)	372
JnNURM-BSUP (Year 2006 onwards)	46,856
MMGY-LIG/EWS (Year 2013 onwards)	11,017
Total	84,413

Before 1990, SMC implemented tenement scheme at 10 sites to provide households to 6,243 families. Althan Tenement, Man Darwaja Tenement, Umarwada Tenement, Gotalawadi Tenement and Dumbhal Tenement are the major sites amongst them.

Site & Service Scheme was implemented in the period of 1991 to 1998. Salient features of the scheme are as mentioned below

- The scheme started in 1991. Slum pockets situated on road alignment and other such strategic locations are shifted.
- Plot of 3.0 m x 5.0 m size with all basic infrastructure facilities were provided.
- The cost of land and infrastructure was borne by SMC.
- 12,388 households were rehabilitated on 22 various sites with the total expenditure of approximately Rs. 58.60 crores (excluding land cost)

In the period 2001 to 2006, EWS & LIG housing schemes were implemented, details are as follow

EWS Housing Scheme (Year 2001 to 2006)

No. of units constructed & allotted till 2005-06	7424
Land Utilized	1,49,596 mt^2
Total Project Cost (Approx)	Rs. 44.51 Cr.
Built up Area	22.45 Sqm. per Dwelling Units
Salient Features	One Room, Kitchen, W.C., Chowkdi, Balcony, Under ground and Overhead Water Tank and all infrastructure facilities like water supply, drainage, street light, roads.

LIG Housing Scheme (Year 2001 to 2006)

No. of units constructed & Allotted	113
Land utilized	2994 Sqm.
Total Project Cost	Rs. 2.26 Crore (Without land & infrastructure cost)
Built up Area	38.0 Sqm. per Dwelling Unit
Salient Features	Two Room, Kitchen, W.C., Bath, Balcony, Under ground and Overhead Water Tank and all infrastructure facilities like water supply, drainage, street light, road

VAMBAY scheme was in force during the period 2003 to 2006. This scheme is specially subsidized by Central Government and designed for the families who are living below poverty line. (i.e. for B.P.L. Families)

Total No. of Units Constructed & Allotted	372 (228 Row Houses & 144 Flats)
Land Utilized	12387 Sqm.
Total Project Cost	Rs. 2.08 Crore (Without land & infrastructure cost)

From year 2006 to year 2013, JnNURM-BSUP Housing Scheme came in force and the slum rehabilitation got major fillip. Basic Services to the Urban Poor (BSUP) focused on access to infrastructure for the urban poor. This scheme has a seven-point charter: Security of tenure, Housing, Water supply, Sanitation, Education, Health and Social security cover. SMC contributed 30% of the approved project cost as per the scheme guidelines. Share of SMC is more than 44% against the actual cost.

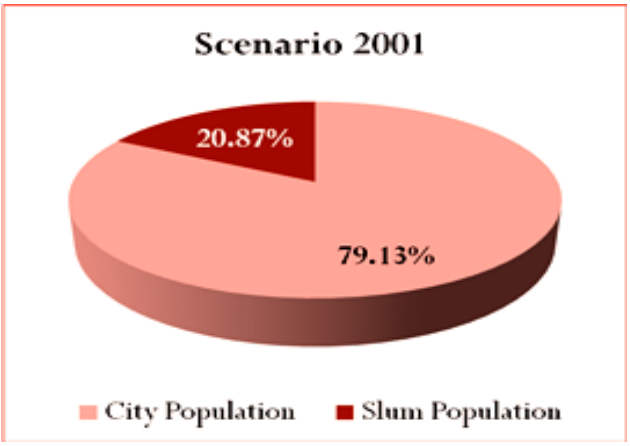
Status of JnNURM Houses (Year 2006 to 2015)

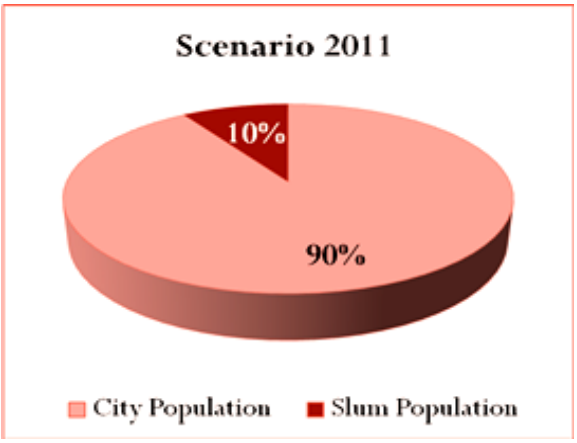
No. Of Projects Approved	12
No. Of Completed Projects	10
Approved Project Cost	699.29
Funds Released By GoI	332.49
Funds Released By GoG	133.02
Expenditure Incurred	839.68
Approved Dwelling Units	46,856
Completed Dwelling Units	45,288
Dwelling Units In Progress	1,568
Allotted Dwelling Units	40,689

(Status as on November-2015)

The outcome these above mentioned schemes which were and are being implemented by Surat Municipal Corporation are being positively reflected in slum population. Below mentioned figure shows the outcome of works undertaken by SMC.

Year	City Population	Slum Population
2001 (Census)	24,33,000	5,08,000
2011 (census)	44,67,797	4,47,390





As shown in the above table, between 2001 and 2011, growth of population is by 83.63% while slum population has gone down by 11.94%. As a result % of slum population has gone down from 20.87% to 10% in the said period.

Mukhya Mantri Gruh Yojana (MMGY) was introduced in the year 2013. Main features of the scheme are as follow,

- Policy to rehabilitate slums situated on public land by public-private participation.
- Scheme of assistance of State Government for construction of houses for rehabilitation of slums as well as for Economically Weaker Sections (EWS).
- Scheme of assistance of State Government for construction of houses for Lower Income Group (LIG).
- Interest subsidy scheme for Economical Weaker Section and Lower Income Group people for housing.

For the year 2013-14, SMC set a target to start 11000 EWS/LIG houses in above scheme. Consequently construction of 8721 LIG houses at cost of Rs. 649.25 Cr. & 2296 EWS houses at cost of Rs. 139.58 Cr. have been started from March-2014. Present status is as follows.

No. of Projects Approved	48 Packages
Approved Project Cost	816.34
Funds Released by GoG	121.65
Contribution Received from Beneficiaries	169.75
Expenditure Incurred	431.91
Approved Dwelling Units	11017
Completed Dwelling Units	7161
Dwelling Units in Progress	3856
Allotted Dwelling Units	8049

Continuing its effort of slum rehabilitation, SMC has also initiated 'In-Situ' - Slum Redevelopment Projects in Public Private Partnership (PPP) mode under PMAY-2015. As per the policy, the slum rehabilitation has been taken up using land as a resource with private participation for providing houses to eligible slum dwellers. "Prescribed Authority" (SMC) has been constituted at city level to implement/decide on projects under the scheme.

The allotted projects have been tabulated herein:

Sr. No.	PPP ID	Name of Slums	Approximate No. of Huts
1	PPP-1	Gandhinagar	400
2		Chimani Tekro	800
3		Juno Depo & Ishalampura	300
4	PPP-2	Jawaharnagar	400
5		Nehrunagar	300
6		Salimnagar	300
7		Gausiya Masjid	200
8	PPP-3	Ambedkarnagar	600
9	PPP-4	Anavarnagar	850
10	PPP-5	Umiyanagar	1400
11	PPP-6	Vivekanandnagar	3000
12	PPP-7	Halpatiwas	800
13	PPP-8	Khwajanagar	850
		TOTAL	10200

5.9.3 Environmental Issues in Surat District

Now we take a look at the scenario of pollution in Surat district. We will be mainly analyzing the data provided by GPCB (Gujarat Pollution Control Board) and its local pollution control offices in Surat city with the data being available from the Surat municipal corporation.

5.9.4 Pollution in the Industrial Areas of Surat District

Surat is an industrial city and thus is likely to have many pollution issues. The major sources of pollution in Surat city are:

Hazira belt industries, the nearby Pandesara industrial belt are likely to be the major sources of pollution in Surat city. Due to the chemical and other such textile factories

situated near by Pandesara area the air pollution is a big problem in that part of the city. A daily visit to those areas will make breathing difficult with flying soot in the air which can result in many respiratory diseases. The air pollutants like suspended particulate matter, sulphur dioxide, nitrogen dioxide etc are likely to be in high concentration in these areas. Similar industries are also likely to result into more air pollution. The noise pollution coming from the operation of looms in textile industry is also another concerned area.

Table 5.12 shows the status of water quality in bore wells in Hazira and Pandesara areas of Surat city. As seen in data, areas of Hazira and Pandesara has the problem of water pollution as indicated by high pH levels and high C.O.D. levels.

