CHAPTER I

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Concepts on Land-Use and Settlements: An Overview

A - Land-use

The term 'Land' is referred to as 'The solid surface of the earth where it is not covered by water' or 'A part of the earth's surface marked off by natural or political boundaries'. But, its surface utilization of all developed and vacant land on a specific point at a given time and space is called land-use. This "leads one back to the village farm and the farmers, to the fields, gardens, pastures, fallow land, forests and to the isolated farmstead". In other words, the term 'land-use' is generally adopted to mean man's activities which are directly related to the land. It is an activity or development which occupies land. It could also be called 'human use of land' or 'human activities on land', which means that this idea deals as much with people as with land. Land-use is distinct from other parts naturally or politically, for economic, or cultural reasons.

'Land', however defined, always has site or locational attributes. Any data relating to land, especially data on land-use, necessarily refer to a defined point in time. The simplest situation is to record present activity or present

improvements on land. An attempt to record past changes in land-use, except by such clear identification of the situation at specified points of time, will almost certainly lead to confusion. The role of geographers is to analyse the relationship between various uses of land and planning. This analysis enables people to use the land more properly and obtain high yields to solve the problems of man.

Land-use has been studied by economists, planners, agricultural experts, geographers and others in different ways. Geographers, for example have analysed existing patterns of land-use in order to determine how the existing land could be used more efficiently.

Although the term land-use may appear to require little definition, it has been used in so many different ways that specification of the meaning to be used is desirable. Many different types of information have been included in different land-use studies. Clawson (1965) lists nine concepts which are often of interest.

1. Location
2. Activity on the land
3. Natural qualities of the land, including its surface and subsurface characteristics and its vegetative cover
4. Improvements to and on land

5. intensity of land-use, or amount of activity per unit area
6. land tenure
7. land prices
8. interrelations in use between different tracts of land, or accessibility, and
9. interrelations between activities on the land and other economic and social activities.

The difference between land-use and utilization is important. Land-use is the use actually made of any parcel of land. House, apartments and industrial location are land-use categories, whereas the term residential, industrial and agricultural refers to a system of land utilization implying roads, neighbourhood retail and service activities as well as location of industries, and the carrying of agricultural pursuits. In a rural area, tree crop or row crop would identify land-use, whereas orcharding, truck farming and grazing indicate a system of land utilisation. The definition given by Salter is as follows: "Land utilisation research can be described as dealing with problem situations in which people in a given locality are in the process of transformation from activities with certain land requirements to activities with different land requirement."³ Land utilisation mainly deals

with the problems related to the society and the region as a whole, rather than a private farmer. Land-use is mainly related to the optimum use of the limited land between the alternative major types of land use. In rural areas, the major types of land-use are as follows:

1) Agricultural land (a) non irrigated lands (b) irrigated lands (c) dry farming areas (d) grazing areas
2) Village orchards or forest lands
3) Forest land (a) forest covered (b) forest reclaimed land-use (c) culturable or recreational land-use

Land utilisation is also related to "Conversion of land from one major use to another general use". After reclamation of forest land, a question arises as to how the land should be utilized. The rotation of crops and their combinations are after all minor problems of land use study. This is because these aspects depend upon personal experience and intuition of the farmer who decides which crops should be grown in rotation.

The study of land utilization has both economic, geographic and demographic dimensions. The geographic aspects consists largely of a survey of the temperature, humidity, topography and soil conditions which influence the utilization of land for crops, pasture or forest. The demographic aspect

4. Nanavati, M.B. (1957), (Foreward), Readings in Land utilization, the Indian Society of Agricultural Economics, Bombay, p.2.
considers the studies of population distribution, composition, characteristics and trends not only in the area being surveyed, but in the whole country.

The concept of land-use capacity refers to the ability of any given unit of land resource to produce a net return above the production cost associated with its use. The amount of this net return provides an index of use capacity. Land areas with high use capacities normally have higher market values than those of lower used capacities. Farmers tend to use their land resources for those purposes which promise them the highest return. In fact a land-use study should find measures to provide optimum return to land utilizers. A land utilization project aims at striking a balance between added mouth and land use capacity. The concept of land-use, therefore, revolves round man's accomplishments in conversion of land; major use to another general use. Each stage of such change may involve many problems to have the path for attaining equilibrium in use of land.5

Increasing population and changing needs of the time require revision of land utilization. The revision is done by trial and error method which leaves its trace of success and failure. The study of land utilization makes it imperative to present an excellent opportunity to rectify past error and to

overrule further errors through scientific methods. The success of national planning is dependent upon the proper utilization of land. Some day in our country a planned programme will determine the pattern of land-use and there not only crops and tamed animals but indirectly things will be determined by man's conscious planning and use of land.6

The demand for land changes due to the changing needs of society. As socio-economic conditions change, land use keeps on changing. The study of land-use is therefore, a subject of continuous interest.

