

INTRODUCTION

Man environment interrelationship has been a fascinating area of study. This is so because man has a unique ability to adopt himself into varying external conditions. The environment in which a man survives, and to which he constantly modifies, includes not only, the physical, natural but the socio-economic, cultural and biological aspects also. Some of these transformations and changes are reversible while others are cyclic or transient.

The number of mankind and their movement from one place to other, their interrelationship and the interactions with their environment have constantly been changing. Urbanisation and industrialisation have been the two major processes of development, and have rapidly been adopted by different regions, states and countries with varying intensity over the period of time. All this has substantially been transforming the urban as well as rural environment and region under study is not an exception to this. The process of industrialization being initiated through industrial revolution from 17th century to 20th century too has been responsible for the transformation of environment on a large scale.

Over the period of time some of the significant transformations and/or the changes mainly relate to the use rather exploitation of natural resources with specially mineral resources have become more prominent as compared to climate and biosphere; transformation in the size of rural as well as urban settlements, the changing composition of rural urban population and the natural environment of the rural areas in and around the urban centres with the emerging changes of the socio-economic and socio-cultural organization, the pace of transformation has been witnessed not only in the environment of the urban territory but also in the environment of the adjoining rural areas. As a

result of gradual but continued changes with the development of infra-structural facilities specially related to health and education the changes with the prevailing socio-economic as well as the natural environment of the region has been transformed.

To achieve the overall development, number of techniques have been evolved, developed, modified and adopted by man who has caused and are causing socio-economic changes from local to global level irrespective of nature and type of environment which is being rapidly transformed. The pace of environmental transformation has become faster than that of the previous generations and has gradually become dangerous for the man and for their future generations.

Most of the developing countries including India have been confronting with the numerous emerging problems due to environmental transformation at various levels and region under study is not exception to this. It is an area of concern and it requires an early attention and involvement of geographers, scientists, economists, sociologists and environmentalists. Considering these facts attempts have to be made to understand the concept and the process of urbanisation causing transformation of rural environment. Gradually the levels of development in the country, state and region, have to be judged by gauging the process of urbanisation as well as of industrialization. As these processes have become essential for the overall development of a country, state and regions including the region under study.

Urbanisation is an important aspect in the process of economic and social change of the region, state and nation. It is considered as an index indicating the improvement in the social status and in the quality of life in the respective regions. Urbanisation is inconceivable without a technological potential and

servicing and recycling capacity, and is thus the creation of a new environment out of existing old and is an exercise in civic and behavioural trend setting. Cities have always been considered as the nucleus of human civilization and culture which owe their existence to the functions they perform not only for themselves but also for their adjoining areas. Thus, the impact of cities on rural areas becomes visible according to their size and composition of activities. The rural areas beyond the boundaries of urban centres too are influenced by economic and social systems prevailing in the cities. The transitional zone between the urban and rural land use are described as urban fringe and/or urban-rural fringe intensively being transformed due to their increasing contacts with its city or town. With the growth of population and diversification of economic activities, the limits of cities have been extended into their fringe areas and gradually the limit or the territories of fringe areas further extended towards the adjoining rural areas. The urban fringe areas are necessarily and directly are influenced by their urban centres.

Geographers consider urbanisation as a process of concentration of population in larger human settlements either through multiplication points of concentration or through increase in the size of existing points of concentration.

Urbanisation is intrinsically linked with the growth of cities and the merger of rural territories which is characterized by terms like urban sprawl and megalopolis. The economic opportunities offered by a developing city area like Ahmedabad has been initiating series of multidimensional activities for the villagers living in the adjoining villages. This has silently been signalling a point of departure from their traditional occupations. Urbanisation is a process where by the primary production functions of rural areas are gradually replaced by the secondary, tertiary and/or market oriented activities. For instance, most of the

villages around large Indian cities have been influenced by the market economy not only by transporting vegetables and milk products but also by providing their residents as labourers. The cities have opened up a wide range of development and employment opportunities for the villagers. To some extent this provides options to choose from the wide range being offered with the commercialisation of agriculture along with the diversification of crops supported by modern inputs.

Urbanisation refers to the transformation of villages as suburban areas, as outgrowth areas, as urban villages and ultimately becoming a part of the urban territory. As an outcome of the process gradually various homogeneous characteristics of the rural people and the areas too are transformed into heterogeneity along with the conversion of territory, as has also been witnessed in the study region.