Table 5.12: Status of Water Quality of Bore Wells in Gujarat [2014-15]

Place / City	Location	pH	D. O.	NO2 + NO3	TC MPN/ 100 ml	FC MPN/ 100 ml	C. O. D.
Hazira	A well at Hazira (Open well)	8.5	5.2	0.2	38	6	10
GIDC Pandesara	Telephone Exchange, Pandesara	7.6	4.1	0.11	9.2	4	13
Gabheni village	A well at village Gabheni (Open well)	8.4	4.7	0.11	17	3.6	9
Hazira	GSPCL	8.44	4.3	0.17	<3	<3	10

• Except pH, TC & FC all the parameters are expressed as mg/L.
• TC= Total Coliform
• FC= Fecal Coliform

Source: GPCB Regional Office, Surat

Apart from water pollution in these industrial areas air pollution is also likely to be a major issue of concern.

Table 5.13 presents the air quality data for the different areas of Surat city:

Table 5.13: Ambient Air Quality Monitoring [2014-15]

Location of Monitoring	Parameters *			
	PM_{10}	$PM_{2.5}$	SO_2	NO_x
Delhi Gate Police Station, Near Railway station, Surat	92	32	14	20.8
S.V.R. Engg.College, Ichchhanath	84	29	13.8	21.1
Baroda Rayon Corporation, Udhna	93	33	14.7	21.3
Air-India Building, Kotsafil Road, Surat	90	32	13.8	20.6

*** All the values are in µg/m3 = micro grammes per normal cubic meter & average.**

Source: GPCB Regional Office, Surat

Data shows that PM (Particulate Matter) is much higher than the permissible limits of 40 µg /nm^{3}in most of the locations. According to national standards, the permissible limit of PM is 40 micro grams per cubic meter. The level of SPM (Suspended Particulate Matter) is also much higher than the permissible limit of 80 µg/m3 in all the locations. The level of Sulphur Dioxide (SO2), and Nitrogen Oxide is less in Hazira and Pandesara area.

Measures to tackle air pollution in Surat district

The GPCB carried out collection and analysis of total 851 samples from various stacks emitting gases under the Air Act, 1981 with the help of its Surat Regional Office and their laboratories including Central Laboratory at Gandhinagar. These samples include the gaseous samples collected from various plants of thermal power, fertilizers, bulk drug, oil refineries, petrochemicals, pulp and paper, etc. Apart from these measures SMC and GPCB have undertaken following steps to control pollution:

- Registration of new vehicles having Bharat II norms for 2 & 3 wheelers, and Bharat-III norms for 4 wheelers made compulsory.
- Supply of fuel is conforms to Euro-III norms started.
- Computerized PUC centers are put in operation and on-road vehicle inspection is regularly carried out by FSL, DSO and RTO.
- Construction of bridges, traffic signals, traffic islands and flyovers by the SMC.
- Almost all petrol pump outlets have premix oil dispensers.
- More than 18 CNG stations and 5 LPG stations are in operation.
- Eight Ambient Air Quality monitoring stations are in operation.
- For air pollution control monitoring under air action plan, 220 air pollution potential units are identified.

- City bus service is plied through private operators in Surat and Bust Rapid Transit System (BRTS) is under construction. On one route, BRTS is already operational.
- Door to door garbage collection system is introduced in all the city zones of Surat.

The government of Gujarat is considering taking stern actions to reduce the level of air pollution in the city. GPCB keeps warning the polluting industries on a regular basis to take actions to control pollution or else the units shall be shut down. However, shutting down the units can adversely affect the economy of Surat and Gujarat.

Measures taken to tackle the groundwater quality problem

Looking at the major problem of groundwater quality, which results into drinking water problems directly or indirectly, the central and the state government has taken several steps to mitigate them. These steps are as follows[1]:

- Enactment of Ground Water Bill to regulate and control the development of ground water for control and regulation of ground water resources.
- Inclusion of Roof Top Rain Water Harvesting (RTRWH) in building by laws: Metropolitan Areas have notified rules under which no new building plan is approved without corresponding rainwater harvesting structure. The D/o Roads & Buildings have been directed to ensure that all major Govt. constructions including educational institutions had adequate rainwater harvesting facilities. The Urban Development and Urban Housing Department has issued necessary orders Gujarat Town Planning Act, 1976 to incorporate the rules for RWH.
- Gujarat government has started the, Swajaldhara Sector Reform Scheme (SSR). The reform process started as a pilot project in 67 districts of the country, including three in Gujarat - Surat, Rajkot and Mehsana. Apart from this, WASMO (Water and Sanitation Management Organization), Gujarat runs various activities to handle the water management of the state[2].

5.9.5 Surat city pollution problems

Surat is also one of the fastest growing economies in south Asia region and its high performing economy attracts many migrants in the city. Due to this the population growth rate of the city is also one of the highest in the country. This increasing population puts lot of pressure on the local body government. Increasing human

[1] The first two points of this information is taken directly from, http://cgwb.gov.in/gw_profiles/st_Gujarat.htm.
[2] The details of these various activities can be found at http://www.wasmo.org/cms.aspx?content_id=15, and http://www.wasmo.org/cms.aspx?content_id=23.

waste and other such pollutants is a major area of concern for the local body. Waste management becomes a major problem.

Presently Surat city is generating 1150 M.T. of solid waste yearly and the SMC is collecting 1100 M.T. of this solid waste. The solid waste transported from the transfer stations reaches to the final disposal site whereat S.W. is dumped and levelled by the heavy machineries. Daily cover of soil is also laid on the leveled S.W.

To address the problem of solid waste in Surat city SMC has adopted a new modern approach. It is[3]:

- Integration of SWM with other activities viz. sewerage, water supply, health care, engineering departments, etc.
- Emphasis was laid on Complaint redressal system, Grievance redressal system, Litter prevention system, Slum Upgradation & Rehabilitation, Field work, Daily meeting in this regard, etc.
- Financial commitment: Equipment, Vehicles, communication.
- Involving citizens: Positive involvement, penalizing truants, creating public awareness.

The new facilities which are going to be used by SMC in coming years to handle the waste of city are[4]:

- Semi closed body transfer station with elevated platform.
- Municipal Solid Waste treatment facility.

Apart from the measures begin taken by SMC, GPCB has also installed a hazardous waste facility namely, Gujarat Enviro Protection & Infrastructure Ltd., in Surat. Two Captive Hazardous Waste Disposal incinerator Facilities are also operational at, Cyanide & Chemicals Co. Ltd., Olpad and Colourtex Industries Ltd., Pandisara, Surat.

Table 5.14 gives the data of water quality in river Tapi. As we can see the water of Tapi river is polluted to some extent. As per the standards pure water has pH of around 7 whereas Tapi river at all the locations have pH of more than 8. This shows that the water of Tapi river is not pure and one of the reason for this is the pollution river water because of industries and human waste. The high pH level also shows that the Tapi water is hard and alkaline[5]. Hardness does not pose a health risk, but can cause aesthetic problems, such as an alkali taste to the water that makes coffee taste bitter; build-up of scale on pipes and fixtures than can lead to lower water pressure; build-

[3] Taken from http://www.suratmunicipal.org/content/swm/approaches.shtml.
[4] Taken from http://www.suratmunicipal.org/content/swm/approaches.shtml.

* Except pH all the parameters are expressed as mg/Lit.[5] Low level of pH (less than 7) on other hand shows acidic nature of water.

up of deposits on dishes, utensils and laundry basins; difficulty in getting soap and detergent to foam; and lowered efficiency of electric water heaters. The low level of B.O.D. (Biological Oxygen Demand) is also evident from the data. Oxygen is not only required for survival of most living organisms, but is needed to decompose organic (plant) material and human/animal wastes (sewage). According to standards BOD level of 1-2 ppm shows a very good quality of water. The mg/L data converted to ppm shows that the BOD levels in Tapi river are quite low which shows that the water quality according to data is good in Tapi. Low BOD combined with high level of O.D. also corroborates this result. But when used for drinking the Tapi river ideally should have 0 level of BOD and COD which we don't see in this data. The treatment plants are thus become important.

Table 5.14: Quality of Water in Tapi River at Different Locations [Average 2014-15]

Location	Parameters*			
	pH	D.O.	B.O.D.	C.O.D.
Kathor Bridge	8.1	7.2	1.2	10
Mandvi Bridge	8.16	7.38	1	8.1
Sherulla Bridge	8.2	7.3	1.1	9.5
Kathor upstream	8.05	7.26	1.1	9.67

*** Except pH all the parameters are expressed as mg/Lit.**
Source: GPCB Regional Office, Surat

Measures to tackle water pollution

To monitor the water quality of river Tapi GPCB has implemented the central pollution control board's GEMs (Global Environmental Monitoring System) project and MINARs (Monitoring of Indian National Aquatic Resources System) project. Under this project GPCB monitors both the quality of surface water as well as the quality of groundwater.

