CHAPTER - II

REVIEW OF LITERATURE

2.1 INTRODUCTION

Review of literature plays a important role and provides ample ideas in any research work. The review of the studies related to the theme of the present research work is an integral towards understanding the nature of the research work done, the approaches, ideas, synthesis and the methods used and the findings arrived at from these and their limitations in different situations.

A good number of literature review research works at international, national and at regional level have been carried out on urban land use, urbanization and on urban land use however the studies on changing land use and its impact on environs is restricted to certain extent and is very limited.

However, the research work carried out in this direction is largely focused on urban land use, land cover and on urban land use classification studies.

2.2 INTERNATIONAL REVIEWS

Houghton R.A. (2002) studies on temporal patterns of land-use change and carbon storage in china and tropical Asia. He reveals that deforestation is the cause in increase of carbon. Nevertheless, carbon emissions from China seem to have decreased since the 1960s to nearly zero at present. His study shows that the emissions of carbon from tropical Asia were higher in the 1990s than that at any time in the past. However, the Kyoto Protocol offers the opportunity to reverse past trends of deforestation before most forests are gone.

Annelie Holzkamper et.al. (2003) say how the changes in land use patterns affect species diversity and heterogeneity of agricultural landscapes. In this paper they present an optimization model concept that aims at maximizing habitat suitability of selected species by identifying optimum spatial configurations of agricultural land use patterns. Bird species with diverging habitat requirements were chosen as target species. Habitat suitability models for these species are used to set up the performance criterion.
Bridget. R et.al. (2005) His study Proposes to test the hypothesis that the conversion of natural land ecosystems to agricultural ecosystems, which impacts the subsurface portion of the hydrologic cycle by changing groundwater recharge and flushing salts to underlying aquifers. The hypothesis was examined through point and areal studies investigate the effects of land use/land cover (LULC) changes on ground water recharge and solute transport in the Armargosa Desert (AD) in Nevada and in the High plains (Hp) in Texas.

Chen Guang Xuu Amat Anwar (2013) Studies on Level of Urbanization and Land Use/Land Cover Landscape Pattern of relationship. The paper analysis on the basis of the development of urbanization and land use change in Zhengzhou City in 2004-2010. The results show that unit of agricultural land and the ratio of the output value of the land for construction as well as population density and land use intensity positive correlation. The population density growth, urbanization of the population and economic non-farm is the main driving factor for the intensity of land use change.

Ernie Baleerak (2013) says that land use changes affect extreme temperature days with the extreme hot and cold that tend to be associated with serious socioeconomic consequences. The earth's climate changes are predicted to occur due to human activity. These changes in extreme temperature days are affected by anthropogenic forcing, including greenhouse gas emission as well as land use change.

Kees Klein Goldewijk et. al. (2013) studied on the uncertainties in global-scale reconstructions of historical land use an illustration using the HYDE data set. Land use and land cover change play an important role in global integrated assessments. However, there are still many uncertainties in the role of current and historical land use in the global carbon cycle as well as in other dimensions of global environmental change. This paper examines the most important uncertainties related to the process of reconstructing historical land use. The results indicate that uncertainties not only arise as result of the large temporal and spatial variation in historical population data, but also relate to assumptions on the relationship between population and land use used in the reconstructions.

Matthew Adams, et. al. (2015) Studied on the impacts of land use change on Sydney’s future temperature. They analyzed future changes to land use have the potential to enhance temperature increases caused by climate change the largest
temperature increases are projected to occur in areas converted from forest and grasslands to new urban developments.

**Orit Rotem-Mindali and Itmar M. Lensky (2015)** The role of local land use on the urban heat island effect of Tel Aviv an assessed from satellite remote sensing. They used satellite 10 years data of surface temperature of Telaviv city and compare the cooling effect of residential areas with high vegetation cover (reformed here as green residential) to that of small of medium size (2-40ha) public parks and industries. Industrial areas had the highest land surface temperature due to lowest ratio of vegetation while ‘green’ areas displayed the lowest land surface temperature. Green residential and small medium public parks had comparable thermal load, with green residential having slightly lower LST By 0.5°C in general small medium public parks public parks displayed higher LST than expected.

