CHAPTER - 1

1.1 INTRODUCTION

The land use practices differ at global, regional and local level. For overall development of a region, the best available resource at all places is land. Land use planning in India is not addressed either in time or at spatial context. The gap that has developed, has pushed the whole land use planning system into jeopardy, either there is a mal utilization or under utilization or over utilization of land without considering the geomorphological, geological and drainage network system. The land utilization depends upon its value, basically, the physical characteristics mentioned above. Each type of land is configured on the basis of climate and physiography.

Most unacceptable fact about land is that, it is merely conceived as a natural agent only to produce crops whether it is suitable for producing a particular crop or not. This trend of land utilization has resulted into threat into the sustainability. The age old tradition of practicing agricultural is no more a matter of fact to buy this theory.

Classifying the regions based on the various determinants in order to evolve a right full land use and regional development planning has become a prime issue rather than adopting a short term temporary solution.

In this context the overall regional land use development planning need to be worked out for southern Karnataka. The final outcome of this research will yield a sustainable model for micro level development and planning.

1.2. Purpose and the expected outcome of the study

The main purpose of this research was to examine the level of control of the physiographic conditions on agricultural prosperity or backwardness. It was noticed that there are villages which are physiographically favourable for agriculture but prosperity of agriculture is not found to the level it should have been. On the contrary, pockets which are physiographically harsh and unfavourable but agriculturally developed. This is one of the major elements to be understood.

Secondly, the response of human activity to the existing physiographic condition is also not in conjecture to the actual condition existing. Because, there are many villages which are physiographically favorable agriculturally backward, where as
amenities wise forward. This is also true in case of physiographically unfavourable, agriculturally forward and amenities wise backward. In order to ascertain all this facts a thorough physiographic analysis of Karnataka was done to understand the favorable and unfavorable physiographic condition and its influence on agriculture.

Thirdly, the most favorable agro physiographic crop regions of Karnataka were generated. After obtaining the agro physiographic crop regions for Karnataka, the work was scale down to taluk level by choosing two taluks from each agro physiographic divisions, such as

- Karwar and Honnavara taluks covering the Coastal and far reach coastal plains.
- Manvi and Sindhnur taluks covering North Eastern territorial plains
- Ranebennuru and Haveri taluks covering North, North central undulating low land region.
- The Hunsur and H.D. Kote(Heggadadevanakote) are selected to represent the entire southern, north west, and south east undulating upland, and to represent south eastern undulating upland Gauribidanur and Chinthamani were selected.
- Mudigere and Thirthahalli taluks were selected to represent Malnad region.
- Basavakalyan and Homnabad taluks lies under undulating upland and low undulating low land regions are agriculturally favorable land in compare to undulating low land.

1.3 Objectives

1. Physiographic Reclassification and Delineation of Southern Karnataka.
2. Integrated Intersected Agricultural Land use Reclassification of Karnataka.
3. Proposed Taluk level agricultural land use reclassification model of Karnataka.
4. Micro level ground truth verification and analysis.
1.4 Hypothesis

- The existing physiographic classification of Karnataka is not appropriate and unscientific.

- It was hypothesized that, the existing agricultural land use is in tune to the existing physiographic condition.

- It was hypothesized that, agricultural land use reclassification of Karnataka will differ from the agro climatic regions of Karnataka.

- It was hypothesized that, the exiting agricultural condition of Northern Karnataka is not better than Southern Karnataka.

1.5 Methodology

The entire study has been carried out in three phases

The first phases of the study had been focused to delineate the study area that is southern Karnataka from greater Karnataka. This work has been done based on the application of GIS.

The second level of study has been intensified with adaptation of both supervised and unsupervised extraction of spatial data. The (both natural and cultural aspects) extracted spatial data has been synthesized in order to identify the similarities and dissimilarities within the region and between the regions, After the completion of the above work the macro level study has been scaled down to meso level.

At the pockets level (those regions which are identified) further analysis has been executed to identify the most promising influencing variable for Higher sustainability, or Lower sustainability.

Once the determining variables are identified, the study has been scaled down into micro level that is village level. Preliminary inferences and analysis has been undertaken using Google data and it has been substantiated by ground truth analysis. Detailed village level survey has been executed to identifying the similarity and dissimilarity in particular village and other part of the study area. Based on the final outcome village level analysis and model building has been attempted to match with the physiography condition and land use planning.
The comprehensive land use planning thus projects the future land use for the various activities such as agriculture, urban townships, recreational, aero drum, Road Network and Vegetative grids.