Apart from these measures, the GPCB has installed CETP [Common Effluent Treatment Plant] at two places, Sachin Enviro Infra Ltd., [process houses] P/2, GIDC Sachin, and Palsana Enviro Protection Ltd.

5.9.6 Vulnerability in Surat District

Human life is susceptible to many economic, social, cultural, political, industrial and natural factors. The dangers are always lurking on individuals that they might lose their job (during the time of recession), might lose their life in a political or social strife, might have to flee the country/state/city/home for saving their life against political/social oppression, might become a victim of any natural calamity such as

earthquake, flood, cyclone, drought, tsunami etc., might become victim of some deadly disease in a time of epidemic like HIV/Aids, plague, SARs, Bird Flu etc., might get crippled physical due to road accidents, might get killed due to crime and violence and many such other dangers. The ICET report defines vulnerability as, the extent to which a community, structure, service, or geographic area is likely to be damaged by the impact of particular hazard, on account of their nature, construction and proximity to hazardous terrain or a disaster prone area[6]. We now take a look at some factors of vulnerability which are present in Surat district.

5.9.7 Economic Factors

Surat city also has its own vulnerability factors. Regarding economic factors it is having no major problems. Life in Surat city is not vulnerable regarding economic factors like unemployment, low wages etc. Ample job opportunities exist in the city of Surat. Those people who live in interior areas find job easily in Surat city, as Surat is known as number 1 city to earn and live in India[7, 8].

5.9.8 Natural Factors

Surat district in general and Surat city in particular is an area prone to natural disasters like flood, earthquake and cyclones due to its geographical position. Due to its coastal areas these areas are also under the threat of a major tsunami which hit Indian coastal region few years back.

Flood in Surat district

Surat district is a green region where river Tapi flows through its different areas. Tapi River is very important for irrigation and drinking water purposes for the population of Surat district. But the river is also known for its flooding. Every monsoon season brings the possibility of a major flood in this area. Tapi river flood occurs mainly due to heavy rainfall in the upstream areas. The history of floods in Tapi rives shows that the Surat city, where river cuts the city area in two parts flowing from in between and encircling it, is been facing the floods since centuries. In the hundred years from 1876 to 1970, there were total 19 instances when the river crossed the danger level at Hope Bridge[9]. Thus, roughly once in every five years Surat city and district has faced the problem of floods. But the occurrence of heavy floods is not regular. Such floods came in years, 1782, 1835, 1882, 1883, 1884, August 1944, 1945, 1968 and in a span of 13 years three major floods in year 1994, 1998, 2002 and finally the flood of August 2006. The 1994 flood gave Surat city the disease of plague. The recent flood of 2006 stands out in

[6] (ICET 2005, 31).

[7] The Surat Municipal corporation website says that, *Surat has practically zero percent unemployment rate and jobs are easier to get here due to very fast development of various industries in and around Surat City.* (http://www.suratmunicipal.gov.in/content/city/introduction.shtml).

[8] Source of this information: (Indicus Analytics 2006).

[9] Source: (Narmada Abhiyan ; Gujarat Sarvodaya Mandal July 2007).

all these floods because of the magnitude of its impact on the lives and property of people of Surat district in general and Surat city in particular. During this flood nearly 90 per cent of the Surat city area was under flood water and the water stayed for at least a week time creating havoc.

Earthquake

Earthquake is another natural disaster proving to be deadly in Gujarat state. It kills people in mass number, destroys people's property, destroys infrastructure, and cripples the economy in big way. From the earthquake map of Gujarat it is seen that almost the whole of the state lies in seismic zones of probable intensity ix (the severest) to vii (moderate) on M.S.K. intensity scale. The sedimentary character of Gujarat district makes most of its areas vulnerable to earthquake. Although Surat district is in low intensity area but any earthquake taking place in high intensity area of Kuchchh can bring heavy destruction in Surat district too due to the passing of secondary shock waves in to sedimentary underground. The nearby passing of Narmada Valley fault line also make Surat district very vulnerable to the shockwaves. In year 2001, when the major earthquake took place in Kuchchh region, its waves brought down at least one high rise building in Surat city and killed almost dozen of people. People were so much psychologically tensed that many spent days and nights outside their building apartments during 2001 earthquake. Any major earthquake thus can result in to vast damage in Surat district.

5.9.9 Industrial Hazards

Surat district has many industrial houses situated in and around its areas. Surat city has a major industrial belt in Hazira and in surrounding areas. These industries are full of health and life threatening hazards. Any big industrial accident can instantly kill many people in the city and its surrounding areas, just like the Bhopal gas tragedy. In Olpad taluka the cyanides & Chemicals factory produces cyanide which is considered to be a highly toxic and lethal substance. In the Pandesara GIDC area there are many dangerous chemical factories which pose a big risk to the people of the city. Any major fire or chemical spill or accident can create a big panic situation and can be proved to be deadly. GSDMA (Gujarat State Disaster Management Association) has identified 31 factories in Hazira, Sachin, Pandesara, Katargam, Chalthan, Sarthana, Rander and Kamrej, Palsana, Bardoli and Mahuva as Major Accident Hazard (MAH) units. In order to prevent accidents / hazards, and off-site emergency plan is prepared and rehearsed. At present, there are four such centres as per four regional (Prant) offices. For each of these areas, a separate Disaster Management Centre is required to be set up. Moreover, these centres should be linked with other Disaster Mangement Centers to ensure 24 hour services to deal with any kind of emergency.

Nuclear threat

Near Surat, in Kakrapar, Nuclear Power Corporation of India operates a pressurized Heavy Water Reactor (P.H.W.R.) plant with a capacity of 2 x 220 MWe (two units). Nuclear power station has a high safety records, except the accidents of The Three Mile Island (TMI) in March 1979 and the major nuclear reactor blast in Chernobyl in April 1986 which killed at least 31 people on site and whose nuclear waste dust was flown all over the world creating big health hazard. Any such mishap in Kakrapar plants can really pose a big danger for the whole district as well as many kilometres areas surrounding Surat district. The major concerned area at these sites is the movement and storage of nuclear waste. Radioactivity can kill millions of people (as witnessed by Hiroshima and Nagasaki) and can contaminate the genes of future generations and the surrounding natural resources making habitation impossible in this area for years.

Dam Threat

Surat district lives and grows with the help of Ukai dam. Dams have many benefits but they can also pose a great risk to communities if not designed, operated and maintained properly. In the event of dam failure, the energy of dam reservoir has the capacity of creating tremendous damage to the downstream areas. Surat districts major areas are under this downstream of Ukai dam. So far there is no big danger being felt in the construction of Ukai dam. It may be noted that mismanagement of water in Ukai dam can have devastating effect on economy and livelihood of the people.

Authorities have taken number of precautionary measures to avert any kind of danger to dam. Extensive use of modern technology is also being made to reduce human error.

SUMMARY

Surat city is located on the banks of river Tapi. The actual revamping the Surat city took place after outbreak of pneumonic plague in 1994. The city is known for its strength to convert adversity into advantage. Surat is experiencing rapid population growth rate in past 4 decades and the sex ratio of Surat city is very low. One of the reasons for very low sex ratio of Surat could be because of single male migrants coming from various parts of the state and country in search of work.

Surat city has very good infrastructure. Road network and quality of roads in the city are very good. The city has a network of flyovers which helps reducing the traffic congestion in peak hours. Surat city has an airport with latest technology but at present, there are very few flights. It is being planned to increase the number of flights as well as to provide parking facilities for air crafts.

There is an improvement in the literacy rate in Surat city in past one decade. Female literacy has increased and gender gap in literacy has decreased. However, male literacy rate continues to be higher than the female literacy rate. Schools are manged by Nagar Prathmik Sikshan Samiti. These schools have very good quality infrastructure with spacious building, playgrounds, computer laboratory, Internet connection, land line phone connection, drinking water facilties with RO plant and much more. Note books, pen, pencil and other stationery; shoes and socks are provided to the students of these schools from the donation received by the Samiti. The student-teacher ratio is 40:1 in these schools. There are two universities in the city and three university centres. SNDT has an affiliated college in the city.

Health infrastructure in the city is very good. There is one Civil Hospital (Medical College) and one SMC-run College and Hospital in the city. There are many private hospitals and dispensaries in the city. Surat was facing the problem of many vector-borne diseases like malaria, Falciparum and Lymphatic Filariasis. Of late, Surat faced the problem of Dengue too. However, in last five years, the incidence of vector-borne diseases is on decline. SMC is taking special care towards better functioning of anganwadis in order to enhance the effectiveness of ICDS programme. SMC gives additional remuneration to anganwadi workers and helpers for the community out-reach activities. This has resulted in increased proportion of normal children.

