

“ शुकुं मोहाल है कुदरत के कारखाने में  
बेधात एक तगैयुर को है जमाने में ”

( डा. इकपाल )

## CHAPTER 1

# INTRODUCTION

### 1.1 Glimpses of the Past:

Habitat transformation is a continuous process of change taking place in the human society may be in the rural or urban areas. The change includes quality, quantity, moral, behaviour, personality, economy, structure, methodology, work man-ship, education, literacy etc. In short all aspects of human life are dynamic, going on changing with the passage of time over a space.

This process, probably, started with the birth of the earth, and more so with the birth of man on the earth. Prior to man earth was changing according to the dictates of its environment and the natural forces, which brought various physiographical features on it, and perhaps they all together made this earth suitable for human habitation.

With the advent of man on the earth started the process and technique of land and resources utilization. Since man by nature was a comfort loving creature, never wanted diligent and turmoiling conditions for his life and the required activities for it. It is true that, there was a time when his knowledge about the earth was superficial and confined to the space he has seen, he could reconcile himself with thing barely available for the satisfaction of his physiological desires. So he opted a life of food gathering for himself,

and that was bare sufficient for him. But the passing time has shown that he was not satisfied with this type of life, it is indeed the dissatisfaction of man that make him to advance in pursuit of better and comfortable life from various stages of development up to the modern time. So he started the first industry just for his meager comfort, that he used stones as raw materials for designing implements for hunting, fishing and also domestic utensils. This may be regarded as an endowment for the future generation that a technical measure is necessary to lead a comfortable life.

The state of nature in the human life dwindled away with ever increasing technically and subsequent improving usage of the availability of resources. This laid the foundation stone of the civilization of man which went on improving with improving rationality and technicality, over time and space, bringing several shades of occupations and subsequent progress into copper, bronze, iron and steel ages. However, the world has seen the magnitude of development during the iron and steel age. But the continuous process goes on unbridled, as the knowledge, the greatest of all the resources, is expanding and researches reaching to their climax are bringing to light the hidden treasures of nature for the use of human society, as a result the speed of the processes of habitat transformation have been tremendously accelerated bringing widespread useful changes.

Although urban areas have enjoyed more of such progressive measures, the rural areas, in their respect, have not lagged behind as the one winged transformation would have remained incomplete unless the feeder areas would have been served at least by those resources required by them. The rural areas function as a big 'agricultural workshop' sustaining a sizeable population according to their extents, and not only their own population, but serve as

feeder for all basic necessities of food and raw material to all non agricultural population. Thus a progressive plan for increasing rural products to cope up with the increasing rate of consumption has been essentially needed at all steps of progressive planning strategies in the developing and developed world. It may thus be accounted that habitat transformation is the out come of the application of varying measures to improve upon the existing and newly added resources for a better and comfortable life of man. So is the rural habitat transformation for the rural folk, and all those depending on them for the fulfillment of their needs of food and raw materials.

Though, the habitat transformation is the feature started with the advent of man on the earth, because man was never satisfied with the state in which he was, he has always attempted to improve upon it for a better life, it was taken in geographic studies as the spatio temporal change, never, before was it deemed as habitat transformation. This concept in geography is quite recent, and it has made its secured and significant place in geography. Dr. R. L. Singh must, definitely be accredited for illuminating this theme in Indian geography. Now the world over this has become a significant topic of research. In India Banaras Hindu University is the chief centre of work on these lines. Among other countries U.S.A., U. K. Japan etc have taken lead. The present work is an impression of the same fascinating topic that urged the present researcher to make a contribution to this aspect of geographical fund of knowledge.

## 1.2 Conceptual Frame And Definition

Indeed R. H. T. invites the minds of readers and planners toward a 'holistic' development of rural sector of the society. It is therefore an assimilating procedure of all micro elements to make a macro perspective including all sectors and factors contributing in the composition of a rural area. It may thus be analyzed in the following way (a) ecological setting and its development (b) Humanistic set up and its development (c) environmental set up and its development. The core objective of all these issues is central one i.e. humanistic, as all developments give only one meaning that they are for the betterment of human society, and all resources that are existing have their meaning in the service of man, otherwise they may be termed as a 'neutral stuff' (Zimmerman) several planning strategies are applied only to make the optimum use of the resources. Each movement of the passage of time and each micro spot of land has much to do for comforts and luxuries of man in space. Thus the programmes of I. R. D. has been designed and motivated towards the optimum use of resources with the rural entity, and those not available to be made available from outside.