**Flow Chart: 1.1 Overview of Methodology**

**Flow chart: 1.2 Structure of the Research**

Existing agro land use and cropping pattern of Karnataka

Physiographic Classification of Karnataka - Southern Karnataka

Integrated Agro Physiographic Divisions - crop land

Taluk level Integrated agro physiographic classification of Karnataka Model

Sample village ground truth land use data analysis

Discussion and Conclusion
1.6 Organization of Thesis

The chosen topic on comprehensive development planning analysis of Southern Karnataka was aimed at, to provide the new method of planning to achieve self sufficiency and sustainability. After conceiving this topic, the chapter wise framework was written. The entire research work has been split into eight chapters. The following paragraphs state the content in a synoptic form.

The first chapter of this thesis contains, Introduction to the topic, the statement of the problem, the purpose and outcome of the study, the limitations of the study, hypothesis, the four objectives and a detailed methodology. The Four objectives such as,

1. Physiographic reclassification and delineation of southern Karnataka.

2. Integrated intersected agricultural land use reclassification of Karnataka.

3. Proposed Taluk level agricultural land use reclassification model of Karnataka.

4. Micro level ground truth verification and analysis

Introduction has been developed as separate chapter. The methodology was framed objective has been written in detail. The review of literature has been done by reviewing International and National Level Research. The method adapted and the findings has been written in synoptic and in captions. Both national and international review ensures the status of the present research work at the Global and National Level.

The second chapter highlights the basic geographical and demographic setup of Karnataka state. This unit covers detailed note about the existing physiographic conditions such as relief, drainage and rainfall. The distribution of Vegetative background of Karnataka has not been discussed in this unit, since it has been applied for further analysis to obtain the final output in the fourth unit.

The comprehensive development planning of Karnataka is the main objective of this thesis. Without the existing agricultural background of Karnataka it was felt that there was a gap existing, without bridging the existing agricultural potential zones and the new classification. Perceiving this, a detailed agricultural background of Karnataka
has been provided under **Third chapter** based on the secondary source of data. In this unit, existing agro climatic regions of Karnataka has been kept as a basis for analysis and various levels of agricultural land use and cropping pattern has been discussed. Mainly, the general agricultural land use of Karnataka and the crop wise agricultural land use of Karnataka such as, cereal crops, oil seeds, pulses, plantation and horticulture crops have been discussed. Apart from this, the four major Agro climatic zones such as dry zones, transition zone, hilly zone and coastal zone cropping pattern and land use has been analyzed and discussed in detail.

The actual research work related to the topic commences from **Fourth chapter** onwards. Realizing the lacuna existing in the physiographic classification of Karnataka. The first objective of research was to delineate Southern Karnataka. When it was realized that the existing physiographic classification is not classified on agro climatic nor it is exactly relief based, the idea of developing a new physiographic reclassification of Karnataka emerged. Thus, an additional work of Physiographic reclassification was done. In this unit, the basis of reclassification, the scope of reclassification, the method of reclassification of entire Karnataka was done. The method adopted to extract Malnad and to sub classify Malnad, a separate method was adopted by taking the degree of slope. Thereafter, Malnad topography was mapped and explained in detail. The final output of the reclassification has been categorized into five classes. Such as

a) Coastal plains and far reach coastal plains possessing elevation of 0-200, and

b) North Eastern territorial plain 201-450 mts of elevation. c) North and north central undulating low land 451-600 mts

c) Southern, North Western and South Eastern undulating up land 601-1000 mts and

d) Mountain peaks more than 1000 mts.

The second objective of the research was to develop an integrated intersected agricultural land use reclassification of Karnataka, which was split into two: This has been discussed in detail in the Fifth Chapter. The synoptic note is as follows
1. At the first phase the base parameters such as relief, slope, NDVI, drainage density, soil, natural vegetation and rainfall. All these parameters were extracted from the thematic satellite image with the resolution of 30 meters.

Relief, Slope, drainage density has been derived from ASTER DEM for 30 meters soil map has been utilized from the NBSS, NDVI data has been utilized from Bhuvan NRSC data center.

2. Secondly, newly reclassified physiographic region of Karnataka was intersected to obtain an integrated intersected Agro physiographic land use classification of Karnataka. Based on the above said parameters the newly classified physiographic divisions intersected overlay analysis was performed.