Surat city has ample employment opportunities. There are a large number of textile, zari and diamond units in the city. The sectors are providing good opportunities to workers. People from different parts of Gujarat as well as from Uttar Pradesh, Bihar, Zharkhand and Orissa, people come to this city in search work. There are a very large number of migrants from Orissa in the city. SMC has undertaken steps to alleviate slums from the city in order to improve cleanliness, revive the heritage sties as well as the river bank. SMC has provided good-quality, small apartment-type houses to the slum dwellers. Thus, it has benefitted the slum dwellers, the city has become more clean and beautiful because of this initiative.

Air and water pollution is a cause of concern in the city. Surat city faces the problem of frequent flooding of river Tapi. Ukai dam and Kakrapar dam also pose safety concerns to people of Surat city as well as nearby areas.

SWOT Analysis

STRENGTHS

- Airport is having state-of-art technology.
- Literacy rate of city is higher than the overall literacy rate of Gujarat.
- Female literacy has improved in past 10 years.
- Gender gap in literacy has reduced over past 10 years.
- Student-teacher ratio is 40:1.
- There are two Universities in the city.
- Health infrastructure is good.
- Cases of Malaria and Lymphatic Filariasis have reduced in past five years.
- Number of children registered under ICDS have increased in past three years.
- On the basis of children weighed in anganwadis, number of normal children are increasing.
- Percentage of institutional deliveries have reached almost 99 per cent in the city.
- Surat city provides huge employment opportunities.
- In order to make the city slum-free, SMC has started building and allocating houses for slum-dwellers.

WEAKNESS

- Despite state-of-art airport, there are very few flights.
- Gender gap in literacy exhibits male bias.
- Burden of leptospirosis, sickle cell anaemia and leprosy still exists.

OPPORTUNITIES

- There could be public private partnership in developing good quality intercity bus stations, enhancing the facilities at railway stations.
- Passenger ferry service could be planned between Surat and Saurashtra.
- Surat city is having historical Significance. Therefore, there is an opportunity for developing Surat as tourism destination.
- Augmented with good infrastructure of Surat, there are opportunities to develop health centres with facilities for telemedicine.

THREATS

- Water and Air pollution in the city.
- Natural disasters like flood and earthquake. City is prone to floods.
- Industrial hazards.
- Ukai and Kakrapar Dams.

THE WAY AHEAD

The district has experienced remarkable economic growth in recent past. The growth is still faster in the Surat city and its peripheral areas. Urban bias in economic growth is quite conspicuous. This is evident from labour market conditions. Labour is in short supply and wage rates are considerably higher than the minimum wage fixed by the government. In rural area, employment opportunities are bleak and wage rates considerably vary depending upon the season. Sometimes it goes below the minimum wage rate fixed by the government. In order to correct these rural-urban imbalances, development efforts should be focused in rural areas.

The Government has launched - the 'Chief Minister's Ten Point Programme for the Development of Tribal Areas'. This programme is aimed to boost up development in the tribal regions and bridge the gap between tribal regions and other parts of the State. The Ten Point Programme will also help in tackling the issues of poverty on a long-term basis, if properly implemented. The Programme with the help of private initiative, infrastructure, and technology, training and modern facilities seeks to lead tribal communities into the new age of global linkages, IT, and value addition.

INFRASTRUCTURE

Development of roads and railways increase access to education and health. Surat has experienced rapid growth in terms of development of roads. This has resulted in ease of access to health care services through 108. Some alternative mechanisms are required. Private Jeeps are operating and this meets the local demand to some extent. Increase in bus frequency with increase access to health and education and access to market activities. Increase in access to urban centres and market activities can lead to change in migration pattern. Postal services are crucial for correspondence with people staying in rural areas. Over and above this, post office is the only access point for exchange of money from the family members staying in urban areas or abroad. Government is undertaking steps to strengthen the Department of Posts and has also introduced the concept of e-posts for people in rural areas for whom internet access is difficult. Telecommunications, especially the mobile telephony has started penetrating in rural areas as well. This is because of the policy regulation of the government that a service provider getting license has to compulsorily set up their infrastructure in rural areas. It was observed that in rural areas, people were using mobile phones more than fixed-line phones. However, accurate the data on the number of mobile phone connections were not available. Surat district has made remarkable progress in providing electricity to villages in past few years with the implementation of Jyotigram village scheme. Implementation of Water Conservation

project and Vanbandhu Kalyan Schemes have lessened the problems of safe drinking water in the district. Through the implementation of Nirmal Gram and Total Sanitation programme, increased number of households in the rural areas have now access to sanitation facilities.

One can find appreciable expansion of both physical and social infrastructure. The concern area is quality of infrastructure, delivery of services and governance. For example, hand pumps were made available for drinking water but in some cases they are not in working condition. Toilets are constructed but are used for different purpose. Conditions of Ashram Shalas are far from satisfactory. This may require re-examination of policy of funding Ashram Shalas.

More focus on quality of services is required after achieving physical targets. Access to physical infrastructure, quality of infrastructure and delivery of services is more important from human development perspective.

EDUCATION

Access to basic education lies at the heart of human development. Lack of educational access is both a part of the definition of poverty, and a means for its diminution. Sustained access to meaningful learning that has value is critical to long term improvements in productivity, the reduction of inter-generational cycles of poverty, demographic transition, preventive health care, the empowerment of women, and reductions in inequality.

Education is an important component of human development. More than that, education in itself is desirable as it leads to enhancement of choices, opportunities and dignity. Expansion of education leads to social benefits also. In particular, it helps to reduce female fertility and thereby contains population growth. Inequality in the level of education implies inequality in the benefits stated above.
Disaggregated data on the level of the literacy rate show considerable regional, gender, and caste imbalances. In order to remove regional imbalances, more resources should be allocated in the regions which are lagging behind in educational infrastructure. In order to reduce gender inequality, special concessional measures for girls should be undertaken. The state government has exempted girl students from the payment of tuition fees. But it forms very insignificant component of total private expenditure in education. The factors behind poor literacy rate among female compared to male children should be identified and measures should be taken accordingly. Gender bias is likely to exist for different reasons and the causes for its existence is likely to vary on caste, region, class and religious basis.

The literacy rate of SC male population is very impressive. It is higher compared to many groups in the state and in India. Even their female literacy rate is praiseworthy. Reservation policy, mid-day meal programme, provision of scholarships etc. are the factors that might have influenced the progress of literacy rate among them.

Literacy rate of ST population in the state is satisfactory compared to their counter parts in India. But specific measures should be undertaken to further improve their literacy rate. Poverty, illiteracy of parents, local environment, lack of educational facilities, school timings and absenteeism of teachers are some of the factors responsible for low level of literacy rate among tribal population.

The composition of the tribal population is not uniform. Different tribal groups speak different languages / dialect. It is difficult to provide education in the language / dialect in which they understand. The curriculum and assessment system may also have to be suitably tailored to meet the requirements of the tribal population. The demand side factors are also very important. The tribal people should feel the need for taking education. Within tribal community, some groups (like halpati,) are highly contented with their life style. It is very difficult to bring them in to the main stream. Special efforts are required to attract them after making their careful sociological and economic study.

Still there are many categories of children in India, for whom adequate and appropriate strategies are not in place for their effective education. One such substantive category is children of seasonal migrants – a group which has not been on the radar screen of the government or development agencies. Distress seasonal migration is a growing phenomenon in almost all arid parts of India. Drought and lack of work in villages forces. There is no official data available on the scale of distress seasonal migration. Migration takes place to a range of industrial and agro-industrial sectors such as brick manufacture, salt making, sugar cane harvesting, stone quarrying, construction, plantations and fishing. The state government is taking special care of children of migrant labour by offering education at campsite and in their own mother tongue. Recently the Collector has involved Sugar Co-operatives and other NGO to improve and provide quality education to this group of children.
Providing education to the children of migrating population is a challenging task. The government has introduced scheme of Nivasi Camp to provide education to the children of such population. Sugarcane Cutter Child Alternative Schooling Systems is introduced to provide primary education to the children of migrant population.

The state government has initiated a series of measures to improve enrolment ratio, and retention rate in the primary schools. Some steps were also taken to provide education to children of migrant population and to encourage girls' education. The

focus of the government is universalisation of primary education for children in the age group of 6 to 14 years with specific planning and target setting.

The government undertook special initiatives to provide education to girls in the state through Kanya Kelavani drive. This has drastically reduced dropouts and increased enrollment in most of the regions. Even in remote areas, these encouraging results can be seen. For the Kanya Kelavani initiatives, due care is taken by the government to recruit qualified teachers.