1.1.0 Scope and Objectives of Land-Use Studies:

The study of land-use has recently developed and it has become one of the most important branches of Economic Geography, because even today majority of the people have close relationship with the primary activities which concern with land. Geographers can present a clear picture of the potentials of land-use, conducive to fruitful planning for a massive agricultural turnover. A plan for the utmost utilization of land assets should essentially include the requirements of land for location of industries, site for houses, schools, public buildings, roads and railways, irrigational channels etc. Rural as well as urban areas have land under different uses. In rural

areas much of the land is used for agricultural purposes and other uses have less land. On the other hand, in urban areas much of the land remains under residential, commercial industrial and other uses. Since one use of land excludes another, it is necessary to assess fully the potentialities of every type of land in respect of all possible uses.

The study of land-use is not only concerned with the land-use classification, use and misuse of land, capability, land-use planning but it also deals with several socio-economic aspects like man-land relation changing pressure of man on land, land-use changes due to dynamism of socio-political conditions and scientific innovations, etc. As such the study of land use has developed relationship with the study of rural settlements, populations, agricultural science, geomorphology, as well as urban geography. In fact rural and urban land use have become two clear-cut aspects of land use study. The study of the settlement either rural or urban would not be perfect without having background information about the land use. Similarly, land use study will require basic information about the land surface and soil characteristics. Demographers do not sit idle because they establish relationship with land. They analyse pressure of man on land and other aspects. Day by day this aspect of economic geography is expanding its dimensions and developing relationship with other branches of geography as well as other disciplines.
The techniques of land-use study include field investigation, preparation of field maps, design of sampling and the presentation of data by different maps and diagrams and methods suggested by scholars in diverse fields of land-use study. The intensive use of land depends upon population concentration, economic production, human establishments, industrial locations, communication and transport lines, while extensive use of the land is related to sparse population, dispersed settlements, the absence of communication lines and the crude forms of transport. However, only the systematic utilization of land can be able to promote economic and cultural advancement. If there is no utilization of land, one can't think of any progress. Thus the study of land utilization is of immense value in tracing out the past use of land and its future trend.

The present study confines itself to the essential ingredients of land-use, i.e. factors, principles, approaches, and land-use classification, cropping intensity, crop combination, land capability and conservation of land. Factors of land-use encompasses physical, economic and institutional aspects. Principles of land-use represents superiority of one use of land over the other which is determined by the social needs and cultural advancement of the people.
During early years there was enough land to support the limited population but today population explosion has remarkably reduced the man-land ratio. Because of increasing pressure on land, an intensive and proper use of land has became essential. Geographers, planners and other scholars have realised the importance of the subject and they have started paying more attention to the problem.

Stamp, pioneered the land-use study in Britain. In the year 1930, he established an independent research organisation called "Land Utilization Survey of Britain". The main motive of the formation of the organization was to prepare land-use map of Britain. For this purpose, intensive field work was conducted and different land-use maps with size 18"x12" were prepared. On the basis of these maps a voluminous book entitled "The Land of Britain; Its Use and Misuse" was published in the year 1962.

The land-use work of Stamp became the guideline for researchers not only in Britain but all over the world. Today geographers of developed and developing nations have been trying to make land-use studies on the basis of this guideline. Actually very few nations have been able to prepare land-use maps.

In U.S.A. also several land-use studies have been made. The credit of such study goes to Baker who published an article entitled "Land Utilization in the United States: Geographical Aspects of the Problems". In this paper he has depicted the trends in land utilization and emphasized the need of land classification and survey. Besides this paper, Government also encouraged the land-use studies in the country. Although the programme of land-use survey was launched in the year 1935, it was properly executed only after 1938. Nearly one thousand communities were organised and 1,40,000 individuals mostly laymen took part in the work. The organization undertook the studies of land-use including map making and their analysis. Special attention was bestowed on the kind of farming, size of farms in each land-use area, area to be recommended for forestry, wild life, recreation, settlements, etc. The problems thus studied suggested plans in every branch, viz., farming and farm sizes, land recovery and settlements.

Thus, American land-use survey was taken up mainly for the purpose of land-use planning on the country-wide scale which embraced the planning of both the physical and human phenomena. It is also for the purpose of research in land utilization. However, what is remarkable is that U.S.A. has not made so remarkable a progress in the field of land-use survey as Britain.

While considering to land-use studies in other countries, it should be noted that very few countries hold a significant position in this respect. Certainly Japan has more enthusiasm in this field. The main motivating factor was how to support a huge population with less cultivated land. As such it is not surprising that land-use survey has been given the highest priority.