Urbanisation in India has gradually become an uncontrollable phenomenon inducing changes in the wider areas even where it is not required. However with an unprecedented pace of urbanisation it has caused imbalances in the expanding urban and the shrinking rural territories and region under study is not an exception to this phenomenon. This together has been causing degeneration of physical environment, social disintegration and economic constraints due to increasing gaps.

Urbanisation has been playing an important role in the transformation of economic, social as well as natural environment with the growing influence of urban centres on rural areas as has been witnessed in study region. Thus, the influence of cities on rural areas gradually extend according to the role they play depending on the size of the city and a pace of its growth as well as the composition of functions being performed by the suburbans similar to

Ahmedabad City Taluka region. The rural areas beyond the boundaries of the Ahmedabad City Taluka too are influenced by multi dimensional urban economic and social activities.

The transformation process of the rural environment clearly revealed through temporal, spatial and sectoral changes being noticed in demographic, social, economic, infrastructural, technological and environmental aspects which have been influencing the living environment in the Ahmedabad City Taluka. With the development of trade and commerce urban employment not only has lead to a greater differentiation of occupational opportunities than that have been caused by the commercialisation of agriculture. This has also resulted the changing combination of occupations on the one hand as well as the occupational mobility on the other hand.

Emerging changes in the occupations is considered as one of the indices transforming the status of the rural people which has also brought about a shift in the social and economic status of the people living in rural areas. Villages have not only been affected by occupational mobility caused by urbanisation but have also been confronted by a variety of products and services being offered by the cities. There is a wide range of possibilities to their rural people choose and with the urban residents to spend their earnings acquired through the new opportunities being availed by them. However such an indigenous urbanisation has brought drastic changes in the rural society of the Ahmedabad City Taluka, however the researcher has found pockets of traditional villages which have partially been influenced by the urban impact.

In India as well as in Ahmedabad City Taluka the influence of increasing urbanisation has considerably reduced the rigidity of social customs, rituals, values and inhibitions, which have been more powerful in the rural areas. In

social transformation, the important role played by education, advanced scientific knowledge and new technology has start radiating from urban centres to the rural areas. Thus the process of urbanisation has considerably transformed the rural environment as well as the social life of the rural people. Besides, a number of mal-practices too have reached the villagers living in the near by rural areas which were non-existent rather absent few years ago and were marginally influenced by the impact of urbanisation.

The metropolitan particularly in India have excessively been influenced by western culture and gradually the city culture has also become the synonym of the western (modern) culture greatly being influenced by modernity and is different from Indian culture. Villagers being influenced by such cities too have start adopting gradually the urban life style, food habits and to some extent behaviour of the urban people.

The rural areas of our country are vast, open and are replaced with a variety of resources. In fact villages are the real home of innocent, unsophisticated and toiling humanity.

Residents of the rural settlements are primarily engaged in agriculture and other allied activities, and have a contrast character as compared to urban life style. The common characteristic feature of the rural areas is depicted by large Kuccha houses spread over the wide areas most unsystematically without adequate civic amenities and are well known for their agriculture and other allied activities.

In the prevailing environment of the adjoining rural areas, the pace of their economic development, pattern of land holdings, occupational structures, availability of the civic amenities and their living style have been assessed and systematically studied during the field work. In most of the rural settlements

man and land are inversely related. It is the man-land ratio including the productivity that emerges as the first and the most important indicator along with the intensity of cropping pattern, intensity of irrigation, intensity of land use and the diversification of cropping pattern too have been considered for gauging the levels of environmental transformations.

The process of transforming the rural environment is a complicated interplay of shifts towards urbanisation, industrial structure, changes in the quality of life and changes in the proportion of agriculture and other allied activities, which provides a key to the overall economic growth of the rural areas as well as of the rural masses.

Transformation of rural environment due to the accelerated process of urbanisation and industrialization, essentially include development as well as the deterioration or degeneration in reference to adjoining rural areas of Ahmedabad City Taluka region. The process of industrialization and the expansion of urban areas, the influence on various dimensions of the transformation of the rural environment both towards the development and modernization have been assessed. As a result it has started degenerating and/or degrading the wider areas by polluting the rural environment. Here attempts have been made to understand and study the process of transformation causing changes in the rural areas including the quality of life of their residents and the changing pattern of their occupation.