'Sarva Siksha Abhiyan Mission' (SSAM) is launched to achieve 100 percent literacy rate. Under the umbrella of SSAM, 'National Programme for Education for Girls at Elementary Level' is also being implemented. Besides, Kasturba Gandhi Balika Vidyalaya Yojna is being implemented. Under this scheme, residential elementary school with boarding facilities are set up for girls belonging to the disadvantaged group of SC/ST/OBC/Minority and BPL in remote areas.

Malnourishment in prosperous state of Gujarat is a predicament. Most of the malnourished children are found among tribal communities. Good physical condition is pre-requisite for educating a child. The Mid Day Meal scheme is re-introduced since January 1992 and it is being implemented throughout the state. Under the scheme, children are provided a healthy and nutritious meal. Under Nutritional Support to Primary education, food grains @100 grams per child per day provided free of cost to the children of standard I to V.

'Doodh-Sanjivini Yojna' is introduced to increase physical standards of poor tribal students. Initially the scheme is introduced in Uchchhal taluka to provide a flavoured-milk pouch daily to 13,272 tribal school children at free of cost. As per the scheme, the state government would provide 200 ml pouch of 'Sumul' brand's flavoured milk to children of 84 primary schools and five ashramshala of Uchchhal taluka. The milk pouch would be distributed apart from the mid-day meal scheme.

The scheme of 'Vidya Laxmi Bond' has been introduced to encourage the poor parents to send their girl child to school and provide education upto to primary level. The state government has introduced the scheme of 'Vidya deep' insurance to provide insurance coverage for accidental death of students studying in primary / secondary schools. Insurance cover under the scheme provided for accidental death, except suicide or natural death, death by any other means viz. earthquake, floods, cyclone, fire, riots, accidental poisoning, dog bite or bite by any other beast or accidental death by any other means at any place during 24 hours of day.

The process of improving retention and decreasing dropout from elementary level is encouraging. This can be attributed to various government initiatives like MDM,

Kanya Kelavani, Praveshotsav, Gunotsav, Doodh-Sanjivani, SSAM and similar such schemes.

HEALTH

Health is a crucial component of human development. Good health enhances capability. Increase in capability leads to increase in income and widening of choices. Urban areas have good health infrastructure compared to rural areas. People have easy access to both private and public health care services especially in urban areas. Some measures are required to be undertaken to correct urban-rural imbalances in health care services in some critical areas. Private health care services is nearly absent in rural areas. Government has introduced various schemes like RCH, ICDS, Chiranjeevi etc. to provide better health care to rural population. It has also introduced special 108 services to increase accessibility to existing health care services and it has yielded good results.

Human physical stature is one of the indicators of well-being. Good health of children provides a wide array of benefits to children, families and society as a whole. India has the dubious distinction of having the largest number of anaemic women and children in the world. Under nutrition is a condition resulting from inadequate intake of food or more essential nutrients. Under nutrition is an important factor contributing to the morbidity and death of young children. If a child is malnourished, the mortality risk associated with respiratory infections, diarrhoea, malaria, measles, and other infectious diseases is increased.

In recent past economic growth has accelerated and per capita income has increased. Most worrying situation is that, the levels of under nutrition have remained unchanged despite the acceleration of economic growth. It indicates that pushing growth alone will not tackle this malaise.

The National Rural Health Mission and the Integrated Child Development Services (ICDS) programmes are expected to prevent the incidence of severe malnutrition of the kind that has been reported in the state. The ICDS seeks to provide young children with an integrated package of services: supplementary nutrition (SNP), health services, and pre-school education (PSE).

A key issue in ICDS is the absence of designing appropriate interventions for children in the various age cohorts between 0–6 years, and the lack of attention to children below three years, which is the time when nutrition interventions have the most effect. The second issue that hampers the working of ICDS is the lack of attention paid to providing the AWW with the capacity and skill to deliver services. *Anganwadi* worker does not have incentive for high performance. Main concerns of the *anganwadi* worker

include inadequate infrastructure; lack of training; low and irregular salaries; excessive work overload and lack of community support. Motivating the *anganwadi* worker through monetary or in kind incentives to deliver high quality services may yield better results.

After 30 years of operation, the ICDS is yet to have significant impact on the poor nutritional status of children, as it is evident from nearly unchanged levels of under nutrition. For tackling the issue of under nutrition among poor people, both short term as well as long term strategies is required. Measures should comprise of both direct and indirect interventions.

A new scheme has been introduced in 2007-08 to ensure that village is properly cleaned, that may arise good spirit on cleanliness, level of cleaning as well as level of rural life may go high. The campaign of sanitation and cleanliness is being done through Nirmal Gram Yojana. It has helped to sensitize people living in rural area about the importance of sanitation.

Despite good efforts made by the government in the recent past, some areas of concern were identified during our field visits. Services of specialist of some diseases are not available in rural areas. Adequate facilities for conducting some pathological tests are lacking and patients are often required to go to make out of pocket expenditure. There were also shortages of both medical and paramedical personnel. Besides, specialists for anaesthesia, obstetric care, pediatric care etc were also not available. The government has taken many initiatives to improve health care facilities in rural areas by recruiting new staff, monitoring existing human resources, planning and improving co-ordination at various levels. Use of information technology has improved communication and effective decision-making. Online attendance by bio-metric system is introduced to monitor the presence and punctuality of grass root workers in the district.

Rate fixed for providing food to the patients is very low, so nobody is coming forward to provide services. In most of the hospitals, food is not provided to the indoor patients. In some places, food is provided from the funds received through donations. The government may provide subsidized food to the indoor patients. Timely and adequate quantity of food often expedites recovery from sickness. Food coupons may be issued to the patients who are below poverty line.

Some of the important indicators of health are proportion of population suffering from mal nutrition, maternal mortality rate and infant (children below 5 years of age) mortality rate. Temporal data on these indicators are not available either at district level or at block level.

Leptospirosis and Sickle Cell Anaemia are the causes of worry in Surat district. Leptospirosis is mostly prevalent among tribal agricultural labourers. It has a high mortality rate, if appropriate treatment is not given on time. Mortality rate is higher among older people, especially men. More cases of leptospirosis are reported in monsoon season, especially in the month of August. Both preventive and curative measures can help to reduce mortality due to leptospirosis. Dense population of rodents, presence of large number of domesticated, stray and wild animals, stagnation of water for long period, humidity and agriculture cropping practices are some of the factors that contribute to occurrence of leptospirosis. They are transmitted directly or indirectly from animals to humans. Active surveillance, training of medical personnel at the level of PHC, public awareness and provision of medicine and diagnostic tools are some of the measures undertaken by the government to tackle of menace of leptospirosis.

Sickle cell anaemia is an inherited blood disorder that affects the haemoglobin molecule in red blood cells. Haemoglobin is the part of the red blood cells that carries oxygen from the lungs and delivers it to the rest of the body. Anaemia can lead to shortness of breath, fatigue, exercise intolerance, and delayed growth and development in children. Children with sickle cell disease are at increased risk for getting infections including life threatening blood infections. The problem of sickle cell anaemia prevalent in some tribal areas needs many sided and long term programs. Concerned over the high incidence of this genetically linked disease, the state health department has now set up screening and counselling centres in Surat. As part of the drive, authorities distributed three types of laminated colour coded cards depending on the shape of the haemoglobin cells. An all-white card indicated normal haemoglobin, half white-half yellow, sickle cell trait and all yellow, sickle cell disease. To ensure that children with sickle cell trait or disease were not born, unmarried boys and girls, yellow cardholders have been advised against marrying among themselves. Councillors have advised that a half-white half yellow cardholder or an all yellow cardholder should marry only to an all-white cardholder. Special emphasize has been given in 10 point programme envisaged by the chief minister to tackle the problem of sickle cell anaemia.

Private practitioners and private hospitals constitute major share among the health care service infrastructure, especially in urban areas. Private and trust-based hospitals operate even in rural areas. Data on private practitioners and private hospitals are not available at either district level or at block level.

Number of cases of different diseases is also vital to take necessary actions by the government to combat the spread of frequently occurring diseases like malaria, chicken guinea, leptospirosis, sickle cell anaemia etc. Moreover, deaths occurring due to different diseases also provide important information on health care situation. The

data available on these indicators are not adequate and reliable. For example, time series data is not available on disease wise cases either at district level or at block level and the data on deaths contain majority of the cases under the head "other causes". The term "other causes" is not defined and thus, it does not convey any meaningful information.