**Zhihuili et. al. (2015)** Studies on analysis of climate and land use changes impact on land degradation in the North China plan they observed that land degradation is a complex process which involves both the natural ecosystem and the socio-economic system among which climate and land use changes are the two predominant driving factors. They observe in North china rapid population growth and urbanization, unseasonable human utilization, and influences of natural factors have caused degradation.

**Julia Cantarino and Vinicius Netto (2016)** studies on urban diversity and transformation land use and public housing. They assessing the impact of having complexes on the micro economic patterns of accessibility and patterns of location of housing compounding and activities. The results indicate, (1) substantial differences in topological and absolute distances to the CBD, (2) strong influences of accessibility in the morphological and microeconomic integration between housing complexes and their neighbourhoods, and (3) significant influence of land subdivision on the rate of change of land uses in areas of sprawl.

**Shobha Poudel and Rajibshaw (2016)** studied climate change and its impacts on LULC change and food security in Nepal due to the climate change. Most parts of the country are facing the adverse impact of climate change especially in the agriculture sector. Eventually changing climate has an adverse effect on the land use and land cover along with the food security of the Mountain’s Region.
Zhangwang et. al. (2016) Landuse structure and emission intensity at regional scale: A case study at the middle reach of the Heihe river basin. The researcher studied on Zhangwang city during the 1980-2010 and quantitatively analyse the relationship between land use structure and emission intensity with controlling the effects of air contaminations. Their analytical results prove that the forest land has statistically significant impacts on the mitigation of emission intensity, more importantly, there are no statistical significant evidences showing that cultivate land and wet land have the same functions.

Jiyangli et. al. (2017) studied the impact of land use and land cover change on meterology in Beijing. They reported land use and land cover (LULC) in Beijing-Tianjin-Hebei region which has changed significantly since 1990. The weather research and forecasting (WRF) model is used to simulate air temperature, precipitation and wind speed in January and July using 1990, 2000 and 2010 LULC data. The temperature increases in the AM period (0.118°C) greater that in the PM period (0.042°C) and increased by 0.36°C in response to the transformation from cropland to urban and built-up lands (UBL). The change in precipitation showed on obvious seasonal difference, where the trend decreased in winter and increased in summer. The wind speed at 10m/s decreased by .04 m/s in winter and 0.017m/s in summer.

Liuying Du (2017) Characterizing the impact of climate and land use change on blue and green water over the ohio river basin U.S. He studies the spatio temporal characterization of blue water (BW) and Green water (GW) dynamics during the period of 1935 to 2014 in the Ohio riverbasin. He observed during the study period about the influence of climate and land use changes to BW and GW. As a result, BW and GW in the entire basin has increased BW and GW in the entire basin.

Ryan E. Hughes et. al. (2017) studied the quantifying land use in past societies from cultural practice and Archaeological data land use is a function of two overarching group of factors; (1) The properties of the physical environment, and (2) socio cultural characteristics. The former group includes climate, topography, the chemical and physical properties of soil and water resources. Attributes of the latter group area a product of any given society’s historical, cultural, technological and
organizational features including diet, animal production strategies, agricultural practices, industries and trade.

**Sahaulla khan and Syed Qasim (2017)** studied on the spatial and temporal dynamics of land cover and land use in district pislin through GIS. On the basis of 2013, 2003 and 1992 images revealed that water bodies covered a very small proportion of total area in 1992 which was only 0.13% which increased to 0.18% of the total area. Thus, a total change of just 0.05% increase was recorded in it. The built up area also witnessed a considerable increase of total area covered by it during the study period. It increased to 12.40% in 2013 from 6.57% in 1992. Thus, on overall increase of 5.84% was recorded. This increase in built up area is attributed to the rapid increases in population in the study area.

**Terefe Tolessa and Moses Kidane (2017)** studied the impact of land use / land cover change on ecosystem services in the central highlands of Ethiopia. They analyse the land use and land covers for over four decades (1973-2015) in Ethiopia. Based on the results of LUCC they observe that forest decreased and other land uses increases at the express of forest land. Ecosystem service value also decreased in response to forest land use change. In Ethiopia during the study period, ecosystem services progressively decreased which indicates the loss of important ecosystem.