Land-use surveys are in progress in various countries of the world, particularly in highly crowded countries, where land-use planning on scientific lines is vital, i.e., Pakistan, Cyprus, Bangladesh, China, Poland, etc. Land utilization maps of Cyprus have been prepared under the supervision of R.R. Rawson and K.R. Selay, in the Department of Geography, "London School of Economics". The maps of Italy are being published by "Italian National Research Society". In Poland, under the direction of J. Kostrowieki, Department of Geography, Polish Academy of Sciences, developed a new pattern of land utilization based on agricultural typology, agricultural regionalization and programmed agricultural development. Land-use survey was also conducted in China. Data were collected on sampling basis from 22 provinces and on the basis


of sample survey data several aspects of land utilization were analysed such as farms, food, standard of living of the people, marketing and price level etc. However, in the whole study no attempt was made to record the use of land on maps which is an important aspect in the land-use study.

1.1.1. History of Land-use Study in India:

Land-use studies conducted by Indian Geographers in various parts of the country received inspiration from L. Dudley Stamp, who had attended the 25th Session of the Indian Science Congress at Calcutta in 1938. "Such studies range from inventories of land-use surveys to isolated topical or regional descriptive accounts of land-use variations, both in space and time. Recently the studies are shifting towards the application of quantitative techniques in the analysis of various land-use components."

M. Shafi have made a strong plea to carry out the land-use survey combined with the survey of land capability. This will help in determining the best utilization of the land in relation to their intrinsic qualities. They have emphasized that land-use survey should be carried out combined with the survey of land capability. It will help in determining the best use of land.

S. P. Chatterjee tried to organize the land-use survey in India in 1940 when in the geography and geology sections of Indian Science Congress Association, he pointed out the necessity of understanding land-use survey. The Government of India established a national committee for the purpose under the guidance of Chatterjee. He surveyed 800 villages of West Bengal and brought out 11 land-use sheets on the scale of 4"=1 mile. The National Atlas organization also prepared land-use maps on a scale of 1:1,000,000.

M. Shafi\textsuperscript{16} in his paper entitled "Techniques of Rural Land-use Planning with reference to India" was of the opinion that land-use survey of a vast country like India is easier to be conducted on the basis of sampling as it is very difficult to produce data for all the villages to be surveyed. Moreover, there is a great similarity in the land-use pattern of a particular region comprising several villages. So a sample village would do the needful. Shafi has brought out a scheme

based on sampling techniques for land-use survey of India. He preferred purposive sampling to the other four types, i.e., random, stratified, cluster and systematic. He is of the opinion that the studies are recently shifting towards the application of quantitative technique in the analysis of various land-use components.17

In Sagar University S.N. Mishra has studied land-use in Khadar and ravines of the Lower-Middle Gomati Valley.18 He has attempted land-use planning for better adjustment of agriculture to the physical environment for optimum exploitation and conservation of natural resources. H.S. Sharma has tested the method of land capability classification based on Bennett's Method. According to Learmonth and Bhat,19 agricultural land-use has been studied in detail by several disciplines but its sharp regional contrasts need spatial analysis which falls under the purview of economic geography. The Agricultural Atlas of India (1958)20 the

21. Government of India (1958), Agricultural Atlas of India, New Delhi,
National Atlas (1957)\textsuperscript{22} and the Census Atlases (1961)\textsuperscript{23} of different states contain choropleth and dot maps relating to land-use and crops which are useful in the analysis of crop distribution and concentration in general way and which have potentiality for more vigorous analysis.

E.Ahmad\textsuperscript{24} of Ranchi University has analysed land-use types in relation to physical elements. According to him slope of the land should be considered in preparing the development scheme of an Indian village in village Golagarhi\textsuperscript{25}.

P.C.Vat of Jodhpur has studied land utilization and farming efficiency by applying the British Method of land utilization in village Golagarhi. J.S.Yadav\textsuperscript{26} has interpreted the broad regional variations in crop land-use in Rajasthan.

L.S.Bhat\textsuperscript{27} has suggested the concept of planning from below, i.e. village, block and district level for land-use planning.

\begin{itemize}
  \item \textsuperscript{23}a) Registrar General of India: Census of India (1961), State Atlases of Andhra Pradesh, Bihar, Gujarat, Uttar Pradesh etc.
  \item \textsuperscript{24}Ahmad, E. (1954), Geographical Essays on India, Patna, pp.15-16.
  \item \textsuperscript{25}Ameni, K.Z. (1968), "Land utilization in village Golagarhi", Geographer, Special Number Land-use. Vol.15.
  \item \textsuperscript{26}Jadav, J.P.S. (1965), Crop Land-use Patterns of Rajasthan. Conferences of Geographers, Bhiwara.
\end{itemize}
S.S. Sharma has stressed the physical and human factors for determining land-use patterns in Shahabad, tahsil of Mathura. V.B. Tripathi\(^28\) of Kanpur and S.P. Garg\(^29\) of Dehradun have applied Weaver and Doi's Method to the study of crop combination ranking and changing patterns. B.N. Jha\(^30\) studied the problems of utilization in the Kasi basin, which passes through the various physical and cultural activities including the emerging problems of land utilization in the region.