The result thus obtained was categorized into four groups such as

- Dry crop region
- Low land irrigated wet crop region
- Malnad and Semi Malnad wet crop region
- Wet region,

The details of the third objective of the present research that is, to propose taluk level agricultural land use reclassification model of Karnataka has been covered in the sixth chapter. Since the entire Karnataka taluk level reclassification could not be performed at a stretch, a method was adopted by limiting to taluk level and Agro physiographical classification was derived at village level. To develop these methods two taluks from each physiographic region was selected. Totally fourteen taluks were chosen and for each taluk ASTER DEM data was downloaded and synthesized to generate such as drainage, drainage density, relief, slope, geology, geomorphology and land use/land cover (satellite thematic mapping data) has been obtained to get a final output of Agro physiographic classification at each taluks of different classified regions i.e two taluks from each region.

In addition to this, the reclassified physiographic regions of Karnataka for the selected taluk boundary has been clipped out to integrate the state level physiographic condition at the taluk level. By combining the above said parameters along with the
clipped out physiographic data, an intersected overlay analysis has been performed. The result obtained was thus classified into three categories such as

i) Highly suitable,

ii) Moderately suitable and

iii) Not suitable.

Further to pinpoint the exact level of status of each village (in the selected taluks) in terms of its physiographic condition, Agricultural prosperity and the amenities it is possessing a weightage score analysis has been performed, taking the census data at village level for the selected taluks of Southern Karnataka such as,

- **Physiographically favorable with agriculturally forward but amenities wise backward**, (Lope Sided Development Villages)

- **Physiographically favorable with agriculturally backward and amenities wise forward villages**, (Lope Sided Development Villages)

- **Physiographically + agriculturally and amenities wise developed villages**, (Fully Developed)

- **Physiographically + agriculturally + amenities wise backward villages**, (Fully Backward)

Have been identified for the selected taluks of Southern Karnataka. This is an instant information for planning and development of villages at micro level. Based on this the District Panchayat CEO (Chief Executive Officer) can take direct measures to uplift the situation of the most backward villages listed.

Within the given time period, a comprehensive development model for entire Karnataka at village level was too laborious. Hence, only two taluks from each classified physiographic region has been chosen as a sample model. The selected 14 taluks were analyzed with the above said methodology and identification of overall development status at the village level has been done. Although 14 taluks have been done, only the Southern Karnataka taluks have been provided with explanation.

The Seventh Chapter deals with the fourth objective. The main objective was to know the exact status and position of the classified regions and the true status of development of the identified villages at taluk level. To examine the obtained result
whether it is true on ground and what its level of accuracy, the village level land use, economical survey was conducted on a random order. The details of the villages surveyed has been discussed in detail stating the reasons for its development or under development or why it is fully backward.

The Eighth chapter provides a summary of the Research with a finding and conclusion. Since each chapter has been provided with findings and conclusions a brief conclusion has been brought out in this unit. The findings have been mentioned in each chapter although it has been listed out here in order to emphasize its importance under each chapter as well as a concluding remark.

1.7 Review of Literature

The review of literature has been classified on the basis of the following category.

- Past to recent literature
- Agricultural land suitability
- Regional disparities in the level of amenities
- inter and intra regional disparities
- Regional disparities based on the geospatial technology

Sivaramakrishnan. L. (2006), book on regional economic development Analysis and Planning Strategy discusses about various techniques commonly used to measure and analyze regional economic development. The role of capacity building institution and leadership and its impact on regional development have been emphasized by the authors. Importance of social capital and its role in sustainable regional development have been highlighted. The use of spatial information technologies which is commonly referred as Geographical Information System (GIS) to build up the spatial decision support (SDSS) had also been dealt with.

Bhattacharya, (2007), the main objective of the paper is identify socio economic growth and disparity among the group of six nations. The secondary data has been used. Lucas supply side model has been use for their methodology. Development process in terms of GDP growth had been uneven across this island nation. All these nations face the same problem due to their small size and vulnerability to natural disasters and external shocks. Vulnerability issues need to be solved jointly or else, it
will affect their vital issues. The need for improved fiscal management by individual countries cannot be over emphasized, structural changes, economic diversification relating to products, marketing and human resource also needs urgent attention. Jump from agriculture to service sector like tourism, offshore financial services and telecom services helped them to grow economically. In order to in cash the benefit of proximity to US and European market, they should develop their potential to explore these markets by attempting to diversify their economies and to attract investments by offering suitable incentives. Social transformation, education health facilities and information technology to the poorest are essential for development. These nations need to tune up economic growth with human resource strategies to access new and emerging opportunities in the global environment.