The changes caused by the urbanisation as well as industrialization have no doubt influenced the living standards and the life style of the people living in urban and industrial centres and also of the people living in the adjoining rural areas of the study region. These impacts have been of both types, beneficial and harmful. The process of urbanisation has been influencing the living

conditions of the rural people having the rural background and has been directly influenced by the modern way of life prevailing in the urban areas and being adopted by the urban people. Rural people too are getting adequate opportunities for enhancing their income not only by commuting and working in the urban and/or industrial areas but also by marketing their agricultural produces in to the adjacent rural urban fringe areas. With the induction of modernisation more and more people are tempted to use the available modern inputs to enhance the agricultural production as well as have opted the diversification of crops.

The process of urbanisation positively helps in transforming the composition of occupational structures and region under study is not an exception to this. As a result, over the period of time the proportion of agricultural workers has substantially declined in the adjoining rural areas of the study region. With the expansion of industrial, commercial and market oriented activities, large number of rural workers have start migrating to the urban areas in search of better job opportunities. Similarly, due to the increasing demand of agricultural labourers in the villages, increase in the proportion of inter and intra regional migration too has been noticed during the field work by the research scholar.

This has become evident in the region under study that the proportion of agricultural workers has changed considering the nearness to industrial and urban centre for example only four villages have some proportion of agriculture labour and those have also migrated from Panchmahals and Dahod districts in Gujarat. There are no cultivators in 11 out of the 23 sample villages as most of farmers have opted to give their agricultural land on hire or have preferred to join other non-agricultural activities. This clearly indicates that the proportion of

farmers and agricultural labourers engaged in agricultural and non-agricultural activities living in the nearby sample villages has drastically changed.

A.a. REVIEW OF LITERATURE

The study of environment has been the core of Geography. Even than the studies attempted by geographers on transformation of environment and/or environmental degeneration and degradation in India are extremely limited especially field based micro level studies. Over the period of time it has emerged as a significant interdisciplinary field of enquiry that demands early attention. Recently much interest has been created to understand and study various dimensions related to the field of environment and other associated activities and issues. All elements of natural and cultural environment are interrelated and their mutual interactions have created variations in the study region.

The main purpose of the environmental studies have been to assess and evaluate the changes of inter-relationship between various attributes of natural environment as well as other associated problems creating environmental imbalances. Environmental studies tend to cover a wide range of problems. The geographers have a long tradition of dealing with natural environment as well as economy and population at local, regional, state, national as well as at the global levels. Environmental studies in geography have been and will continue to be of great significance to understand, to study, analyse and interpret various emerging problems related to the human survival and their welfare in reference to the diversification of activities over the period of time. This has encouraged and will encourage in identifying, selecting and suggesting the remedial

measures based on field experiences to mitigate and control the emerging multiple problems of diverse nature.

Murton (1999), Bunch (1996) and Vaidya (1995), discussed the role of agricultural innovations including mechanisation and the substantial decline of human participation in agriculture with the growing dependency of rural masses on non-agricultural activities in the adjoining villages, where the migration to urban areas has become a regular feature. The similar trend has been witnessed in the study region.

Desai & Pillai (1970) and Venkatarayappa (1972) specially attempted to study various aspects of the slum areas and the prevailing environmental conditions and identified slum areas along with their role in aggravating the living conditions causing gradual degradation of the living environment.

Nag (1983) talked of environmental crisis, strains, abatement and management. Thakur (1988), Dutte and Zutsi (1988), Kayastha (1989), Singh (1989), Manshi (1990), Kayastha (1991) and Rangarajan (1991) have attempted to study various processes of environmental degeneration as well as of degradation and their resulted effects.

Some magazines like *Down to Earth*, *The Survey of Environment* and other annual publications have been regularly publishing the field based environment related stories, issues and problems. Koshoo (1986) was the first who talked about the environmental priorities and sustainable development in India. Katiyar (1997) talked about the environmental concerns, depleting resources and sustainable development, whereas Rathore (1996) attempted to study and explain the relationship between

environment and developmental activities being witnessed in any area/region.

Varsheny (1993) studied the environmental consideration and emerging policy issues related to environmental challenges. Saxena (1992) talked about man's action and degrading environment, Agarwal, Dubey and Tiwari (1996) studied the environment and biodiversity. Yadav (1995) focused on the trends of urbanisation and their impact on environment and also on various studies done in the field of industries related to environment and other factors.