K.K.L. Das\(^31\) in his studies about "population and Land Resources in North Bihar Plain, West of the Kosi" has shown the relationship between population and the intensity of the utilization of land in the study area.

S.L. Das\(^32\) studied the "patterns of population and land-use in the district of Bhagalpur, Bihar 1971" in which he has shown the distribution, growth and future estimate of population, and agricultural land-use in different parts of the district. In this way he has investigated the pressure of population on land after considering various attributes of the environment. Mandal\(^33\) has very recently done a commendable work on land utilization in which he has discussed natural

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principles, techniques, models and the role of remote sensing and air photographs in land-use analysis.

Conclusion:

The ultimate goal of land-use study is to suggest the planning for better utilization of available land to the society. Land-use planning is not recent in its origin but its practice is truly recent. A land-use map gives its origin but its practice is truly recent. A land-use map gives a clear picture of land to the planner who determines its future use and suggests the maintenance of land potentiality. Land-use planning should have a humble beginning from the present position of the land-use survey, so that the future use might satisfy the basic needs of mankind e.g., food, shelter and cloth. But land-use planning is not found in practice in most areas and therefore scholars should influence the implementing agencies for its practice so that proper use of land and improved technique of cultivation would not only solve the food problems of the nation, but also provide surplus products for exports too.

B - Settlements

At the very outset let us examine the term, settlement itself which forms the core of the settlement geography and from which the very name of the discipline has been derived. Etymologically the word finds its root in the old English
'Setl' (seat) or 'Setlan' (to place) and 'is not a specialised scientific' term. It has as many as eleven meanings, of which two are important from geography's point of view: 'a settled colony' (group of houses where people dwell) and 'the act of setting' (forming a permanent residence). But as is evident from Stone's review, the term has been employed to mean several things in geographical literatures. These range in objects from a single small dwelling or shed to a skyscraper or from a hamlet of a few houses to a megalopolis; in the sense of action, it has included every thing from the development of a porch on a house plan to the distributional pattern of buildings in a village or the total geographical history of a region. Also, it has been a technique of analysis and a part of historical geography. This is too much stretching of the meaning of the word which leads to a lot of confusion especially in the minds of settlement geographers. Thanks to the serious efforts of the modern geographers many of these misgivings in some definitions have been cleared and purposive meaning has been assigned to the word.

Settlement is a place of population concentration with an adjustment to nature. Settlements, which are a concrete expression of human occupation of the earth's surface, have

always adorned the geographical writings right from the dawn of the civilization. The term settlements refers to the "characteristic groupings of population into occupancy units together with the facilities in the form of houses and streets which serve the inhabitants. It analysis the facilities developed in the process of human occupancy of the land and their grouping. It is an occupancy unit and represents thus an organized colony of human beings, including the buildings in which they live or work or store or use them otherwise and the tracks or streets over which their movements take place. This study is not only related to the buildings grouped around the permanent farm dwelling, but also with the temporary camp of the hunter or herder, or with settlement clusters or agglomerations, running the scale from hamlet to village, town, and city. It is an organized colony of human beings, consisting of buildings in which they live or work or store various things, and streets over which people move. Broadly speaking, it deals with (i) the facilities built in the process of human occupancy of the land and (ii) their grouping. The nature and distribution of these facilities are related to the art and mode of living on the one hand and on the other, to such physical factors as water supply, slope, forests, and swamps. These are designed and grouped to serve specific purpose, and as such, carry functional meanings. Geographers treat the

settlement as a man made habitat on the earth's surface with an adjustment to environment.

1.2.0. Historical Development of Settlement Geography:

The accounts of early travellers and explorers as well as the ancient books of religion and philosophy contain innumerable of such references where settlements have occupied prominent place alongwith features of the physical landscape. So much so that the scholars have expressed contradictory opinions, sometimes too much stretching and sometimes squeezing the meaning and scope of the discipline.

Settlement Geography, whose central theme is to examine the spatial and morphological attributes of the settlements, has always been a point of debate amongst the academicians (Tiwari, 1976, p.167) and has been constantly modified with the changing concept of the subject of Geography. Whereas in its traditional studies emphasis was laid on man-land relationship in concentrating studies emphasis was laid on man-land relationship, concentrating initially on genetic and morphological approaches and then on the functional ones the recent concept revolves around the complex set of 'Man-man Relationship' emphasising the impact of socio-economic factors and thus clearing the way for the locational analysis with the help of modern and quantitative techniques. (Tiwari, 1973, p.77).
Western Concepts:

It was Carl Ritter who paved the way for the geographical studies of settlements. Later on Kohl, Richthofen, Ratzel, Meitzen, Schuluter, Grandmann, Martiny and Christaller in Germany; Blache, Brunches, Demangeon and Blanchard in France; Miss Lefevre in Belgium; Aurousseau in Australia; Ahlmann in Scandinavia; Houston and Chisholm in Britain; Bowman, Hall, and Kohn in the U.S.A. made significant contributions to the settlement studies. But the real honour of developing this branch into an independent discipline goes to O. Schulter who is supposed to be the founder of settlement geography. 37

In the first quarter of the present century, the research in settlement geography also moved beyond the Atlantic. Jordan was of the opinion that words 'distribution' and 'building' restrict the scope of the discipline. According to him it may be defined as "the study of the form of the cultural landscape. The word 'form' as per his argument, is equivalent to 'settlement morphology' and includes (a) vertical arrangements and dimensions, (b) horizontal arrangements and dimensions (c) the material composition.