Hassan, M. et. Al (2007), says agricultural and industrial development has become worse during the decade. Infrastructure facilities have been improved. Agriculture productivity grows at a slower pace even with also those improved agricultural inputs. Rice is a prominent crop which occupies 80% of the land, had declined from 83.91% in 1991-92 to 76.02% in 2001-02. Process of economic progress had lagged behind. Narrowing down of the inequality within the state can be attributed to the emergency of yet another development nucleus’ in the western upland plateaus in and around Sambalpur and Jharsuguda districts. The dominance of coastal plains with Khorda as its centre had undergone a marked decline. The emergence of Sambalpur and its neighbouring districts as a development node is linked with prosperous agriculture and transport connectivity. Middle mountainous region with sizeable proportion of tribal population continues to lag behind. The development dynamics, however limited it may be, has definitely witnessed some amount of dispersal during the recent past.

Mohapatra, R., (2007), the data and methodology has been used citing examples. Public participation is a vital part of the planning process. A planner should understand whom they are planning for. A good planner should have good negotiating skills. Students should be encouraged to do role play or to work in projects outside the classroom environment. Students must be encouraged to reflect not only on outcomes but also on the process of achieving a solution.
Tiwary, P.K., (2007) He explained that poverty is initially caused by the low income as well as low productivity and its inequitable distribution among the people of a nation. Poverty has become more relative with the increasing gap between rich and poor, and spreading among the masses have a trend of diminishing absolute and increasing relative poverty. In rural areas, an important cause of poverty is lack of land resources along with its distributional pattern as well as fragmentation of land holding. A sizeable number of rural households have no land at all. They live entirely upon earnings from personal labour. They constitute some of the poorest sections of rural population. This study highlights the problems of rural poverty and identifies the regional pattern of level of poverty in Niyamatabad Block (Chandauli District, Uttar Pradesh).

The study was on intensive field work and personal observations. However, the secondary data has been collected from the various government offices. To analyze the spatial distribution of poverty levels, 14 sample villages have been selected on the basis of stratified random sampling and on the basis of physiographic and socio-economic variables. Composite poverty index has been calculated by composing twelve types of variables at the village level. Finally through field visit, cross verification was done.

In this block, most of the populations below poverty line are landless. In some villages population are also below poverty line because of less productive land such as usar, and semi usar lands, small size of land holdings and uneconomic agro-operation. Majority of marginal farmers are below poverty line. Villages near towns have less poor people as they get employment opportunities in towns. Most of the people below poverty line come under backward and schedule caste. With the help of composite index, villages are grouped as, high poverty in north eastern, central and eastern part of the block, moderately poor areas lie in the southern and northern part of the block and villages encircling the high poverty areas in the block. Finally low poverty covered areas are scattered around the northern, central and southern part of the block.

Verma, D.N. et al. (2007) his paper tries to explain empirically the spatial variations in the level of human resource development in Uttar Pradesh. The main objective of this paper is that observations on the status of human resource development scenario
are always in the state of change. It was argued that these changes are also not uniform in space and time. In the methodology, 15 indicators have been adopted and the secondary data has been acquired from the concerned government department. The author applied composite method for identifying final outcome of the analysis.

Per capita GDP and the Human Resource Development (HRD) are positively related, with some exceptions. Only 23% of districts have high and medium levels of HRD which are mainly located in western part of Uttar Pradesh, while the rest of the districts have low, very low and extremely low levels of HRD located in the central and eastern parts of Uttar Pradesh. The study relates the high levels of HRD to industrial and agricultural developments and depressed regions to that of low industrial and agricultural developments. So, the smaller part of the state is developed and larger part appears as areas of very low level of HRD. This situation is a matter of concern.

Nagaraj, et al. (2007) his although India has recorded a high rate of economic growth during the past two decades, yet this growth has created regional disparities. Usually the intra district disparities are much greater than the inter - district disparities. The main objective of this paper is to illustrate how in future such disparities could be contained. Socio-economic and demographic indicators have been used for identifying regional disparity. The main methodology that has been carried out here is that, 13 social indicators, 19 economic indicators and 5 demographic indicators have been used at taluk level. Finally, the district has been divided into 5 categories.

In this district only two taluks are classified as area of very high level of development. One of these taluk had district headquarters and the other was agriculturally developed due to developed irrigational facilities. These two taluks had high net sown area and a good network of agricultural banks, cooperative societies, etc. And three taluks in this district have been grouped as low developed, has they are agriculturally backward due to rugged terrain.