The contemporary geography has to move with the advancing global space, and its focus is man, and other phenomena are nothing but the service to him. The R. H. T. has therefore become an integral part of the geographic science especially of human geography. Its significance lies in the attempts to give an all round development to human habitat to make it, as far as possible, an optimum supply area, as stated by DR. R. L. Singh and R. P. B. Singh that "the concept of rural; habitat transformation is more comprehensive and based on need-value-ecodevelopment programme with a view to promoting human welfare while maintaining the ecological balance." It may

thus be reckoned with the 'futuresology' of any rural habitat, as the changes occurring through the processes of change, are continuous.

Rural habitat transformation is a very wide topic involving the changes of rural environment in totality. Since this topic knitted with human geography or in more appropriate term-human ecology, involves all aspects of human interaction with the environment. A few geographers have, therefore, made an attempt to give a convincing definition to it. The habitat in Russian terminology is taken as "Geocenosis" i.e. physical habitat, and "biocenosis" as the biome. Gerasimov combined the two to make "Geoecobiota" for physical and human habitat. But this doesn't give the real sense of the habitat as it is conceived as a settlement or shelter. Singh R. Y. says that "habitat is not a shelter, not the resource base which defines the limits of growth, it is not even the home that symbolizes the social relations". It is a synthesis of bio-culturally determined pursuits of the quality of life, institutional and infrastructural basis for supporting the quality and the resource base for deriving the livelihood. Thus habitat has wider horizons including "site, building and building materials, water points, foundation of mobility and also moulds various occupancies as well as settlement forms".

"Rural habitat transformation may be taken in terms of self governed agropolitan districts enjoying all urban amenities with, on farm and off farm workers". Friedman and Douglas (1978)' courtesy

A comprehensive definition of the problem which includes all aspects is "It seeks to purvey a multisector, multilevel, and multisection perspective of rural development" (Singh R. L. 1981).

The present researcher has also attempted a modest definition that “Rural habitat transformation is the process of integrated development of all existing resources in an area”. (Kumar R 1998)

Another definition giving some possible explanation of the theme is “Rural habitat transformation is the multifaceted development of the rural areas”.(Rizvi S. M. H 1998)

It may therefore be stated that an habitat transformation in its spatio- temporal perspective is a continuing process of change taking place at various levels of habitations. It has been observed in both increasing and decreasing trends of population. Both nature and man are responsible for this phenomenon, and both on their part go on changing the environment. However, the attempt to control environment through man made measures is an attempt towards habitat transformation. The development plans, rehabilitation projects, agricultural and other economic development programmes, social and educational development schemes, have the effect of bringing conspicuous changes over a rural habitat. Areas inhabited by man too become dynamic along with him, but man is the cause and area is the effect. The present age of scientific and technological development has given spurt to the processes of change. Both in developed and developing countries the multipurpose and multidirectional programmes are an attempts to achieve the better goals at different levels of human society. Thus rural habitat transformation may be taken as the several relevant processes involved through planning strategies in changing the face of the rural areas for a more better quality of life and livelihood of its inhabitants



### **1.3 Review Of Literature**

Although this aspect of study in geography is quite new, a host of geographer in India and abroad have sought to bring forth multi-direction and multi-sectional information about the rural developments either in the form of research paper or books. The present researcher could find with his limited resources only a few books, that are containing the research papers selected for publication. Both Indian and foreign researchers have dealt on this theme highlighting the increasing rate of uses of changing types of bio, electric, oil and other types of energies in agricultural works, settlements etc., including the innovational social behavioral, interactional and a host of other themes. However, the present researcher has taken inspirations and knowledge from the Reverend Prof R L. Singh who is the main key for propagating and enhancing the vistas of research on these lines.