Settlement Geography is a most recent sprout from the venerable trunk of human geography. Its systematic development

as a scientific discipline was started after the First World War. It took its offshoot from rural studies in the beginning, concentrated mainly on urban areas after World War II and consequently no serious thought could be given by the scholars to evolve a sound and logical methodology for the subject. Early geographers like Thucydides, Polybius and Strabo were not mistaken in observing ancient city as the symbol and outward evidence of a superior civilization; they also pointed, in contrast, to people living in towns or small villages from the immemorial. In Forster’s regional study of the South Sea Islands during the 18th century one may find the analysis of settlements; and in later regional studies as well as in the literature of many of the topical fields may be found the discussions of the pattern and processes of settlements.

In the words of Stone, the subject is both old and new; its objectives are varied; developments have been unequal within the profession; classification and methodology remain incomplete; terminology is indistinct; and texts and formal courses on the topic are limited. He has ascribed three reasons concerning these problems: ‘in part, the confusion is inherited, in part, it is a product of different opinions; and in part, it is a result of advances in geographical research.

The most developed area of settlement geography which has the profound impact on geographical research in various parts of the world is "central place theory" of Christaller, W. 38A. The theory, devised to explain size, number of distribution of towns based on the assumption of isotropic surface on which there will be regular spacing of settlement arranged in hierarchical order, each bounded by hexagonal shaped trade area and each nesting a host of six nearest immediate lower order places around it. The higher order central places which are more widely spread than lower ones have larger population and trade area and so perform all the functions of lower order places plus a number of higher order functions of their own category. Christaller suggested seven tier hierarchy in his model ranging from the market hamlet to the regional capital city. Although his theory commanded a great applause by urban geographers, but it also serves a useful purpose of explaining the distributions, spacing, hierarchy and hexagonal pattern of rural settlements.

Drawing upon the idea of the Zipf and Webber, Chisholm 38B provided a systematic account of the general problem of the location of rural settlements and agricultural

land-use. He proved that, a new agricultural settlement has two sets of space relationship: (1) to its lands or resources and (2) to its links with the outside world. Whereas the initial location of such settlement would be determined by the principle of 'least cost' depending upon the availability of arable and grazing lands, water, fuel, resources, building materials, protected sites and external contents; its diffusion may be linked to four major changes: (1) Socio-economic changes in the land holding system (2) removal of the need for defence agglomeration (3) elimination of such factors as disease and (4) technical improvements in water supply. He further contended that 'the best primary' units for rural environs are squares rather than hexagones.

In India geography had a late start and settlement geography in particular could not make much headway till late forties of the current century. Today, Indian settlement Geography appears to be overtied to western concepts such as Christaller's hexagonal hierarchies, Losch's economic landscape, 'Rank-Size Rule' and more recently, the growth pole strategy for regional development. Some significant work is noticeable, but it has gone into a routine to test an empirical aspect, without deriving meaningful results. A vast amount of literature on settlement geography, particularly on the towns of the developed countries has grown during the present
century, but our knowledge of the current processes, configurations and implications of development of rural settlements and urbanisation in the developing countries is still very limited.

Today much of the work have been done in the field of settlement geography. The settlement hierarchy and central place schemes developed by many scholars. Among them the 'population threshold' scheme developed by Berry and Hegget and 'Centrality Formula' derived by Davies may be well used to award weightage to different levels of functions. The first two formulae are concerned with measuring minimum population essential for the sustenance of a function but they do not take into account the population of the complementary region which also shares the sustenance of the function of the centre. Whereas the second one is not applicable to all level of settlements. The third one seems to be more realistic. It is based on the principle that the greater the scarcity of function greater is its importance in terms of centrality and thus the higher would be its weightage.

Grove and Huszar argued that the status of a centre should be expressed by the presence or absence of certain 'Key'

facilities they applied 'points' scoring system, whereby functions according to their apparent importance are given arbitrary weightage as 1, 2, 3, 4, 5, ... points. This technique was a slight improvement over the previous one. If however attempted to differentiate the levels of functions in a way that if a primary school is awarded one point, middle school should be awarded two points, high school 3 and so on higher will be the centrality of place. Hence, higher the level of functional hierarchy. But the technique still failed to differentiate the functions in an objective manner. Consequently the recognition of the different functional levels has led to the origin of a series of sophisticated studies. These approaches seem to be realistic in this regard. Each scheme has its individual merits and demerits.