Debapriya, et al., (2008), explains that developing human capital in terms of better living environment, education and health should be the ultimate objective of well being as mere growth GNP does not lead to overall development. In this context, authors have analysed that due to inter district disparity in the level of development in education and health care facilities in the state of Orissa, this kind of model may be
useful for the planner to formulate region wise special human development parameters. As per the methodology they have adopted following parameters to achieve the outcome of the paper. Such as, the developmental index of education and health care is constructed in all the 30 districts using 16 indicators. The value of each district is a sum of the total of weighted linear function coefficients of all 16 indicators and equation has been carried out. Later on the districts are grouped into 5 categories.

In the state of Orissa Inter district disparity was very high. Coastal districts of Cuttack, Khurda, Jagatsinghpur, Balasore and Kendrapara were highly developed. The adjoining districts like Puri, Bhadrak, Jaipur, Keonjhar and Jharsaguda were developed districts. And in the state, 9 highly backward and 6 backward districts were there, distance from the highly developed regions explains their backwardness.

Bishnoi, et al. (2008), as per the author, the state of Haryana has a very impressive growth, being above the national growth rate. The state attracts sizeable investment from both inside the country and outside. But the growth is concentrated in the areas of national capital region and national highway No. 1. A large section of the people and vast geographical area remained isolated from the economic and social change. On account of this, the authors have undertaken the study of regional variation in the socio-economic development in the state at the district level to facilitate remedial measures to reduce disparity. As per the methodology adopted, 28 variables have been chosen for the analysis. This data has been derived from the census of India. Finally composite method index has been applied for final outcome.

According to author inter district disparities in terms of agricultural performance was not growing. Number of developed districts in the year 1991-92 was 5 which increased to 6 in 1997-98 and 7 in 2004-05. Between 1991-92 and 2004-05, rank of the district remained almost the same.

But in terms of industrial performance, disparities have increased in the state. Both the indices had shown 4 developed districts between 1991-92 and 2004-05 but their positions have been changed. Districts around Delhi have improved their industrial performance. 4 districts which were moderately developed had slipped to underdeveloped category.
Number of developed districts falling under basic infrastructural development had declined. Overall development has shown growing disparities in the state, particularly after 1997-98. Changed position of districts in overall ranking is a matter of concern for the state.

**Hangarai, (2008),** his paper evaluated the inter taluk disparities in the level of development of old Bijapur district of Karnataka state. Regional disparities give rise to multiple social, economic and cultural problems. They will hamper national integrity and unity. The main objective of the paper is laid on minimizing regional imbalance. In the methodology, the study has been based on secondary data. Totally 61 indicators have been chosen for analysis and composite index method has been adopted to extract the final output.

In terms of agricultural development 2 taluks are highly developed, 5 medium and 4 are low developed. In terms of industrial development 3 highly developed, 5 medium and 4 are low developed taluks. Infrastructural development wise 2 are high, 3 medium and 6 low and in terms of demography is high in 5, medium in 2 and low in 4 taluks.

Composite index wise 3 taluks are highly developed, 3 medium developed and 5 are low developed.

**Khan, et al, (2008),** paper explain the pattern of rural employment and level of agricultural development in the state of Uttara Pradesh. As per the methodology, in this paper the study based on secondary data has been collected from various government offices and census of India 2001. Finally, composite index method has been performed for the final outcome.

Southern, north eastern and central part of the state reported very high rural employment in 15 and high in 14 districts. Whereas western and south eastern part of the state had 15 medium, 7 low and 15 very low level of development. The eastern part of the state had very low level of employment.

Level of agricultural development was very high in 11 district come which under western and north eastern part, 23 districts from Agra to Ghazipur have medium and 20 districts surrounding districts of medium development have low level of
agricultural development and 7 districts scattered all over the state have low level of development.

Rural employment and agriculture was high in south western part of the state. High rural employment and medium agricultural development was found in central part of the state. High level of rural employment versus low level of agricultural development was found, one in the south and another one in the north.

Reddy, et. al (2008), According to the author this paper tries to explain levels of living standards of people of north eastern states of India. The secondary data has been used from various government agencies. Analysis shows that in the nineties there was no significant improvement in the levels of living of the rural people in this part of the country. Marginal improvement was seen in the rural economy particularly in agricultural output but was neutralized by the growing population.

The agricultural inputs used for farming like irrigation, fertilizers, electricity, credit, etc has been found to be at a very low level in NER compared to all India averages. It was found that the effect of reforms on reduction of poverty in rural areas of NER were negligible or regressive in nature. Unemployment rate among women was high but decline in this was seen during the period 1993-94 and 1999-2000.