Recent studies have also emphasised the need for environmental conservation like Abbasi (1996), Vinithan (1996) and Shukla (1999) considered the impact of urbanisation and industrial activities causing transformation of agricultural landuse.

Lokanathan's (1991) worked in the early nineties and played a useful role in drawing the geographer's attention to the problems of Indian industries, Pearson (1992) tried to analyse the industrial relocation and their resulting pollution in the urban and rural areas. Choudhary (1992) also studied the problems of environmental pollution through industries, industrial pollution and that of control, constraints and their emerging conflicts.

Tiwari (2000) and Mahapatra (2000) have pointed out the effects of industrialisation on environment and mankind. While Shukla (1999) explained the impact of yield raising technology in creating the agro-environmental degradation.

Gill (2004) discussed about the growth of population and solid waste management. Bhattacharya (2004) described the socio-economic features

and related problems. Misra (2004) examined the spatial pattern and the levels of agricultural development and Krishna (2004) talked of growth and decay of towns. Shukla (2007) attempted to explain the significance of the sustainable development.

A.b. NOTEWORTHY CONTRIBUTIONS

The studies being initiated by geographers on environmental transformation are extremely limited. The issues of environmental degradation and/or environmental transformation are also emerging as the main problem in various parts of our country, of course with varying intensity. It is really a field that demands early attention and regular monitoring. Joshi (1979) studied the rural transformation in Hungary. Makhan (1978) adopted two villages of Uttar Pradesh to study the rural transformation, Chakraborty (1978) studied the involvement of rural youths in transforming the countryside, and Ravindranath (1983) talked how education can bring rural transformation. Harvey (1976) and Sonnerfield (1978) considered conscious utilization or transformation of the environment along with explaining the landuse pattern. Singh and Rana (1980) examined the transformation of rural habitat following the line of thinking as has been advocated by the International Geographical Union and attempted to coordinate human and infrastructural issues covering environmental, socio-economic and behavioural dimensions.

Rasool and Sinha (1995) attempted to study the transformation of cultural landscape in Lahore (Pakistan). Chourasia (1993) attempted to understand the major problems of the environmental degradation.

Sharma and Tripathi (1998) assessed the impact of industrialisation on the environment of the plains of southern Chhatisgarh. Similarly, Singh and Moharana (1998) studied about industrial effluent and analysed its impact causing degradation of the landforms in the western parts of Rajasthan. Gupta and Chatterjee (2001) studied the rural industrialization in West Bengal and examined its impact on rural environment. Rasure (2001) has talked about environmental issues in the developed and developing economies. Shukla (2002) in depth attempted to study the processes causing environmental transformation in Jabalpur region. Shukla (2003-04) has studied the process of environmental transformation in tribal areas of Central Indian territory. Bhattacharya (2004) successfully analysed the interrelations of population, Development and Environment. Singh and Asgar (2004) discussed the impact of Brick making on soil fertility and agricultural productivity, while Rai (2004) attempted to explain the land suitability for the urban development. Similarly Vishwakarma (2005) analysed the dimensions of environmental degeneration in the Bhopal region. Singh (2005) discussed the implications of solid waste on human health. Shukla (2004) has emphasised the need of environment friendly development in the new millennium. Shukla (2007) explained the transformation of tribal environment in Central Indian territory. Shrivastava (2008) has been successful in assessing the role of urbanisation in transforming the rural environment of the Jabalpur region. Shivwanshi (2008) tried to understand and analyse the process of development which has been responsible for the transformation of tribal environment in Dindori – Mandla region.

A.c. OBJECTIVES OF THE STUDY

Urban and environmental studies have been a popular field of research among the Indian scholars. However only few of them have work on urbanisation, environmental transformation and rural environment, based on first hand field based data and information through investigations. To meet the expanding needs caused by urbanisation, efforts are being made by various sectors i.e. industrial, agriculture, transport & communications and infrastructure by adopting new methods and techniques to achieve over all development in the study region. It has also been recorded that gradually the urban as well as the rural environment is adversely affected.

Considering the nature, complexity and dimensions of the emerging problems and environmental implications, the main objectives of the study has been:

- to understand and study the process of urbanization causing rural transformation,
- to identify and examine the dimensions of rural environment being transformed due to urbanization,
- to examine the impact of urbanization on demographic transformation,
- to understand and discuss the transformation of social environment,
- to examine the impact of economic development on rural area transformation,
- to study the processes of transformation of agriculture land use,
- to study the role of infrastructure facilities in the transformation of rural activities,

- to analyze the impact of environmental transformation on the quality of life,
- to identify reasons causing pollution and / or creating hazardous conditions, and
- to suggest a plan to ensure the protection of the rural environment and the rural people from the urban development related activities to check the transformation of rural environment.