A New Perspective:

It is time, therefore, that we took a closer look at the problems relating to our settlements and applied only those techniques that are likely to yield meaningful results. A few problems suggest themselves. A good deal of work on the internal social structure of the Indian village has been done, but there is a greater need to understand the social integuments that make the village— an aspect which came out powerfully in the newly settled villages whose older villages

were submerged by the river projects. Though the displaced families were allocated their new sites on a random basis, after two or three years it became clear that many householders had exchanged their sites so that they could reside in their own 'Caste shell'. Any planning of new villages will have to take into account this aspect of social zoning which will disappear only with education and economic uplift.

Another equally important problem can be identified. The western hierarchy of settlement and the growth pole strategy when applied to the Indian conditions is simply not effective. They assume that the countryside is well-developed and has the necessary 'demand' factor (i.e. the rural consumers effective demand for goods sold at the market centres). This may be so in developed countries but is certainly not true of developing countries like India, especially in drought prone tribal and hilly areas. The growth pole strategy is itself being questioned in France where the disparities between rural and urban regions are not wide. It defeats one's reasoning as to how a growth pole, endowed with all the inputs, can generate the economy of Indian countryside that is backward and impoverished.

1.2.1. Status of Settlement Geography in India

In our country the credit for introducing this branch of geography goes to Prof.E.Ahmad, Prof.R.L.Singh, Prof.Pithawala and Buschman, etc. The several works of Prof.
R.L. Singh on settlement geography have provided guidelines to investigators in this field. One of his papers (1961) gives clear idea of meaning, objectives and scope of settlement geography. His paper on "evolution of settlements in the middle Ganga Valley" is a significant study of rural settlement.\(^{39}\) He has also recorded several advances in the field especially in the study of rural houses, urban centres,\(^{40}\) and their origin, growth and morphology. Many of these topics have also been dealt with by K.H. Buschman\(^ {42}\) and Pithawala\(^ {43}\) in their study of settlement pattern and house types in different regions of India.

The work of Prof. E. Ahmad in this particular branch of human geography is equally important. His Ph.D. Thesis\(^ {44}\) (1948) is a detailed study of settlements both rural and urban in the long settled fertile country of Uttar Pradesh. The rural settlement types in U.P. are analysed in an important paper.

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He describes the Indian village pattern based largely on the study of 1 inch topographical sheets. The rural and urban settlements of Bihar have been studied by him in his book on Bihar. The Ph.D. thesis of Dr. L.R. Singh on the Human Geography of the Tarai Region and his other papers on rural settlements in the same region provide a detailed analysis of the evolution, growth and distribution of settlements. A.B. Mukherji has made valuable contribution towards Jat settlements and habitations. M. Anas in his study of sub-Himalayan Region discusses in detail the various patterns of rural settlements found in the region. Dr. N.D. Bhattacharya in his Ph.D. Thesis dealt with "Evolution of Settlements".

Further, C.D. Deshpande (1942) made an analytical approach to the analysis of rural settlement types and

M. Anas (1954) identified four types of settlement pattern: (i) a zone of compact settlement in the Tarai region, (ii) the cluster and hamlet types of settlement in Bhat region, (iii) the fragmented type in the southern region of Trans-Ghaghra plain and (iv) the dispersed type in Khadar portion of Ghaghra valley. The study of house types made by M. M. Subrahmanyam (1938) is worth mentioning. He has brought out the salient features of four types in South India (Cuddapah type, Malabar type, Godavari type and Tamilnadu type).

According to Singh, settlement geography deals with (i) the facilities (houses and highways) built in the process of human occupancy of the land, and (ii) their groupings. Gosal, while agreeing with Singh’s contention, observed that this is only a restricted definition and scope of the subject (which puts) special emphasis on form to the near exclusion of function, functional relationship and functional hierarchy. Chatterjee suggested that the subject “deals with the size, form and function of settlements built by man and traces their historic growth”. Sharma, on similar pattern, expresses that “Settlement geography aims to study the size, form, functions and regional association of human settlement and traces their

55. Subrahmanyam, K.M. (1938), Four Main House Types in South India, JI. of Madras Geographical Association, 8(2).
growth and pattern of distribution. Gosal, while reviewing the works of Indian geographers in settlement geography, feels that it "concerns itself with both the processes of settling and their manifestations on the earth's surface" and proposes "the variation of settlement attributes and co-variation of spatial correlates as the basic theme.

More recently, Singh and his co-workers have proposed a new definition, for rural settlements geography, which suggests that the subject deals "with the orderly description and interpretation of process, patterning, functions and spatial organisation of human occupance within rural environment over the earth's surface." They claim that this idea of theirs represents the concept of 'holistic approach' and concerns with the 'form' function and 'genesis' parallel to that of geomorphologists' 'structure', process and stage.