Mishra, et. al (2008), Author’s emphasis on land usage should be utilized for sustainable development. Data has been collected from primary and secondary based and in the methodology quantitative techniques have been used. About 42.13% increase in total land was not available for cultivation. Cultivable waste land had declined by 6.65% and net sown area had registered an increase of 9.31%. Barren and uncultivable waste land had doubled, which was a clear indication of decrease in the level of development and decline in further total agricultural output. Scarcity of resources and lack of awareness has made Kalahandi the most backward region of the country.

Singh, Nabakumar Th, (2008), the main objective of the paper is to find the socio-economic development of the inhabitants of the hilly area of Manipur. The data has been collected from primary and a secondary and statistical technique has been used for methodology. Social and economic life of the people in the hills of Manipur was different from other people. Due to inaccessibility of the terrain, political instability
and lack of social cooperation, economic transformation was very slow even with vast natural resources. Unfavorable environment had a high influence on social, economic and cultural life of the tribal people of Manipur hills. Diversity of the physical environment and economic development gets significantly reflected in the heterogeneity of the social and cultural life of the tribal’s. Economic development would boom if the altitude is lower with more infrastructural facilities.

**Yadav, R.N, (2008)**, as per the author, the changes in the morphology of settlement, due to growth of population and improvement in the economic status of the people. The data has been collected based on primary and secondary level. Statistical analysis was performed to get output.

Unemployment problem is very serious in the village so, working people are involved in multiple occupation. Most of the families of this region were not satisfied with their parental occupations and they want themselves and their children to find jobs in urban areas. Small farmers, landless, labourers and their families suffer from malnourishment.

Positive aspects of the village are improved means of communication, availability of good potable underground water, availability of farm implements, electrification, and construction of approach roads, main road and expansion of educational facilities. The implementation of various rural development programs by the state government, witnessed rapid change, especially in respect of its morphology, internal structure and economic base.

**Kumar, Narinder, et.al, (2008)** as per the author’s, Haryana had a high rate of rural non farm workers, and factors responsible for increased nonfarm employment was commercialization of agriculture, development of infrastructure, industrialization, urbanization, literacy and transport. Proportion of nonfarm workers was high in northern and southern parts, and low in the western part of Haryana.

**Dipa, (2009)**, says wage employment in the post reform period. The secondary data has been used and statistical analysis was performed for getting final outcome of research.

During the study period, employment growth had declined from 96.4% to 95.7%. Share of wage employment had also been declined from 43.2% to 40.6%. Wage
employment was low in LIG (Low Income Group) states and high in HIG (High Income Group) states from 1993-94 to 1999-2000 (period one) but from 1999-2000 to 2004-05 (2nd period), wage employment got reversed was high in LIG and low in HIG states due to growth of self employment in HIG states.

Wage rate and weekly wage rate in real terms had increased but the rate of growth had been decelerated in the 2nd period for both HIG and LIG states. In both the time period average weekly wage increased for regular workers and decreased for casual workers in the 2nd period. There was a shift of average wage per day per worker from less than '50 to above '50, but the pace had decelerated during the 2nd period. During both the time periods, share of casual workers was rising in middle wages (’51-100 and ‘101-249) for both HIG and LIG states. For regular workers, the rise in high income jobs was prominent in period 1 whereas the rise was in lower income job in 2nd period.

**Nayak, L. T., et al (2009),** He analyzed socio economic level of Bellary district. Secondary data has been used to fulfill the work. The composite index value has been used for methodology. Social development was high in 2 taluks. Those are Sirguppa and Kudligi, medium in H.B. Halli and low in 5 taluks. Economic development was high in 2 taluks. Those are Bellary and Hospet, medium in Sirguppa and low in 5 taluks. Demographic development was high in Bellary and Hospet. Remaining 6 taluks had low development. Overall the development was high in Bellary and Hospet and low in remaining 6 taluks.

**Diwan, G. R., (2009),** dealt with the distorted pattern of urban development in Maharashtra state. The secondary data has been used from various governments’ agencies and finally composite index methods were applied for methodology.