AIDS is a major cause of worry in Surat. Surat city and district, with maximum migrant workers and floating population in the state, has the highest number of AIDS patients in the state. People from UP, Bihar, Orissa and Maharashtra visit and stay in and around Surat city for livelihood. Migrant population mainly consists of single male, who come in city to look out for employment, remitting money back to their home. These people are at higher risk of suffering from AIDS. In addition, Surat is rapidly becoming a cosmopolitan city being the economic hub of the state; it attracts commercial sex workers in the city which again is a major cause of the prevalence of AIDS. Surat district is facing potential threat from HIV/AIDS, if not controlled and monitored it can have disastrous impact. Migrant population and with them others living in the city are all very vulnerable to the dreadful disease of HIV/AIDS. The disease not only causes financial losses but it is also associated with social stigma. The state government has implemented the National Aids Control Programme to control AIDS.

Existing health management system does not specifically address age-linked health problems. The needs of older persons living in rural area require special attention. Nature and complexity of old age health problems are significantly different for women as compared to men. Proportion of women in elderly population is higher compared to men. It is generally found that among widowed, percentage of widows is higher compared to widows. Since older women are often weak to fight injustice due to their poor health.

There are additional issues with regard to the health care provided to elderly. Geriatrics is still relatively less known health care of the older population. To meet the preventive, curative and restorative needs of older population and especially for older woman is a difficult task. The aim of health care for elderly population should focus on providing quality services closer to their residential area. The government may think of providing Mobile Medicare Services to reach remote villages in rural and tribal areas. Separate counters for older women may be made, so that they do not have to wait for longer hours. Even separate time-slot may be allotted for elderly people. Provisions for equipments needed by older people may be made available in public health centers.

Drinking water and sanitation are a basic human need that determines the quality of human life. Safe drinking water and sanitation are very vital for good health and well-

being. Easy access to drinking water reduces the time taken for fetching water and thus, it reduces drudgery for women and the girl child.

During our field visits, in some tribal villages, it was observed that hand pumps had dried up. People in that area have to make alternative arrangement for fetching the water. This calls for proper maintenance of the infrastructure created.

In coastal villages, where piped water was supplied to households, water was not regularly available. The people in the village informed that the water is available once or twice in the month. This was unbelievable, so we talked to a cross-section of people. When matter was probed, people informed us that water was diverted to fish ponds by influential people. This phenomenon indicates misuse of public resources. Poor people are unable to raise their voice as it happens in most of the cases. The government may think of developing some mechanism for the surveillance of water distribution system.

The need of drinking water is largely met from ground water sources. The average availability of water is reducing steadily with the growing population. Availability of drinking water and its quality has bearing on health. Salinity, fluoride and nitrates have a widespread effect on suitability of ground water sources for drinking purposes. The major chemical parameters of concern are fluoride and arsenic. Iron is also emerging as a major problem with many habitations showing excess iron in the water samples. In recent years, quality of ground water is threatened by human activities. The intensive use of natural resources and the large production of domestic and industrial wastes, over exploitation of water, contamination of ground water by heavy metals and pesticides often threat to ground water quality. Quality of ground water in Surat is under threat, especially in metropolitan areas. Central Pollution Control Board carried out detailed survey of ground water quality in metropolitan cities of the country. Samples collected during pre and post monsoon seasons were analyzed for various water quality parameters. In Surat, presence of heavy metals has been recorded in many samples and the water quality standards have been violated for iron, nickel, lead, and cadmium. Presence of pesticides (Aldrin, DDT and Endogulphan) was also detected at few locations in the ground water of the city. Concentration of total dissolved solids exceeds desirable limit. The alkanity values also exceed the desirable limit. Magnesium content and chloride content also exceeded the desirable limit. BIS prescribe drinking water specifications. The study carried out by Veer Narmad South Gujarat University also corroborates the findings of survey carried out by Central Pollution Control Board.

The health burden of poor water quality is enormous. The provision of clean drinking water has been given priority in the Constitution of India, with Article 47 conferring the duty of providing clean drinking water and improving public health standards to

the State. Surat Municipal Corporation (SMC) has done exemplary job in providing water of good quality. The Water Quality Surveillance Programme is implemented to ensure the quality of water supplied. To check and measure parameters like pH, turbidity, total dissolved solids, dissolved oxygen, chlorine, ammonical nitrogen and to achieve desired results, a digital turbidity meter and a digital residual chlorine analyzer are installed. Arrangements are also made for conducting in-house chemical as well as bacteriological tests on a regular basis. ISO 10500 standards are strictly followed. The SMC has got National Urban Water Awards 2008 for their commendable efforts in providing good quality water.

In rural area, water is a scarce resource. Accessibility and availability of drinking water is a problem. Bacterial contamination of water continues to be a widespread problem. The problem of water quality greatly varies different regions of the district. The Government of India launched the National Rural Drinking Water Quality Monitoring and Surveillance Programme in February 2006. This envisages institutionalization of community participation for monitoring and surveillance of drinking water sources at the grassroots level by gram panchayats and Village Water and Sanitation Committees, followed by checking the positively tested samples at the district and state level laboratories.

LIVELIHOOD

Poverty among plenty is the greatest challenge in the world. Poor people often lack adequate food and shelter, education and health that keep them away the kind of life affluent people take it for granted. They are worst affected in the event of natural disaster, ill health, economic shocks and dislocation.

Poverty alleviation measures consist of direct method of income transfers to the poor, which includes old age pension, producer and credit subsidies, or employment programmes. The indirect methods are growth mediated. The growth oriented approach focuses on specific sectors which provide greater opportunities to the people to participate in growth process. Direct transfer of income to poorest among the poor is required to provide them livelihood. Old, Widow, disabled persons and those who lack any support system are in need of direct financial assistance. The government has implemented social security schemes like Niradhar Vruddh and Niradhar Apang, Indira Gandhi National Old Age Pension Scheme (IGNOAPS), Niradhar Vidhva Punasthapan and Sankat Mochan Scheme. Numbers of beneficiaries under the social security scheme have increased in recent past and people have benefitted from these schemes in one way or the other. However, if steps are undertaken to create awareness about the rights and the scheme to these people, the implementation can be more effective. Involvement of NGO, *gram mitra* and local self-help groups can help

improving the effectiveness of these schemes. Government can also consider regularizing the frequency of payment and increase the amount that is being disbursed under these schemes to Rs. 500 – 600 per month.

The government has launched *Garib Kalyan Mela* campaign in 2009 to help deprived poor get their dues directly. It will help beneficiaries without involvement of any intermediary.

Large numbers of poor people stay in rural area. Lack of access to land and lack of employment opportunities are two major determinants of rural poverty. The district administration has taken many steps with the active support from the state government to ameliorate the conditions of BPL families, especially from tribal areas and provide livelihoods.

The district has strictly implemented the Forest Rights Act, 2006. The Act gives individual property rights to the tribals and other forest dwellers in the forest land under their occupation for cultivation and dwellings and community rights on forest resources, including right to manage them, and total ownership rights on Non-Timber Forest Produce (NTFPs). In Umarpada and Mandvi taluka, property rights are given to and land is distributed according to the provisions of the Forest Rights Act, 2006.

Government also distributed land acquired under the Land Ceiling Act of Gujarat in Mangrol, Mandvi, Bardoli, Palsana, Kamrej and Mahuva talukas.

The government can think of improvement in implementation of these schemes after carrying out impact assessment studies. Socioeconomic conditions of beneficiaries, issues in implementation of the schemes and extent of benefits can be examined through impact assessment studies.

Issues of living conditions of the poor people and vulnerable groups are different in urban and rural areas. There is a visible difference in the life of land owning class and landless farm labourers. Majority of landowners in the Surat district are *Leuva* and *Kanabi* Patels and *Anavil* Brahmins. Most of them have migrated to USA, UK and Canada and they take active interest in development of their native places. Their family members staying in the village use mineral water for drinking purpose and send their children to good private English medium schools. The internal roads of the villages in the localities dominated by these landowners are paved. In stark contrast to the life of land owning class, the life of landless agricultural labourers in the same village is not satisfactory. They live in hut type of structure, which lacks even basic amenities like drainage and sanitation. Their houses are small, poor quality, kutcha or semi-pucca, usually of one room and a part of that room is used as kitchen and for sleeping purpose. One can find the use of poor quality of materials for building. The surroundings of the houses of the landless labourers become filthy during rainy

season and a fertile breeding place for mosquitoes and other disease-causing germs. Poor people are at higher risk in getting sickness and sickness results in loss of employment and income.

The government has taken initiatives to provide housing to poor people in rural areas through *Indira Awas Yojana*, *Sardar Awas Yojana, Pt Dindayal Awas Yojana* and *Dr Ambedkar Awas Yojana*. Government has also implemented Total Sanitation Campaign (TSC) for providing toilet facilities to every household in the rural area. Improved living and sanitation facilities will help in reduction of diseases and morbidity among poor people. Ownership of house also improves the social status.