**Utashripke and Ulrike Tappeiner (2017)** studied future impacts of changing land use and climate on ecosystem services of mountain grass land their resilience. They assess future impacts of on multiple mountain grassland ecosystem services in central alps. Six ecosystem services were quantified using plant trait-based models for current and future conditions (in 2050 and 2100) considering three socio-economic scenarios. Under all scenarios, the greatest changes in ecosystem services were related to the natural reforestation of abandoned grass land, causing a shift from grassland to forest services.

**Xinpian Zhang et. al. (2017)** studied on effects of land use/ cover changes and urban forest configuration on urban heat Islands in a loess hilly region: case study base on Yanan city China. They are taking LULC and land surface temperature landsat data during 1990-2015. The results shows that during 1990-2015 because of local anthropogenic activities land surface temperature (LST) spatiotemporal changes
were parallel to LULC changes especially for construction land during the past 25 years. But the vegetation covered area LST decreases during the study periods.

Yirsak. E et. al. (2017) studies socio economic drivers of spatio-temporal land use / land cover changes in rapidly urbanizing area of china, the Su-Xi China region. The rapid economic development resulting from Chinese economic reform has greatly accelerated urbanization and industrialization. Thus leading to alterations in the natural landscape. In this study they observe three change matrices were constructed for detecting LULC changes from 1980 to 1990, 1990 to 2000 and 2000 to 2010. In the study period, farmland, water bodies and wet lands significantly decreased. However construction land, grassland and woodland increased considerably.

Yunyunli et. al. (2017) assessing the impacts of climate and land use land cover changes on hydrological droughts in the yellow river basin. They studied climate and land use and land cover (LULC) changes are two important factors for the hydrological conditions in the yellow river brain. Climate variability and change can influence the amount intensity of precipitation that falls into the basin. Changes in land use and land cover (LULC) can modify the surface characteristics that in turn alter surface infiltration, runoff generation, overland and channel.

2.3 NATIONAL REVIEWS

Ranjitkar. (1983) says growth and development of a city is reflexive to urban land use changes because effects of urban growth visualize in the shape, size, function, uses and urban environmental condition. Urban land use change is the spatio-temporal reflection of urban growth. Such change is influenced by a set of social, economic, and political factors. Different driving forces have been identified in various studies, including the effects of natural environment, demographics, economy, and transport system, preference (by people) for proximity, neighbour hoods, and government policies.

Pal and Mruthunjaya (1990) studied silvipastoral system for development of wastelands of arid areas in Rajasthan using the time series data of 16 years from 1970-71 to 1986-87. This study shows the result that the compound growth rate
revealed that the area under forests, grazing land, cultivable wasteland, gross cropped area and area sown more than once registered a significant positive growth during the study period. The growth rate was highest for forests (4.16%) followed by area sown more than once (4.10%), the growth rate for barren and uncultivable land was negative and significant. They suggested a land use plan for the development of arid areas of Rajasthan which envisaged that the proportionate area under crops should decrease from the existing 44.98 per cent to 33 percent of total area.

Ramanaiah et al. (1990) reported that the importance of forest land use in Andhra Pradesh was second only to agriculture. The increase in percentage of forest land in the state during the period from 1963-64 to 1978-79 was negligible. The study shows that the non-cultivable land in the state showed an increase from 14.9 percentage of the total area in 1963-64 to 16.4 per cent in 1978-79, thus showing a net increase of 1.5 per cent. Between 1963-64 and 1978-79, the percentage of cultivable wasteland in the state had decreased by 1.8 per cent and the arable land in the state showed a marginal decrease of 0.1 per cent.

Singh (1990) studied the land use pattern in the problematic areas of all the five-agro climatic regions of Uttar Pradesh, during the year 1988-89. The study revealed that the hill region had the highest area under forest, permanent pastures, grazing land, tree crops and groves, non-cultivable wastelands and land under non-agricultural uses. The area sown more than once and the total cropped area, as well as the intensity of cropping had been found to be the highest in the eastern region and the lowest in the hill region. He concluded that the slopes of the hilly areas of Uttar Pradesh could be successfully developed for the plantation of temperate fruits.