On closer examination of these definitions following broad observations can well be made:

The definitions have shown great deal of variation through time in conformity with the changing nature of its parent discipline (geography). Some of the definitions are too comprehensive to include a number of associated features whose study cannot now be advised to be undertaken in settlement geography in view of the rapid growth of geographical knowledge and consequent branching off of the discipline of geography. On
the contrary, examples are not lacking where the subject has been too much narrowed so as to leave out some of the vital topics. There are definitions which either emphasis on process or on form, but in other cases a characteristic building of the two is noticed. Most of the scholars have borrowed their ideas from their predecessors as a result of which some of the definitions are nothing but the repetition of the similar views, though in different terminology. The settlement geographers are not ready to shed away their age-old beliefs, while putforthing a new definition of the subject. So much so that they are not even prepared to part with some of the topics which now logically belong to other disciplines. That excessive credence has been given to history and historical view-points rather than to logical thinking. The earlier studies have mainly relied upon the historical and regional approaches and very few attempts have been made to develop the systematic side or to evolve a comprehensive approach in view of the spatial nature of the discipline. Some of the definitions are too vague, and lack clarity of thoughts and thus generate great deal of confusion in the minds of the researchers and scholars.

1.2.2. Branches of Settlement Geography: Interrelatedness:

There are two sets of settlements, which are functional. Although rural and urban settlements are two
important wings of settlement geography, the problem and procedures of their analysis are distinct and separate. Urban Geography has attracted more attention while systematic and scientific analysis in case of rural settlements is still in the initial stages. Urban and rural settlements are also the concern of economists, historians and sociologists but their line of approach differs. Geographers mainly treat the problem as man made habitat on the earth's surface in relation to environment and examine the settlement features, such as buildings and their architectural style. The functional structure of settlements is closely related to social, economic and political structures of the society. These aspects vitally influence the shape, form and location of settlements. Each community has its distinctive religious centres (like temples, mosques and churches) and educational institutions and these have a bearing on the development of settlements.

Urban Geography deals with very complex areas possessing sharp internal differentiation. It is concerned with the problems of guiding urban growth for better living. Urban geography attempts to analyse the geographical conditions which are significant in the building of urban centres. The activity is divorced from the cultivation of the soil. Some portions of urban settlements may be devoted to cultivation, but generally this is limited to cash crops and vegetable gardening.
Urban settlements have been identified as containers, since they contain the agglomeration of people and facilities which perform certain functions. Those settlements exist mainly to provide goods and services for the people of the areas outside the municipal limits. It also studies the intensity of human success in the natural environmental conditions. The pattern of urban centres becomes an index to intensity of human success. It is not an isolated physical or social unit because it is a focal point of activities for a much larger area, the size and extent of which vary for each urban function.

Urban geography throws light on the association of activities in urban centres which are expressed in characteristic associations of land-use and occupancy features. It also examines the architectural styles, road patterns for the sake of investigating the historical sequence as this investigation enables us to know the origin of settlements and their successive expansion.

In our country the facilities for the origin and development of settlement are different from those in the advanced nations of the world and require a slightly different approach for analytical framework and planning. Settlement studies appear as essential elements of research undertakings in many other branches of geography. It is closely related to population geography, agricultural geography, transport
geography, historical geography, military geography and cultural geography. Even social scientists other than urban geographers such as sociologists, planners, economists have widely used and quoted urban literature in adjacent fields and have contributed many studies of value in urban geography.

Rural settlement geography as a field of study has made a late start in India. Perhaps the earliest known reference is made in Subramanyam's paper (1926, pp.118-122) published in the first issue of Madras Journal. But since then the progress has not been encouraging due to the inclination of early research workers towards land-use and urban studies and the lack of reliable data and field-work facilities in the villages. In fact sociologists, economists, and anthropologists have taken keener interest in rural studies amongst whom S.C. Dubey, R.M. Mukerjee, Srinivas etc. need special mention. But it was Ahmad's work (Ph.D. Thesis from London University in 1949 and a number of articles during 1950-60) that infused new vitality in Geographers to turn their faces towards countryside.

During 1960-70 three events of utmost significance accelerated the development of rural settlement geography in the country.

1. the publications of Prof. R.L. Singh's paper on the meaning, objectives and scope of settlement geography (1961).
ii. the census monographs on sample village (1961).

iii. the formation of I.G.U. Commission on 'Rural Settlements in Monsoon Asia' under the chairmanship of Prof. R.L. Singh (1968). Then onward a good deal of literature in the form of research monographs, Ph.D. dissertations and articles are coming up in the country and abroad. Prof. Chatterjee's progress of Geography (1964 and 1968) and I.C.S.S.R's survey of research in geography (1972 and 1979) present a systematic account of this development, whereas annual reviews are now published in I.C.S.S.R. journal of 'Abstracts' and 'Reviews in Geography'.