Government has implemented *Vanbandu Kalyan Yojana* for people residing in tribal area. The scheme focuses on developing infrastructure for drinking water in tribal area. *Sagar Khedu Sarvangi Vikas Yojana* is a flagship scheme launched in an integrated manner for overall development of coastal villages. The basic objectives of this scheme include improving the wages and self-employment opportunities, educational facilities, health infrastructure, drinking water, housing, salinity ingress, electrification, water conservation and national security.

The ***Swarnajayanti Gram Swarozgar Yojana*** **(SGSY**) is launched as a single employment programme in place of the earlier programmes. The scheme covers all aspects of self-employment viz. organization of rural poor into self-help groups (SHGs) and their capacity building, planning of activity clusters, infrastructure build up, technology, credit and marketing. The deficiencies of earlier self-employment programmes are removed through integration of various agencies – banks, line departments, DRDAs, NGOs and other institutions in SGSY. The programme provides special safeguard for the weaker sections. Major focus of the SGSY is social mobilization of the poor through self-help groups. It is an effective instrument for successful implementation of various poverty alleviation programmes. Our field visits suggest that there has been a definite change in rural areas towards SHG movement. Some aspects of the programme require considerations. The target groups of the programmes who are poor, illiterate, shy, scared and passive hardly understand the scheme.

NREGA is a flagship anti-poverty programme that guarantees of 100 days of wage employment in a financial year to every rural household whose adult members volunteer to do unskilled manual work. All adult members of a rural household, resident in the area, willing to do unskilled manual work have right to demand for work, even if a person is already employed/engaged in work. Despite its usefulness in providing livelihood, some problems have surfaced in its implementation. NREGA programme suffers from lack of technical and professional support, delayed and inadequate payments to workers. Moreover, the study undertaken by the Department

of Human Resource Development reveals that many provisions of the Act are not strictly observed.

The existing delivery mechanism focuses on utilization of funds rather than the outcome of the funds utilized. The delivery system is mostly administered by overburdened bureaucracy. Implementation agencies are more interested in utilization of funds, rather than for producing results. Impact assessment studies may throw more light on issues involved in implementation of various schemes targeted at poverty removal.

SURAT CITY

The actual revamping the Surat city took place after outbreak of pneumonic plague in 1994. The city is known for its strength to convert adversity into advantage. The population growth rate is very high and sex ratio is very low. This is perhaps because of single male migrants coming from different parts of the country in search of livelihood opportunities.

Surat has very good road infrastructure and airport with latest technology equipment. However, the number of flights are less.

Schools are manged by Nagar Prathmik Sikshan Samiti. These schools have very good quality infrastructure with spacious building, playgrounds, computer laboratory, Internet connection, land line phone connection, drinking water facilities with RO plant and much more. Note books, pen, pencil and other stationery; shoes and socks are provided to the students of these schools from the donation received by the Samiti. The student-teacher ratio is 40:1 in these schools. There are two universities in the city and three university centres. SNDT has an affiliated college in the city.

Health infrastructure in the city is very good. There is one Civil Hospital (Medical College) and one SMC-run College and Hospital in the city. There are many private hospitals and dispensaries in the city.

Nearly 20 per cent of the Surat city lives in slums. Most of the slum-dwellers are engaged in unskilled jobs or semi-skilled jobs such as diamond cutting, polishing and organized, semi-organized / unorganized textile (power) looms. Migrant labours work as wiremen, printers, drivers and workers in small shops in textile markets and in other industrial areas, coolies at railway and bus stations. Nearly 64 per cent of the public land has been encroached by the slums in the city. Normally, slums or low-income settlements are congested and unhygienic. The condition of public utilities is also miserable. In these localities, one can see lack of drainage, chocked gutters and garbage. These locations are filthy and provide ideal conditions for the spread of waterborne diseases like malaria, gastroenteritis and hepatitis B. Seasonal or

temporary labour migrants in the city are quite visible. The problems of seasonal migrants and permanent migrants are quite different. Permanent migrants have specific location to stay and have access to public utilities and other necessities. In event of disaster, they also get government relief. No such benefits are available to seasonal labourers who come to the city for a very short period.

SMC has initiated a number of measures like slum upgradation, slum redevelopment, slum rehabilitation and housing projects for the purpose of providing a house and access to water supply, drainage lines, stone paved foot paths, road with carpet, hand pumps, street lights etc. As discussed earlier, ownership of house improves personal hygiene as well as enhances the social status. As in other growing urban centres of the district, similar kind of advance planning may be done to avoid problems confronted by poor slum dwellers and migrant population.

Mission Mangalam Scheme is launched with goal of providing employment to the youth of Gujarat. In Surat, district administration has taken very commendable initiatives by providing training to youth.

1.1.1 Migration

Migrant population majority belong to Schedule Caste (SC), Schedule Tribe (ST) and Other Backward Castes (OBC) and comprise of landless poor labour. Majority of migrants are illiterate and possess no or very little amount of assets. Newly formed Surat district faces the problem of in migration. In undivided Surat district both out and in migration were the issues. Migration takes many forms and there is significant diversity in migratory patterns. Understanding of this diverse pattern of migration is required in order to make effective interventions in policy and practice. The gender aspects of migration also need to be given much greater attention. Migrant children face a life of hardship and insecurity. Information on conditions of children of migrant population is not available. Data collection on this issue of migration is required for better understanding and policy formulation. Surveys on out of school children are undertaken by education department. Reference period for data collection is very important to collect reliable information. If surveys are undertaken during migration period, children who migrate for work will not be counted. Surveys may be designed to capture some aspects of child migration.

Surat district is very prosperous region and growing very fast in recent past. People migrate in large numbers to this region from different parts of the state and outside the state. Economic and living condition of seasonal migrant labour is very bad. They constitute the most vulnerable group of the society. Seasonal migrant labours come from backward regions of the state and neighbouring states. Provision of healthcare services and education to their children is a challenging task. They have diverse background and face different problems depending upon where they temporarily stay

and work. Particularly, the conditions of poor migrant labourers for construction and agricultural work are very bad and improving their condition is a challenging task.

Implementation of NREGA has started influencing inflow of migrant labourers. The scheme has positive influence on rural wage rates. Despite some shortcomings in the implementation of the scheme, it is very useful for the livelihood of rural people.

1.1.2 Environment

Good environment is essential for healthy living. The problems of environment are different in rural and urban areas. In rural areas, coverage of forest area has depleted. In recent past the coverage has not changed much but the forest coverage is very less. Coverage of forest not only influences environment but it has a direct bearing on livelihood issues of tribal population. Government can think of creating and enforcing private property rights to increase forest coverage and arrest further depletion of existing forest area.

Air pollution, water pollution and noise pollution are major problems of Surat. Air pollution in the industrial areas of the district like Hazira is much above the National Ambient Air Quality Standards (NAAQS). Water pollution, as measured by high pH and Chemical Oxygen Demand (COD) in the water is much higher in industrial areas of Surat district like Hazira and Pandesara. Surat district's major river – Tapi is polluted with a high pH level of above 7 mg/lit. Drinking water should have ideally 7 pH level. The noise level is very high in the city area during the festival time of Navratri and Diwali. Noise level is also very high in the areas where looms are operating. Surat city Municipal Corporation is trying hard to cope with the solid waste being generated by the city population. Thus, appropriate steps are required to be taken to reduce the air, water and noise pollution. Many legislations are enacted to deal with different kind of pollution but implementing agencies are constrained for various reasons to take necessary actions. Public also need to be educated about the consequences of pollution. When benefit is personal or private through any activity and cost is borne by public, problem of pollution occurs.

Presently SMC is collecting the solid waste by door-to-door garbage collection and container lifting.

The pollution of soil is a source of great danger to the health of people. The anthropogenic pollution caused by heavy industries enters plants, then goes through the food chain and ultimately endangers human health. Surat industrial area is one of the polluted industrialized area. There are several large and medium scale textile industrial units besides large number of small scale units. Soils in the vicinity of Surat industrial area were found to be significantly contaminated with metals like copper, chromium, cobalt, vanadium and zinc at levels far above desired level in the soil, which may give rise to various health hazards. Regular monitoring of heavy metal

pollution should be taken up to minimize the rate and extent of future pollution problems on a priority basis. The Gujarat Pollution Control Board (GPCB) has the responsibility of controlling pollution and the protection of the environment from anthropogenic pollution. The surveillance by GPCB is required to be increased and monitoring by third party like academic institutions or NGOs may also be undertaken to tackle the issues of pollution.