### **1.4 Introducing The Area Of Work**

#### **Personality of the areas**

The Karjan taluka is one of the twelve talukas of Baroda district. It is situated in the cotton belt of Gujarat and was known for cotton cultivation. It is a part of 'Kanam' region (i.e. the region of black cotton soil) in the southwest of Baroda District, and lies between 21° 49' to 22° 7' north latitude and 73° to 73° 14' east longitudes. It covers an area of 601 km<sup>2</sup>. There are 93 villages, and an urban area known as Karjan. It is flanked by the boundaries of four talukas of Baroda District viz. Sinor, Padra, Dhabhoi and Vadodara on the southern and south-eastern, north-western and north-eastern directions respectively. Bhâruch-a district and a big city of Gujarat state lies in the south.

across Narmada, Bombay-Delhi Broad gauge railway line traverses from the heart of the Karjan taluka (Figure 1.1)

### **Physiography**

Karjan is a part of main-land Gujarat. Physiographically it is an almost flat gently rolling alluvial plain. It is built of the alluvial deposits of Dhadhar in the north-west, Narmada in the south-east and their tributaries. It is found tilted towards the river's Dhadhar, and Narmada at the north west and southeast. The mid plain area is characterized by very gentle slope making it ill drained.

The origin of this plain dates long - long back when a big lake of brackish water was sweeping over the area. With the passage of time the undaunted process of sedimentation made the lake to disappear and turned it to a flat plain. It is about 90 meters high from M. S. L. Near the bank of river. Dhadhar huge mound like landforms exist which may be attributed to the erosional and depositional work of the same river. In the southeast deep vertical abrasion by Narmada have left many scars on the near by land. These are the only conspicuous feature in the entire monotonous flat plain. Barring these features the rest of the area from north to south, offers very suitable conditions for agricultural land use.

### **Climate**

Karjan like other parts of Gujarat state has tropical monsoon climate with dry and wet summers and moist mild winters. Arabian sea coast lies in south-west at about 80 Kms. and nearer home is Gulf of Khambhat. These big water bodies have the effect of keeping the air moist with relatively

higher percentage of humidity even during hot summers. This makes the summers hot and sultry and winter cool and moist. Increasing humidity during pre-monsoons days makes the season quite uncomfortable

### **Seasonal changes**

Like the rest of the country and specially of Gujarat, Karjan has almost the same weather conditions prevailing elsewhere in the mainland Gujarat. Seasonal variations are conspicuous. The three broad division of the seasons of the year into winter, summer and rainy season are true for Karjan as well. With slight variations owing to its locations in the vicinity of gulf of Khambhat and its parent body the Arabian Sea.

### **Winter**

Starting gradually from the end of monsoon (i.e. from 15<sup>th</sup> October to 15<sup>th</sup> February) is the winter. It includes the post monsoon transition period extending from late September to about middle of November or beyond. During this period the diurnal and nocturnal degrees of temperature do not show much difference, however, the later part of nights and mornings are pleasantly cool but the days are hot, sultry and often windless, with scorching sunshine. Normally a mild winter condition is experienced, from December to February except when the area is haunted by a severe or a mild cold wave. During this seasons continental winds blow and bring cold from the mountains. Winds are generally dry and cold making the climate dry and cold. There is less humidity in the air, sky is clear. The winter is the most pleasant season of the year in this area. The marine influence is conspicuous on the winter season hardly allowing it to become severe or harsh.

The maximum and minimum of this season ranges between 32°C and 15°C. It normally remains constant except disturbed by cloudiness, rains, occasional hailstorm and cold waves. Rarely temperature dips to as low as 02°C-03°C or so. And if so it lasts only for a short duration. January is the coldest month of the season as mostly cold wave are experienced in this month, but from 14<sup>th</sup> January onward season moves toward being warmer, the sun's travel, towards north brings more heat in the northern hemisphere.

At times this area receives rains during winter by the retreating monsoon. These rains are locally known as 'Mavathoon' (the Gujarati Version of Hindi word 'Mahawat'). Often in winter fog (Locally called Dhummas) envelops the environment increasing cold and decreasing visibility. Bright sunshine is experienced almost throughout the winter days, except the cloudiness owing to either heavy snow fall at the hilly area or due to the effect of retreating monsoon, this is the season of rabi crops.