Joshi and Prasad (1991) studied the optimal utilization of village community lands for sustainable development in Haryana. They reported that the state had large tracts of wastelands in the hands of village panchayat and the population was heavily dependent on its scarce forest and grazing land resources. They used linear programming to find an optimal land use pattern. The analysis revealed that the community lands have considerable potential for generating income, as they were suitable for the production of crops as well as being a source of fodder and fuel wood. To achieve these objectives, there was a need to educate the rural community with the
help of suitable organizational and institutional action and create greater awareness among them about the benefits of utilizing common land effectively.

Ratnareddy (1991) studied the trends of under utilization of land in the districts of Andhra Pradesh for a period of 33 years from 1955-56 to 1987-88. The study showed that the underutilized lands included current fallows, other fallows, cultivable waste and grazing and pasturelands. The analysis suggested that under utilization of land was associated with irrigation, tractors, commercialization and such other factors. Such under utilization was attributed to the inability of the farmers to adjust to higher demand for resources. He concluded that land utilization largely depended on the availability of resources.

Shrivastava et. al. (1991) studied the dynamics of land use and cropping system in the Tawa Command Area of Hoshangabad district of Madhya Pradesh. They assessed the impact of the Tawa irrigation project on cropping pattern and land use in the area during the pre-project period (1973-71 to 1974-75) and the post project period (1975-76 to 1979-80). They observed a decline in the forestland as a result of illegal felling of trees for domestic purposes. They also reported that fallow land had increased since the introduction of the Tawa irrigation project.

Singh and Kaur (1991) studied the changing pattern of land utilization in Punjab since the inception of new farm technology in the mid sixties i.e. from 1966-67 to 1987-88. The study revealed that the reported area for land utilization remained constant while the area under forests, area not available for cultivation and net area sown increased during the period. Due to intensification of agriculture, gross cropped area and cropping intensity increased.

Vaidya and Sikka (1991) studied the land utilization pattern in Himachal Pradesh using secondary data for the period from 1965-67 to 1986-87. They observed that there had been no uniform trend in the changes in the land use classes. The area under forest showed an increasing trend while that on other categories had shown a declining trend. They have projected the land use pattern for the 2000 on the basis of compound growth rate calculated.

Mishra (1994) studied the changing profile of agriculture in Orissa and reported the change in cropping pattern for the period from 1950-51 to 1990-1991.
They observed that there was a gradual increase in the proportion of the net area sown at the cost of land under categories such as area no available for cultivation, other uncultivated land excluding fallow land. They reported that there was a gradual fall in the share of area under rice and other cereals which has been diverted for production of pulses and oilseeds, the proportion of which has consistently increased.

Nagabhushan (1994) studied the dynamics of land use in Dharwad district of Karnataka for a period of 21 years from 1970 to 1991. He employed cluster analysis and compound growth rate for the study and the study revealed that the growth rates of area under forests, land put to non-agricultural uses, current fallow, net area sown, total cropped area and area sown more than once were significant and positive. He opined that the improvement in the management practices was the main reason for the increase in area sown more than once.

Padmanaban and Chinnadurai (1994) studied the land use pattern in Tamil Nadu for the period 1960-61 to 1988-89. They reported that the total cropped area in Tamil Nadu has declined 7.32 mha in to 6.44 mha during the period and the area sown more than once declined from 1.32 mha to 0.90 mha during the same period. Over the years, the total cropped area has been consistently declining, at the same time the area under current fallow, other fallows and lands under non-agricultural use increasing year by year.

Mangoli (1997) studied the land use dimensions in Bijapur district for a period of 21 years from 1971-72 to 1992-93. The study revealed that there was no change in the forest cover in almost all the Taluks of Bijapur district. The growth rate for area sown more than once and land put to non-agricultural uses were positive and significant in almost all the taluks studied. The growth rates of area under crops like jowar, bajra and maize were positive and significant.