In Surat district, shoreline changes is a serious problem. The landforms along the coastline are quite unstable and occur in response to the prevailing geo-environmental process. Their shapes, sizes and locations continue to change. The coastline persistently face erosion because of natural and anthropogenic causes. Effects of waves, currents, tides and wind are primary natural factors that influence the coast. Construction of artificial structures, mining of beach sand, off-shore dredging and reduction in sediment supply from rivers are some of the major anthropogenic causes of shoreline erosion. The erosion problems are reported for coastal areas of the district. In Surat district, 19.3 km coastal stretch covering areas of Bhimpore, Sultanabad, Dumas, Suvali, Damka, Bhandut, Lavachha, Dandi (Ta. Olpad), Mor, Bhagwa, Kudiana and Budia, are under erosion.

Shore erosion may adversely affect agricultural production, it may also cause loss of livelihood of people residing in these areas. People are forced to migrate from coastal area. It is necessary to take protective measures to lessen problems faced by people living in coastal areas. The government can consider undertaking some specific measures like construction of coastal protection infrastructure and cyclone shelters. One may also think of plantation of coastal forests and mangroves. Accurate demarcation and monitoring of shoreline are necessary for understanding the coastal processes.

STATISTICS

Surat is experiencing rapid economic development and it is influencing living standards of different groups of people. The existing statistical system is not very reliable to assess human development issues in the district. Statistics often falsely generalizes away from local lived experiences and relations. Statistical abstractions are often misleading. Objectifying procedure reflects the familiar opposition between primitivity and modernity and an unconscious bias in favour of the later. It is necessary to undertake studies based on qualitative research methodology to understand human development issues and dynamics of development.

Statistics and statistical analysis are central to planners and policy makers in all the societies. Many of the decisions that we make and judgments that we have to form are based on analysis and interpretation of data. The relevance and effectiveness of our

policy judgments, therefore, depend crucially on the quality of data and the efficacy of analysis and interpretation. It is important, therefore, for public policy institutions focus on statistics and statistical analysis.

Income is an important component of human development index. Estimates of income at district level are not available. The state has made some attempt to estimate income at district level but it is still not published. It is necessary to evolve a system of estimating district income with reasonable accuracy and reliability. Income of Surat city has been estimated by some institution but information is not easily available.

Information on migration is available in population census but it requires to be supplemented with additional statistics. A person is considered as migrant by place of birth if the place in which he / she is enumerated in Census is other than the place of his / her birth. Certain aspects concerning temporary movement / migration of people are also collected in the Census. Some reasons for migration is also recorded. From human development perspective, many characteristics of migrant population are required to be collected. For example, statistics on family income, demographic characteristics and change in their level of living by development programmes. Information on their food security and other issues of vulnerability is required to be captured by devising appropriate statistical tool.

Existing statistical information on health is quite inadequate and unreliable. Some of the important indicators of health are population suffering from mal nutrition, maternal mortality rate and infant (children below 5 years of age) mortality rate. Time series data on these indicators are not available either at district level or at block level. Private practitioners and private hospitals constitute major share among the health care service infrastructure, especially in urban areas. Private and trust-based hospitals operate even in rural areas. Data on private practitioners and private hospitals are not available at either district level or at block level. Number of cases of different diseases is also vital to take necessary actions by the government to combat the spread of frequently occurring diseases like malaria, chicken guinea, leptospirosis, sickle cell anaemia etc. Moreover, deaths occurring due to different diseases also provide important information on health care situation. The data available on these indicators are not adequate and reliable. For example, time series data is not available on disease either at district level or at block level. The existing statistics do not properly report cause of death. The data on causes of deaths report 'other causes' as cause of death. It does not help us in knowing how and why people die. For policy formulation, this information is crucial. For health care management, reliable statistics on health is essential. It helps in devising appropriate policy for the delivery of health care services.

Census is one of the important source of information on literacy and some other aspects of education. Statistics gathered by the Census is available with considerable lag. For making various educational policies to improve the falling educational standards, it is important to have timely availability of high quality educational data. Policy formulation and program planning requires these data, and in absence of them planning and programs are likely to fail. These circumstances give birth to the issue of educational data availability, their reliability and future needs.

Major variables for which reliable data are required:

- Percentage of habitations without schools as per the prescribed norms.
- Availability of non-formal or other modes of education in unserved habitations.
- Intake rate by gender and social groups.
- Percentage of students in private schools to enrolment of public schools.
- Gross and Net Enrolment rate.
- Percentage of schools not inspected.
- Classroom space per student.
- School size by category of school.
- Availability of playgrounds, toilets, boundary wall and water etc.

Once the students are enrolled into the classroom, it is necessary to keep a watch on their progress in the schooling system. If they are repeating, the grade more or many of them are dropping out of the educational system then that shows the inefficiency of the educational system. It also shows the wastage of resources. School efficiency related data are necessary for stopping this wastage. Some major variables of need here are:

- Drop-outs and wastage by caste, income groups, gender and region.
- Repetition rate by caste, income groups, gender, and region.
- Percentage of schools with multi-grade teaching.
- Utilisation of the educational infrastructure and provisions.
- Average days of teacher's absenteeism.
- Pupil: teacher ratio.
- Percentage of students reaching the final year of primary education cycle.

Some of the major deficiencies of the available statistics are redundancy of data, confusion regarding concepts and definitions, inaccuracies in the reporting and analysis, time lag and irrelevance of data as the emphasis is on the ease of collection rather than on the need of the users. The need for modernization of data collection, handling, storage and sharing of key data among a variety of users is an absolute necessity now. There is a need for capacity building among educational

administrators to promote the use of educational data for planning, management, monitoring, evaluation and decision making. For the success of educational planning, it is essential that up to the institutional level database be generated and maintained at various governmental levels, including district and block level.

Statistical system in the state is required to be strengthened. Method of data collection, definition of variables, and technical explanations are required to be given in government publications. Awareness of importance of statistics where data originates should be created. Dynamics of change should be captured through field studies. Longitudinal data also can be collected about village economy.

POLICY RECOMMENDATIONS

On the basis of all the data and information analyzed, following suggestions may be adopted for human development in the region. The suggestions could either be in the form of works undertaken under existing policies or formation of new policies:

Overall

- Bardoli holds historical Significance. Therefore, there is an opportunity for developing Surat as tourism destination.
- Surat has a long coastline and four beaches. These beaches could also be developed as tourist spots.

Education

- Hundred percent literacy rate can be achieved, as close to 100 per cent enrolment is taking place and there is close to zero drop-out rate.
- There are 4 universities, 4 university centres and 120 colleges for higher education in the district.

Health

- Health infrastructure is good but can be increased to meet the standards of WHO.
- Augmented with well-developed infrastrtucture of Surat, there are opportunities to develop health centres with facilities for telemedicines.
- There are opportunities of putting kiosks to spread awareness about Vector-borne diseases, TB, Malnutrition etc. in remote areas of Surat district.
- Though, steps are already undertaken to reduce the prevalence of leptospirosis, sickle cell anemia and leprosy, some measures should be undertaken to increase awareness.

Livelihood

- There is still a possibility to increase the cropping intensity.
- Horticulture is gaining importance over last one decade. There is a possibility to develop market for bananas, papayas, onions, brinjals and similar such horticulture crops.
- Development of animal husbandry, milk co-operatives, poultry, fishing and shrimp farming has huge opportunities.
- Land is allocated to tribals under the Land Ceiling Act and the Forest Rights Act, which is expected to create livelihood opportunities for them.
- Bric clay is available in abundance and lignite generates a large proportion of royalty.
- There are ample employment opportunities because of textile, zari and diamond industries. Special Economic Zones provide opportunities to export oriented units.
- More trees require to be grown, especially in rural areas.

Surat City

- There could be public private partnership in developing good quality intercity bus stations, enhancing the facilities at railway stations.
- Passenger ferry service could be planned between Surat and Saurashtra.
- Surat city is having historical Significance. Therefore, there is an opportunity for developing Surat as tourism destination.
- Augmented with good infrastructure of Surat, there are opportunities to develop health centres with facilities for telemedicines.
- Steps should be taken to stop sea shore erosion.

SMART CITY

Surat has been shortlisted as a smart city by the Ministry of Urban Development Smart City Mission. The Union Ministry had announced the list of 98 cities which were selected after the competitive process of "Smart City Challenge" Round-1 and Round -2

Now the Municipal Corporation has prepared draft Smart City Proposal (SCP) according to the guideline of Smart City Mission is given by MoUD, Govt. of India. The Smart City Proposal has been prepared base on the basis of opinion/Feedback received from the Citizen's in round-1 and Round-2.

Strategic Focus and Blue Print

Surat is ranked among the best corporations in the country in terms of governance; basic infrastructure facilities and also in terms of advanced facilities like

mobile app, CCTV surveillance etc. The prime focus would be to maintain the high growth rate and consistent high GDP. The status of Surat may be coveted by other cities as a goal for Smart city. However, for Surat to continue its trajectory of upward curve it needs to sustain the development and ensure a better quality of life for all by providing equal access to all the citizens including women, children, elderly, special needs, poor etc.