According to the author, urban economic base of small towns was very weak in the absence of industrial development. To get rid of this problem secondary sector needs to be promoted. Authors view point is that, in the metropolitan urban area of Mumbai, the industrial activity should be stabilized as further industrialization will aggravate the problem facing the city. On the other hand promotion of agro based industries should be given in the cotton belt of the North and the sugar belt of the South. Western coastal belt should be promoted as a region of horticulture. Fisheries and tourism and Ports have to be developed. In Marathwada and coastal Maharashtra,
importance should be given on improving accessibility and development of infrastructure. In backward areas, direct investment should be promoted. The well framed policies with proper implementation of those policies would bring development and reduce regional imbalances in the state.

**Rukhsana, (2009),** his paper dealt about India being a land of villages. Rural development becomes very important for overall development. The study is based on secondary data Z score based techniques has been used for methodology.

Agricultural development was very high in 2 districts. Those were Muzaffarnagar and Moradabad, high in 6, moderate in 8, low in 8 and very low in Gautam Buddha Nagar and Auraiya. Industrial development was very high in 7, high in 6, moderate in 8 and low in 6 districts. Infrastructure development was very high only in Merrut, high in 8, medium in 7 and low in 8 districts. Bijnor and Jyotiba Phule Nagar had very low infrastructure level. Overall development was high in Meerut and Ghaziabad in western part, high in 4, medium in 14 in southern part, low in 2 districts viz. In Bijnor and Jyotiba Phule Nagar, very low was recorded in 4 districts.

**Ahmad, et. al, (2009),** The author says in order to identify the health aspects in concerned district, primary and secondary data has been used for the data and composite method has been adopted.

In rural areas availability of registered medical practitioners was satisfactory but quality wise was poor. Settlements less than 500 people don’t have public health centre, dispensary, child welfare centre and family welfare centre. These services were available for settlements above 2000. Nursing home facilities were not available to rural settlements. Population less than 1000 do not have hospitals. Settlements above 5000 have maximum number of hospitals. Composite Z score reveals very high and high availability of health facilities in 3 blocks each and medium, low and very low in 4 blocks each. These gaps are likely to exist in 2021. So, in order not to widen the existing gap complementary regions need to be well served.

**Sharma, Jyothi Prakash and Sharma, P.R., (2009),** studies about the factors of dimensions of rural development and to identify the regions of relative rural development. Secondary data were used. Statistical analysis was performed. Study concludes that there exists wide variation in the levels of rural development at village
level in Mohania Block. Rural development wise, 71 villages of the block were highly developed with good infrastructural and irrigational facilities and 84 medium, which were lacking in infrastructural and irrigational facilities and 54 villages had low rural development due to poor irrigational facilities and lack of infrastructural facilities. Two third of villages are backward in terms of infrastructure and agriculture. So, proper strategy was needed to pump up the level of development equally in all villages.

**Asif (2009)**, To know the level of agricultural and socio-economic development primary data based analysis was performed here. The sampling technique have been adopted.

All talukas of bareilly district belong to medium and low level of agricultural development with high level of socio-economic development. Crops like sugarcane, rice and wheat were more grown crops but the productivity of sugarcane and rice had declined due to loss in fertility, and lowering water table. Sugar mills had been shutting down due to declining returns for the mill entrepreneurs and farmers. Talukas of Bareilly district were performing well in social amenities like concrete houses, kitchens, and toilets, literacy rate was about 70%.

**Bhagat, R.M., et. al (2009)**, says land suitability analysis is essential for sustainable agriculture and it also plays an important role in agricultural planning especially in mountain regions. Different parameters have been used to evaluate the performance of land suitability for cereal production in Himachal Pradesh using GIS. Different parameters have also been used for identifying suitable area for wheat, rice, maize and barley. DEM has been generated on the basis of topographical contour. Seven of Indian Remote sensing satellite (IRS 1D LISS - III) satellite data had used for generating land use and land cover of study area. The suitability analysis was performed by digital image processing of geo referenced data and calculating potential production areas by combing different types of geographical data through decision rules framed for each crop using arc view GIS software. Suitable areas have been delineated for cereal crops in the form of land suitability maps.

**Hangaragi, S. S (2010)**, his paper measure backwardness in terms of inter-state disparities 14 variables have been described by three basic components. Category-I indicates the developed districts and category-II indicates the relatively developing
Districts while Category-III depicts the Backward Districts and Category-IV represents the Most Backward Districts. It is important to find out the root cause of backwardness particularly in developing countries, so the flaws can be patched up which is essential to attain development. Elimination of total backwardness is very lengthy process. The areas identified as backward must have three key characteristics for the purpose of planning 1) They must have potential for development 2) There must be some inhibiting factors which prevent this potential for development 3) There must be a need for special programs to remove or mitigate the inhibiting factors and realize the full potential for balanced regional development.