Rajesh and Ramasamy (1998) They reported that the prevalence of landlordism or large holdings has been responsible for the high percentage of land uncultivated, as the high percentage of land is not cultivable in large size operational holdings. The resource crunch faced by the farmers seems to have aggravated, after the advent of new technology due to the capital-intensive nature of modern inputs. This has led to the neglect of other lands.
Prashantkumar (2003) studied the land use pattern in three dry zones of northern Karnataka and the results showed that there was a decline in the area under non-agricultural uses, cultivable waste, current fallow and other fallow land in the case of zone-I and in the area under non-agricultural uses, cultivable waste and net area sown in zone-II. There was a growth in barren and uncultivable land, current fallow and other fallow lands in zone-III. The share of area under cereals increased in the case of zone-II and zone-III.

Goswami and Challa (2004) studied the land use pattern of India for the period 1950-51 to 1991-98. The results indicated that forest area had increased from 40.08 million hectare in 1950-51 to 68.65 million hectare in 1997-98. There was significant increase in area under non-agricultural uses from 9.36 million hectare in 1950 - 51 to 12.3 million hectare in 1997-98. It also revealed that the net area sown increased during the period from 1951-1971. However after 1971 the area is found to have remained same until 1997-98.

Sreeja (2004) studied on the change in land use pattern in Kollam district of Kerala. The results indicated that there was a substantial growth in the current fallow, which reflects the consequence of year-to-year rainfall variations showing inverse relationship between rainfall and current fallow.

Debabrata Mistry and Ranjan Basu (2014) studied the status of physical environment and land use pattern in Rabindra Sarohar lake area of Kolkata says physical environment is considered as an essential part of a lacus rine system. Degradation of environment largely affects the physical component. If the physical components are spoiled, then the entire system of the lake will get degraded, water, air, soil, ground level etc. due to cultural activities and improper monitoring system practiced by the lake authority.

Navaneethkumar (2014) studies impacts on climate change and land use change on the water resources of upper Kharun catchment, Chattisgarh India. He observed in his study climate change is likely to severely affect the surface and ground water resources due to changes in precipitation and evapo-traspiration and their spatio-temporal distribution. The impact of the future climate change may be felt more severely in the study area, which is already under stress due to the current population increase and associated demands for energy, freshwater and food.
Purandara. B.K. et. al. (2018) studies the change of land use and land cover on ground water recharge in Malaprabha catchment using rainfall and ground water level data. Ground water recharge was estimated using empirical and ground water estimation committee methods. A numerical model, soil water infiltration movement model (SWIM) was applied to estimate the ground water recharge under different land cover. It was observed that the ground water recharge is mainly dependent on the rainfall pattern and land use / land cover changes. The forested areas have shown relatively higher recharge on compared to degraded and agriculture lands.

2.4 REGIONAL STUDIES

The impact assessment studies on related to land use on environs of Mysore city are few in number and the land use studies conducted on Mysore city is directly or indirectly related to land use; land use change and classification.

Mahdev P.D (1972) studied on the general land use of the Morphology, Structure and growth in Mysore city. Mahdev.P.D. (1973) did research on the Process of Land use evolution in Mysore City; A Non western Example. He describes about the process and evolution of different types of urban land use with the western example.

Mahdevaiah .S (1985) studied on the spatial pattern and environmental aspects of housing in an urban center a case study of Mysore city. The study focuses mainly on the patterns of housing, structural and growth of housing.

Nusrath. A (1993) worked as the spatial aspects of brick industries and its environmental problems in two urban centers of Mysore and Mandya, describes about the utilization dry agricultural land for manufacturing of bricks and briefly studies about the urban land use.

Arun Das. S (1997) studied on the process and pattern of urbanization and counter urbanization a case study Mysore Rural- Urban fringe. His study mainly focus on different types of land use, land transformation and how the rural land use is being converted in to urban land.
Harish. M (2007) studied on the planning and management of transportation by using Geographic Information System" briefly explains about the land use and studies mainly concentrates on the transport network, traffic flow and congestion with accident zones.

2.5 CONCLUSION

From the of above review of literature of International, National and Regional Studies, it is clear that, the urban land use is a continuous process of change due to the urbanization, development of science and technology, growth of urban population, migration from rural areas and due to unlimited wants of the people.' The change that has taken place is certainly has damages both physical and cultural environs of the city in this regard the above mentioned topic is being chosen for the research and gaps in the existing literature is fulfilled.