The treatment, in general, has been morphological and historical mainly based on gazetteer information rather than on the field-work. In many cases theories and models developed in western countries have been made to study the spatio-functional characteristics of rural settlements of India so as to devise an integrated functional system or to find out lacuna in existing planning procedure to make rural settlement studies utilitarian and growth propulsive.

1.3.0 Data base and Methodology:

Data base:

To testify the postulated hypothesis, efforts can be made to collect and discern all available sources of data. But
the non-availability of sufficient data and information for the study in detail have caused major set-back in many approaches.

In the present study the data have been gathered from various sources, which include both field investigation and secondary sources. Data pertain to different aspects of the district like climate, soil, vegetation, agriculture, industry and allied activities (including irrigation, socio-economic facilities) were collected from their respective departments located in the district and outside. Besides, information was sought from various industrial units, educational, health, town municipal corporation P & T, P.W.D., transport and other departments. The demographic data is obtained from the census reports (demographic data of 1991 census from provisional census report). The district gazetteer published in the year 1985 provided much information and data.

Discussions were held with government officials in different departments like forest, revenue, T.M.C., Zilla Parishat and other offices to understand local problems. Researcher visited each and every taluk and random villages to get first hand information regarding problems of land-use and settlements.

The district and taluka maps have been obtained from the latest district gazetteer and census hand book of Uttara Kannada district. In addition to this, various atlases, such as
'National Atlas' etc, have been used wherever found necessary. Moreover several maps are prepared based on Survey of India (S.O.I.) toposheets (Scale 1"=1 mile and 1:50,000). The information about the location and relief etc have been taken from these toposheets, of different editions. Where maps were not available for some analysis, author himself has prepared sketches/maps by visiting field. The latest land-use map of the district has been prepared based on 'Remote Sensing', which was obtained from 'State Remote Sensing' department, Bangalore.

Methodology:

1. The Origin and Evolution of Settlements is analysed in the light of available recorded data.
2. The Pattern of Distribution of Settlements and Service Centres is analysed with the help of "Nearest Neighbour" technique.
3. To find out factors responsible for forest degradation, fourteen variables are considered for correlation analysis.
4. To find out Corelationship between Fallow Land/Waste Land, eight factors are considered.
5. The Slope Analysis of the study area is done by using Modified Wentworth's method.
6. The Crop Combination is analysed with the help of J.C.Weaver's Minimum Deviation method.
7. The Intensity of cropping is done by using the formula

$$\frac{Gca}{C1} = \frac{Nas}{100}$$

8. The Identification of Centrality and Functional Hierarchy of Service Centres is done as per weightage method suggested by Tiwari, R.C. and Tawde, M.D. and Gophane, B.N.
9. The Urban Sphere of Influence is worked out as per Reilly's "Gravity Model" and V.L.P. Prakash Rao's method.

10. The Functional Classification of Towns is studied by applying Webb's method.

11. The Hierarchy of Urban Settlements is worked out with the help of Rank-Size Rule.

12. The Regional Disparities are identified as per Kendal's "Rank Order Score" method.

1.3.1. Objectives and Hypothesis of the Present Study:

Objectives:

The main objectives of the present research are:

To make an in-depth study of land-use pattern, crop land-use pattern and problems related to land-use development in the Uttara Kannada District.

To examine various socio-economic and physical factors that are responsible for land-use changes.

To make suggestions for the efficient and sustained development of various land uses and thereby to seek economic development of the region.

To study the settlement pattern of distribution and their spatial organisation among themselves. In doing this exercise the rural settlements, urban settlements, their hierarchy and functional nature have to be explored, so that their regional dimensions can be understood. The relationship between land-use and physical factors have to be studied for understanding their influence on pattern and growth of settlements. Lastly to know the regional disparities in order to make a viable development of the region, considering the
pattern of land-use, settlements and their spatial interrelationships.

**Hypothesis:**

1. It is hypothesised that the pattern of forest land-use in the study area is going to change owing to the intensity of forest cut by man for his specific needs like fuel wood, industries, building purpose etc, (This hypothesis is proved).

2. It is hypothesized that increased extension of fallow land by various means is going to influence on declining land under rice cultivation (This hypothesis is proved).

3. It is hypothesized that the physiography, drainage and forest cover directly influence on the pattern and forms of settlements (This hypothesis is proved).

4. Smaller the size of the settlements lesser is its impact on its surrounding area and vice-versa (This hypothesis is proved).

5. It is hypothesized that higher the population size of an urban centre shall show specialization only in one or two functions (This hypothesis is partly proved).

6. It is hypothesized that lesser number of settlements in a taluk render it as low developed in socio-economic aspects (This hypothesis is partly proved).