### **Summer**

Extends from March to May. The weather becomes warm in the later days of March then rises to extreme conditions in late April and May. Summer in this part of the country begins much before Holi festival. Summer days even from beginning of the month of March become very hot. April and almost half of May are very hot, scorching and relatively dry. Later half of May becomes very hot and sultry giving indications for early or late arrival of monsoon rains. The farm work gets suspended in the dry areas, but where the facilities of irrigation are provided the farming work continues but with the decreased tone. Often temperature rises to 45°C or more making the environment a vast oven.

Normally the mercury remains within the range of 35°C to 40°C rising higher in unforetold circumstance. Though generally absent, rain sometimes occurs owing to the local depression created by intense heat. Such rains are usually accompanied by dust storms and gusty winds (locally known as Vavajhodoon). Often so intense that they uproot trees, telephones and electric poles and cause heavy damages on lives and properties. They are, very dangerous for the mango crop.

### **Monsoon**

This season usually starts from middle of June and lasts up to middle of October. Practically it ends by the first half of September some casual showers may occur or may not occur after that period. Usually advancing monsoon is believed to have ended by the first half of September, but the uncertainty and irregularity of monsoon can not be ruled out. Though in the broad division of season it is expected to begin from 15<sup>th</sup> June, it probably once in blue moon might have begun. It comes either earlier or later than the given time. It is the most important season for the agricultural community all over the country.

During rainy months the diurnal range of temperature usually drops down from above 40°C of the summer days to 30°C – 32°C. The nocturnal range of temperature is usually low i.e. around a 15°C -20°C because of the moist air and the cloudy sky.

The average rainfall of Karjan taluka is around 1050 mm. July is the rainiest month. The table 1.1 shows the seven year's data of rainfall obtained from Karjan taluka headquarter. It shows that Karjan usually received

enough rainfall giving the average 1041 mm, nearer to the established average of taluka.

Table 1

STATEMENT OF SEVEN YEAR RAINFALL IN KARJAN TALUKA

Years	Rainfall in mm
1989	1132.29
1990	1194.01
1991	1022.56
1992	736.57
1993	1041.35
1994	1067.52
1995	1092.41
Average	1040.98

Monsoon is erratic and irregular by its character. It is sometime excessive, causing havoc and sometimes scanty causing distress of drought. Karjan being a tiny part of the massive monsoon land enjoys and suffers from the smiles and frowns of it.

The erratic and irregular rainfall affects the crops adversely. The intensity of monsoon decreases by the end of September. The temperature starts rising. There are occasional showers by the retreating monsoon which benefits growth of cotton and the rabi crops.

## Soils

The soils of Karjan talukas are composed of the deposited debris of the cretaceous lava made rocks lying on the eastern fringes of Gujarat state and extending into the western Madhya Pradesh.

The soils are of recent origin. They are mostly black in texture commonly called Black Cotton soil but at places inter-spersed with gorat i.e. yellowish alluvial deposits owing to the deposition of the rivers Bhukh, Dhadhar and Narmada.

The soils on the basis of texture and composition are divided into three types. They are Black (Kali) and light coloured gorat or goradu (alluvial). The mixture of these two types of soils forms a third type known as besar. The black cotton soils predominate in the taluka. It contains more proportion of clay and fine silt and less proportion of coarse silt and sand than gorat or besar. This soil is highly retentive of moisture most suitable for cotton crops. The problem of the soil is that it is very difficult to be worked upon during the rains, as it becomes sticky and swampy. While during summer it develops cracks and fissures and becomes difficult to plough. Its erosion can be checked only by constructing bunds all around the fields. Gorat and besar contain more of silt and sand than black soil. In the gorat soil the percentage of sand varies from 55 percent to 65 percent. The besar or bhatha soils are generally formed near the river banks and have higher percentage of silt.