Patra, A.K. in his paper Inter --Regional Disparities in Infrastructure Service: A Study of Orissa, discussed about infrastructural part in the inter-regional disparities. Regional disparities in economic development are explained in terms of varying level of infrastructural services available to people in the region. 30 districts of Odisha have been taken to examine inter regional disparities. Principle component analysis employed to compute ‘composite index of infrastructure (CII). As per the value of CII and HDI and CII and PCDDP position of each districts have been measured. Based on this observation, the position of the districts remain same and there has been a positive relationship between Composite Index of Infrastructure and Human Development Index.

Jain, A. et. al author analyses the intra -regional disparities in the state of Madhya Pradesh based on recent data relating to district level domestic product and its variants, brought out by the Directorate of Economics and statistics of the state government. Interaction between micro economic framework and intra-regional disparities has also been highlighted. Study focuses on the most important factor like the deficiencies of plan formulation and implementation process in the state. Planning process needs to be strengthened. To measure intra-regional disparities, certain indicators have been used. Those are growth performances of the economy, structural changes of the economy sectorial growth rates, and the income-elasticity of GSDP. The whole approach on planning and development of the states need to shift from macro-economic planning to micro-economic policies. The state, need to reduce privatization and commercialization of two important social services: education and health.
Pradhan, R.P, author investigate about the causality between Human development (HD) and Economic Development (ED) in India during 1981 to 2001. By applying causality test it was found that there exists bidirectional causality between HD and ED, which means ED causes HD and HD also cause ED. This paper also examined regional disparity across the state which showed inter-regional disparity among the states of India. Disparity is high in developed states compared to under developed states. In case of HD, disparity has declined and increase in case of ED, Kerala is very rich in HD and Bihar is very poor.

Sadhana Kothari et.al, his paper states that the difference occurring in natural resource because of human and physical factors are responsible for disparity in development. Author tries to identify the spatial disparities in terms of development indicators with reference to the southern Rajasthan. Paper is based on secondary data for the year 1981, 1991 and 2001. Composite index method has been used for 51 taluks to measure level of development using 35 indicators. Based on this method five levels had been classified as Very High, High, Moderate, Low and Very Low. Regional disparity is high in southern Rajasthan. The 3 indicators highlight the need of proper development and planning for 51 taluks of Rajasthan.

R. N. Sharma, author attempts to study socioeconomic development including agricultural, industrial resources and infrastructure development in this paper. To identify level of development data related socioeconomic condition has been collected for nine indicators. Based on composite index method three categories had been made such as average level of development, poor level of development and very low level of development. Chittorgarh district is backward so, development of transport network is essential for socio-economic development.

Singh S.B. and Chandramauli, says development is considered as multi dimensional process which involves structures, attitude and institutions, acceleration of economic growth, reduction of inequality and eradication of absolute poverty. Development process benefits certain region to attain higher levels of development in our country. Without the concerted efforts on the parts of government it is difficult to reduce regional disparities and achieve equality in development. In this paper to evaluate ‘Spatial inequality in development of Robertsganj taluk Sonbhadra District’ secondary data and authors personal views and mathematical computation have been
taken. Policies implementation requires elaborated and experimental study to understand the core issues involved in sustainability of natural resources. Robertsganj taluk is rich in natural resources and industrial development is musky. Government of Rajasthan failed to plan proper conservation and management of natural resources. So, it is suggested that more importance need to be given on education and health as without these no progress can be achieved.

1.8 Limitation of the present research

1. Having been taken a comprehensive land use development planning analysis of Karnataka, Itself is an vast area of research. To overcome this, Southern Karnataka was taken and delineated.

2. The delineated reclassification of Karnataka, does not fit with the existing taluk or district boundary or any other classifications that are in use.

3. The agro physiographic reclassification of Karnataka, is a generalized classification which will be useful only for regional level analysis.

4. The Agro Physiographic taluk level categorization of Karnataka is once again generalized on the largely prevailing condition overlooking the minute variations.

5. The village level physiographic combined with agriculture and amenities analysis is not only the exact basis to pinpoint the status of development. But, the parameters used in the analysis is almost reveling other aspect like social economic and demographic in tune with the identified categories, having an accuracy level of 85%.

6. While performing overlay analysis, the forest region although physiographically favorable has been weighted with less score in order to suppress, its domination under area suitable for agriculture.

7. The amenities wise study of the villages is derived from the 2011 census of India. Any variations post of this date does not attract any liability on the researcher.