A.d. METHODOLOGY

A.d.i. LIBRARY WORK

Considering the nature of the present study available literature from books, journals, doctoral research works, reports of various government department and agencies working on environment and other related issues, the reports of various magazines and periodicals covering the field of environment, specially, urbanisation, rural transformation, environment & development and occasional issues published by various agencies, articles based on field based studies and case studies reported in state and national daily newspapers, reports of central and/or state pollution control boards and those of urban activities have been consulted and the required related literature, data and material has been collected.

In depth reading of the literature and discussions with number of researchers have positively helped in improving the research plan by making needful modifications. For this academic

exercise Library of the M.S. University of Baroda, Vadodara, Library of the Centre for Environmental Planning and Technology, Ahmedabad, Library of the Gujarat University, Ahmedabad, Jawaharlal Nehru University Library, Sagar and the libraries of various government departments and those of national and state research institutes have been consulted.

A.d.ii. COLLECTION OF DATA

To fulfil the requirements considering the objectives of the study both primary and secondary data have been used in the present research work. Repeated efforts have been made by the researcher to collect the required data and information from various sources. Primary and secondary data related to various aspects of urbanisation and related to its role in transforming various dimensions of the rural environment of the region have been collected. Secondary data and information related to various aspects i.e. growth, distribution and composition of population, urban population, urban centres their area, population, households, transport and infrastructure have been collected from the secondary sources, particularly from District Census Handbook and District Gazetteer of Ahmedabad; District Economic and Statistics office, Ahmedabad Office of Town and Country Planning, Ahmedabad; Superintendent, Land Records, Ahmedabad and Ahmedabad Municipal Corporation and other related institutions as per requirements of the study.

To collect the primary data considering the objectives of the study, a set of detailed questionnaire was designed and developed, for the Village Survey and Household Survey. Village Questionnaire was used to collect the detailed information and data from the 23 selected sample villages, while Household Questionnaire was used to collect data and information from the 343 selected households for gauging the process causing the transformation of rural environment as well as its impact on the quality of life. Survey work was completed by the research scholar between December 2007 and June 2008 adopting interviewing method and by using the information collected/recorded through observations during the fieldwork.

Great deal of discussions was attempted with the selected sample respondents and also with local people, to have the first hand knowledge and to assess the impact of environmental transformation from the respective sample villages of the study region.

A.d.iii. SELECTION OF THE SAMPLES

As per the objectives of the present study and considering the physical limitations and constraints of time villages were identified by using the stratified random sampling and purpose ensuring the wider coverage 23 villages representing varying distances and different directions from the Ahmedabad city were selected as sample villages shown in Plate A.1.