The distribution of these three soil types in the Karjan taluka forms a pattern from north to south (Fig 1.2). On the basis of these three major types of soils, Karjan taluka could easily be divided into three soil-based regions, in order to study the regional variation of the area. The 1<sup>st</sup> region of

# KARJAN TALUKA

## SOIL REGIONS

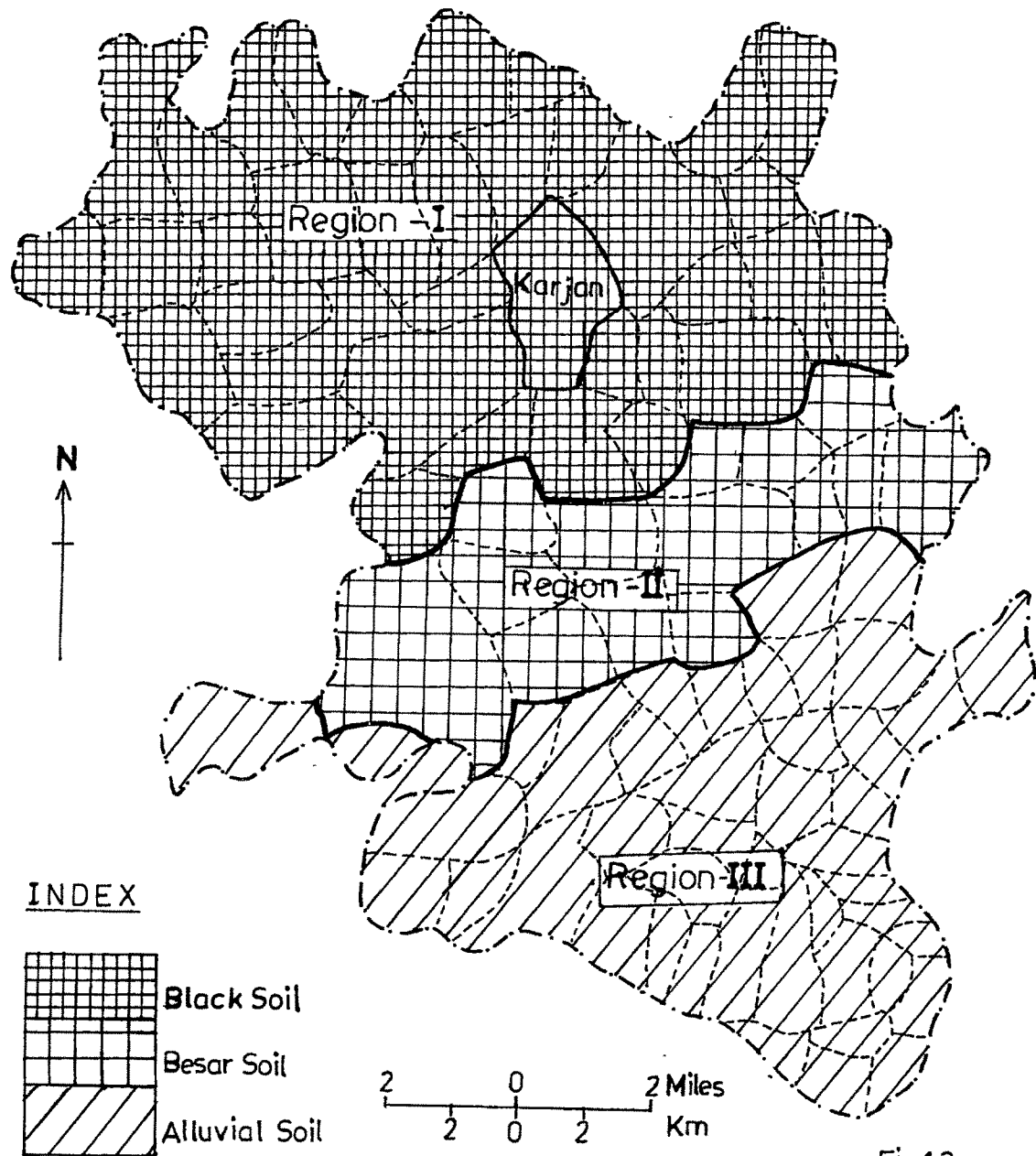


Fig 1.2



black cotton soil prevails over the northern part of the taluka II region of besar soil forms the middle part of taluka. Where as III region of goradu (alluvial) lies in the southern part between the Bhuki and Narmada rivers. The I and III are quite sizeable in area, while the II in the middle is relatively a narrow strip distributed among fourteen villages.

### **Geology**

Dr Charles Lush did the first geological survey of the Princely state of Baroda and gave a comprehensive information about its geological structure (Gazetteer pp. 16). In 1908 Mr. V. S. Sambasiva Iyer of Mysore state Geological Department was employed for the same purpose. He conducted an extensive survey and prepared records on the mineral resources of high commercial value and published it in 1910

The land in and around Karjan, is a part of the mainland Gujarat. The surface deposits of this plain are formed during the Pleistocene and Recent periods. While the underlying rocks consists of Deccan trap This was proved by the boring operation, which were carried out in 1931. People in villages while digging wells have come across layers of trap rocks at a depth of 95 feet. This trap rock is overlain by the old and new alluvium which are seen in two distinct layers Immediately above the Deccan trap lies the old alluvial strata deposited by the then rivers which traversed this plain. Above the old alluvial are the recent deposits consisting of new alluvium which constitute the present soil structure of the taluka.

## **Water Resources**

Water is one of the most important and highly required endowment of nature. It is required by all living organism of any sort. Natural resources of which water is the basic component has a significant bearing on the prosperity or the poverty of any area. Karjan on the eastern peripheral limits of Kanam has ample water resources, i.e. by rain, by surface, and by underground reserves.

Rivers, and lakes are the major surface water resources. Wells and tube wells supply the subsurface water reserves to surface, rains are the prime resource\$ feeding all others. Three rivers viz. Dhadhar, Bhukhi and Narmada traverse the taluka from east to west in the north, middle and the southern parts. Several small and big ponds and tanks also supply water for irrigation and animal drinking for the major part of year.

A brief account of the three rivers and one rivulet, their contribution in the economic viability of the taluka is given here under:

- (1)The river Narmada.
- (2)The river Dhadhar.
- (3)The river Bhukhi
- (4)The River Rangal.

### **The River Narmada**

River Narmada emerges from the Amar Katak Plateau of Vindhyan range in Madhya Pradesh. Flowing through the valleys between Vindhya and Satpura Ranges enters the plains of Gujarat, and ends into the gulf of Khambhat beyond Bharuch. It passes through many villages of Karjan taluka viz. Kothia, Rampur, Somaj, Moti Koral and Lilapur, Arjunpura before entering its old stage into Bharuch district. It is a natural gift for the inhabitants of these villages using its water for drinking, irrigation and other uses.

### **The River Dhadhar**

The Dhadhar river takes its rise in the Pavagadh hills near Shivrajpur about 55 km north of Baroda district. It traverses five talukas viz Vaghodia, Dabhoi, Vadodara, Karjan and Padra respectively. In Karjan it flows through Pingalwada, Adhara and Virajai villages. Further draining through some of the villages of Padra taluka. It enters Amod and Jambusuar talukas of Bharuch districts and lastly meets the Gulf of Khambhat. Of its total length of about 170 Kms. it flows for about 25 km in the Karjan taluka.

Five villages of Karjan viz Pingalwada, Surwada, Sombhai, Adhara and Virajai are located in close proximity to the bank of this river. Though a small river when furious in monsoon cause great havoc to the neighbouring villages. In the dry season however, it is merely a river of sand and gravel, at places with narrow stream of scanty water.

### **The River Bhuki**

The Bhuki, is a small river, originates near the Dabhoi taluka and passing through Sinor, the central part of Karjan empties itself into the river Narmada in Bharuch district. It has only two small nameless tributaries. In the rainy season its flood cause damages to the standing crops of the area.

### **The Rivulet Rangal**

The Rangal rivulet flows through beyond the northern border of the taluka and joins the Dhadar near the border.

Besides these rivers there are small depressions which inundate during the monsoon season. They are seasonal, when they over flow, they erode the soil and impede the traffic.

### **Wells**

They are also an important source of drinking, washing and irrigation water. There are 398 perennial wells scattered in the different parts of the taluka. However, out of 398 wells 27 wells having brackish water are of no use. The depth of wells varies from 20' to 100' and water level varies between 33' and 85'.

### **Ponds**

There are 164 ponds in the taluka. They retain water till the month of February or March. Practically every village has at least one natural pond. The pond water as long as it runs is used by animals for drinking as well

as washing cloths and cleaning utensils by the low income class and the immigrant labour force.