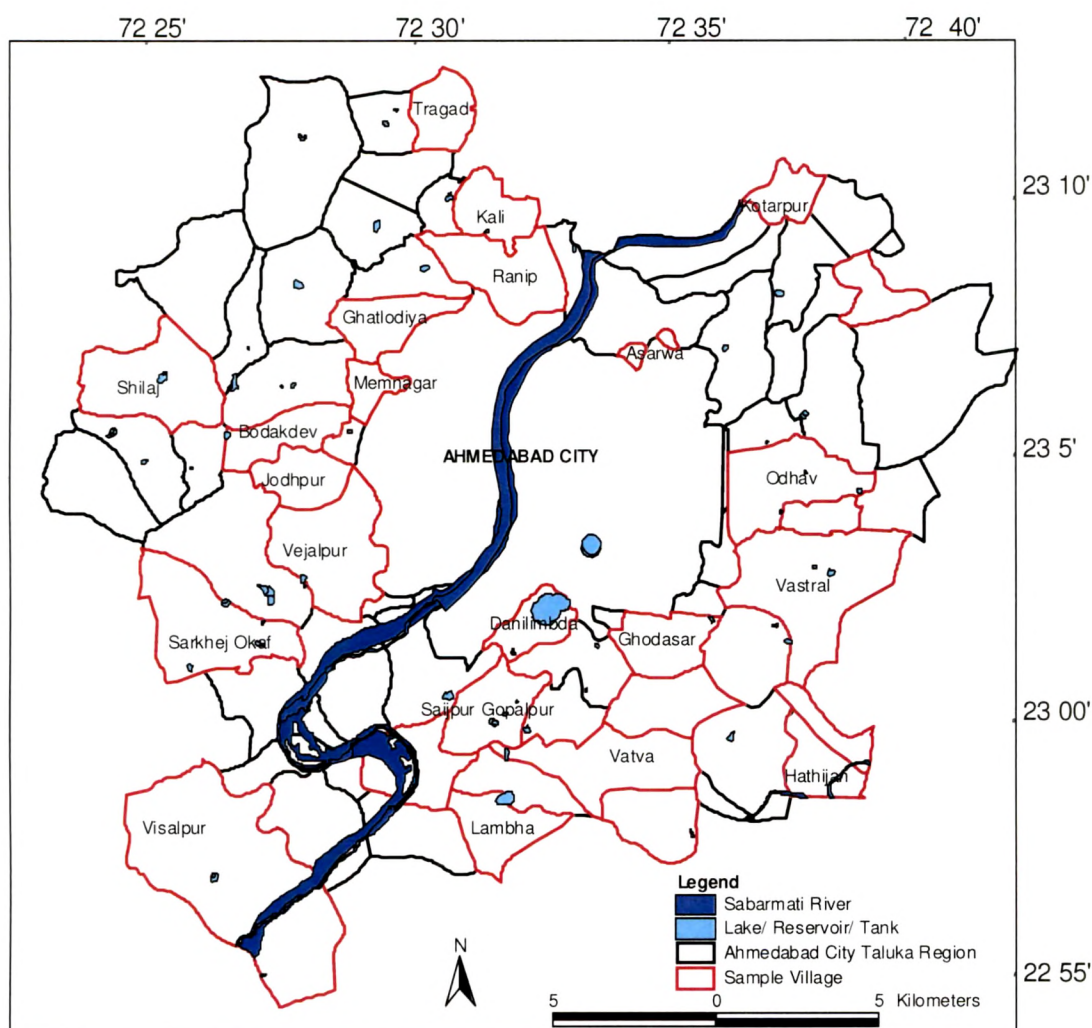


Plate A.1 – Location of Sample Villages

Source: Prepared from Base Map, BISAG, Gandhinagar

To gauge the impact of transformation on various dimensions of the rural environment 0.3 per cent as sample households representing the sample villages were selected based on distance and direction from the Ahmedabad City Taluka.

The ultimate unit of study was the households representing the selected sample villages. After selecting the sample villages, sample households representing these areas were selected to collect the detailed information and data as per the questionnaire. Though the sample villages have a wide variation

in total number of households, approximately 1.0, 0.5, 0.3 and 0.1 per cent of total households as sample households were selected for interview from the respective sample villages. Finally 343 household were covered during the fieldwork conducted between December 2007 and June 2008.

A.d.iv. PROCESSING OF DATA

Considering the nature and requirement of the present study, the collected data have been processed and classified by using different statistical methods and various frequency distribution methods. The classified data is arranged in short and systematic tables, based on purpose, origin and construction. Thereafter the processed data was presented in the tabular form.

A.d.v. PRESENTATION OF DATA

Looking to the need of the study, using the GIS the processed data has been cartographically and diagrammatically presented to identify the patterns and trend to understand the possible reasons for emerging relationship among the identified variables. Various diagrams and choropleth maps along with consideration of objectives too have been used for meaningful presentation of the processed data and identify the emerging patterns/ trends.

A.d.vi. ANALYSIS OF THE DATA

The processed information and data being presented cartographically, has been interpreted and analysed to understand the role as well as the dimensions of rural environment being transformed. Researcher has successfully attempted to understand and thereafter has rationally explained the process which has a multifacet impact in the transformation of the rural environment in the Ahmedabad City Taluka.

A.e. ORGANIZATION OF THE WORK

The content of the present study has been divided into eight chapters along with Introduction, Bibliography and Annexure.

The first chapter deals with the regional setting of the region. Second chapter explains the process of urbanisation; status of the rural environment in the selected sample villages has been discussed in the third chapter. The socio-economic transformation has been explained in the fourth chapter. In the fifth chapter the transformation of agricultural environment has been examined. The sixth chapter explains the transformation of infrastructure facilities and its impact of rural environment. The seventh chapter discusses the transformation of living environment and finally in the eighth chapter conclusions along with the problems and suggestions have been presented.