### **1.5 Choice of the Area**

Karjan taluka of Baroda district is chosen purposefully on the basis of its favourable locations. With in it are the net works of national, state and district highways as well as western railways broad gauge mainline and narrow gauge railway lines connecting it to Bharuch a metropolis in its south and a few talukas of Baroda and Bharuch, giving it a wide connectivity with in the region and to far distant places like Rajasthan, Madhya Pradesh, Delhi and beyond. Further its villages are also found well connected with district and taluka roads, including the all season villages roads This is a prime factor in its all round development.

Secondly, the impact of NRIs (Non Resident Indians)- One of the main thrust of this work is found very conspicuous on the development of taluka in general and the villages of such people in particular These two along with dynamic nature of the inhabitants, and the physiological conditions of the area supported the developmental strategies Cash crops and a few important small scale and cottage industries may not be ignored laying their impact on the talukas habitat transformation. However a significant progress in literacy during late seventies and entire eighties is another factor in this regard.

### **1.6 Choice of time Frame**

Choice of time frame bears an interesting geographical significance It is observed that 1970-71 and 1980-81 was peak season of cotton- the most paying crop of the entire agricultural extent of Karjan, but

from 1981 onwards cotton met a severe blow from the biotic menace, and was reduced to a sub order crop instead tur rose to a higher order accounted as the first order crop of the area. Besides, many of the low inconspicuous crops, along with tur became conspicuous in the hierarchy of crop order. Thus the first decade of rise and second of downfall of the main crops attracted to select the time frame from 1970-71 and 1990-91. Other factors contributing to the development are included in this span of study

### **1.7 Objective**

Even though R. H. T. is an interesting area of research and a wide ranging aspect are taken up by researcher particular in Varanasi and Meerut, Baroda did not make any head way in this direction. The present researcher desired to make Baroda stand in the fray. Thus selected this topic to work on it and attempted to give a contribution to the existing fund of geographic knowledge, and also leave a guide line for the future researchers if they desired doing so

### **1.8 Relevance Of The Topic**

The problem of the development of rural areas in all perspectives have been the focus of planners, since the dawn of the five years plans in our country. The aim to make rural areas self sufficient in most of their demands, and stall their exodus has always remained the core of all the planning. The R. H. T. is the right direction to that aim. Academically it is an important field of rural geography in which the geographers should contribute through their researches the most useful measures, that may be effective to change the fate of the rural areas. The R. H. T. though new line of research is the most effective in case of the economic after-moths in the rural areas. A work on this aspect may

be contribution of socioeconomic value in geography, and may pave the way for future researches, as well as any viable and valuable vision may help the society in general and rural society in particular.

### **1.9 Methodology And Data Base**

The work is based on the secondary data collected from census reports for population, literacy, and functional structure. From the mamlatdar and Taluka Development Officer (T. D. O. ) Offices for agricultural development programmes etc , and by the questionnaires from the selected house holds and people Simple mathematical calculation methods are used for processing the procured data and relevant ones are mapped by choropleth technique For minute and comparative investigation the taluka is divided into three edaphic regions on the basis of varying soils. (Figure 1.2 ) This has given desired results of varying levels of transformation in the three regions

### **1.10 The Text**

The entire text is divided in six chapters including that of summary and conclusion. They are

- (1)Introduction
- (2)Population
- (3)Economic Activities.
- (4)Cooperative Societies
- (5)Transport and Communication.

## (6)Summary, Conclusion and Findings.

### **Introduction**

It deals with personality of the area, justification of the choice of area and temporal extent (1970-71 to 1990-91),objective and relevance of the topic to geographic studies.

### **Population**

It forms the main platform for the entire study. Its dynamic nature which involves changes with in itself and change in its environment, as developments, rotate around it, increasing literacy improving human qualities etc , has been given a thought-full attention Introduction of innovations improvement in traditional professions, adoption of new professions etc., may all be attributed to it Indeed the population is the main source of all transformation in any habitat, and so has happened in Karjan.

### **Economic Activities**

It deals with the traditional and non-traditional occupations (activities) that have grown in the areas. Among the traditional activities (Occupations)agriculture is of foremost importance in which are engaged about more than 70 percent of the people of the area It has exhibited notable change from time to time The former methods of cultivation by animate energy are by and large replaced by in-animate energy H. Y. V seeds, chemical fertilizers in



place of biotic manure increasing irrigation facilities with more technical methods like tube-wells and wells with pumps sets etc. assuring successful crops with least scare of failure, use of insecticides and pesticides to protect the crops from the biotic menace. However, the helplessness of man against biotic menace is discernible, in case of cotton which being once dominating crop of the area is reduced to an ordinary crop in spite of the several controlling measures introduced and implemented against the crop damaging insects and pests. The rise of 'tuer' as substitute of cotton is absolutely because of the uncontrollable diffusion of cotton damaging insects and pests. Other crops like oil seeds etc gaining importance, nearer the second point of time, may also be attributed to the same factor. Thus a sizable change in cropping pattern of Karjan in comparison to the previous points of time is interestingly notable.

### **Commercial, Industrial And Other Activities**

Considering the primary occupation-agriculture, insufficient to meet the growing desire of the growing population, the industrial and commercial activities have started creeping in the rural habitat of Karjan like elsewhere. Diversified occupations are seen in the rural areas including services, technical workmanship, mechanics of automobiles, pump sets, and tube wells etc. The diamond cutting is gaining importance in several village of the area, which is fetching desired returns from the work. Other industries like cement pipe. Plastic, dolomite powder even though they are small scale industries they need full time workers, not in big number but at least 20 – 30 people in cement pipe, dolomite powder industries, and workers ranging from 5 – 15 in the diamond cutting, plastic and the household industries found engaged. This has opened a new venue for additional earnings for the people primarily agriculturist. Besides the business trends have also started developing

in the rural areas in the form of tea and snacks stalls, kerana shops, cloth and tailoring shops, pan bidi shops, hat, or bazaars, fair price shop, fertilizers and seeds stores, etc. They are gaining importance owing to the increasing number of NRIs. Developing transportation and increasing frequency of buses and private vehicles are the added source of income. This is the functional transformation that has gained significance in the rural milieu in the recent years. Thus agriculture has met the sizeable transformation in its methodology and cropping and other economic attributes have come up to improve the economic base of the population.

### **Co-Operative Societies**

Co-operative societies have played a significant role in the rural Karjan between two points of time. There are co-operative societies for the agricultural purposes, Milk, farmer services etc. The agricultural co-operative societies have supported farmers in various ways that is by supplying improved seeds, marketing of products, loans for agricultural expenses, supplying improved implements, tractors for tilling the land on subsidized rates. This has improved efficiency of the agricultural works and has also increased the productivity of the crops.

Milk co-operative societies have assured proper sale of milk and timely payments of its prices. Karjan has become a big centre of milk supply to particularly two dairies- Baroda and Amul Dairy at Anand. The earnings of the rural milk supplies has sufficiently increased supporting the earnings from the agricultural productions.

Farmers services society supports the small and marginal farmers in several ways, i.e. by loans on easy installments, tools and implements and

tractors, improved seeds on subsidized prices, with the main intention to improve their agricultural practices and get them desired advantages out of them.

In this ways societies have on their part brought economic prosperity to their members and the areas they serves, which has contributed significantly to the habitat transformation in their service areas.

### **Transport And Communication**

Transport is the life line of the economic prosperity. Karjan is fortunate enough to have an efficient network of broad gauge railway line, national highway No 8, the narrow gauge railway serving with in the taluka particularly eastern segments joining important nodes within the taluka and Sinor, Padra, Dabhoi and even up to Chhota-Udaipur in the eastern and north eastern parts of Baroda Besides, state highways joining Karjan with other parts of Gujarat state and this highway connected by district and village roads are giving a very convenient outlet to each village to enjoy the markets and other places within the taluka and between the other taluka of Baroda district as well as the Gujarat state and country at large. This has provided convenient linkages for sale and purchase of products from whatever areas with in the state or outside as desired by the people of Karjan

Besides Karjan is well served with telephones, telegraph lines, which also helps in both social and commercial requirements of its people.

**Conclusion**

To conclude the different factors mentioned above have brought sea change in the habitat of Karjan as observed within the chosen period of study. The details are given in the main text.