Chapter-I

INTRODUCTION

Introduction:
Land use is the surface utilization of all developed and vacant land on a specific point, at a given time and space. This leads one back to the village farm and the farmer to the fields, gardens, pastures, fallow land, forests and to the isolated farmstead. The role of geographers is to analyse the relationship between various uses of land and planning (Foreman, T.W. 1968). This analysis enables people to use the land more properly to obtain high yields.

Land use is also related to conservation of land from one major use to another general use (Nanabati, M.B. 1957). The use of land changes according to the changing needs of man. Stamp has classified the needs of man into six categories which are the need of work, home, food, transportation, communication, defence and recreation (Stamp, L.D. 1948). The need of food means conservation of good agricultural land for production and at the same time the development of poorer land for production and cash crops. The land has to satisfy the needs of transportation and communication by means of railways, highways, and airways. Land is also given to recreational usage in shape of parks, playgrounds, gardens, clubs, etc. Apart from these, a large number of uses may be listed.

Land is the expression of a variety of topographical features, natural drainage and basins together with evergreen, deciduous and mixed forests and soft carpet of tall, small, wet and dry grasses. Man on the other hand, ingraves his agricultural farms and fields, constructs his home, ranging from hamlet to sky-high building and ultimately nets his rural and urban settlements with lines of communication. Cultural landscape thus emerges when he depletes forest, tills cleared lands and taps underground
resources. This relationship between man and land portrays a variety of land problems which differs over time and space.

Man has made proper uses, misuses, under uses and overuses. When the land is given to a particular use the interest of other uses may be overlooked. The factories are located without any regard to the agricultural value of land. In the same way, the growth of cities in most cases takes place in rich agricultural land. In China, the best agricultural land is converted into graveyard as people try to bury the dignified persons in the best agricultural field to honour him. Land that has once been withdrawn from agricultural use seldom returns to the farmers, and if it does, it will only be after a long lap of time (Stapledon, R.G.19440). Again there are conflicts between the use of land for land for cash crops and food crops. The growth of population and the resultant needs make the conflicts of land use more serious. The increasing population should be followed by a rise in food production. But as the land is limited, it has to be used very carefully and judiciously. If the food growing fields are intensively cultivated without proper manuring, the food obtained from such fields would be deficient in minerals, fats, and proteins which are very necessary for our physical and mental well being.

The concept of land capacity refers to the ability of any given unit of land resources 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 between added mouths and land use capacity. The concept of land use, therefore, revolves round the man’s
accomplishments in conversion of land, major use to another general use. Each stage of such change may involve many problems to pave the path for attaining equilibrium in use of land (Sing, R.P.1967).

Increasing population and changing needs of the time requires 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 errors 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 patterns of land use and they are not only crops and tamed animals but indirectly things will be determined by man’s conscious planning and use of land (Klages, K.H.W.1947).

Agricultural growth in the district of Paschim Medinipur in West Bengal took place during the Forth-Five year plan period (1969-1974). Ghatal and Kharagpur sub-divisions are important for agricultural practices and agro based industries in the district. Therefore, the impact of agricultural growth is immense on the spatio temporal variation of economic development in these sub-divisions. Here more than 89 percent of the total population is rural and the rural economy is mainly based on agriculture and agro based small scale industries. Therefore, the economic development of the area depends largely on agricultural activities.

In the district of Paschim Medinipur, Ghatal Sub-division is enriched with agricultural resources, while Kharagpur sub-division is marked with industrial growth. The agricultural growth has a positive impact on the socio economic conditions of the region. New Municipality areas and urban centres came into existence, natural income increased and a large number of people are engaged in non agricultural work as an
alternative to agriculture. Transport network extends even into interior areas where
electricity, drinking water facilities, health care facilities education system etc. are
available. Hence, changes in landuse pattern are quite obvious.

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

**STUDY AREA**

Paschim Medinipur, one of the most important districts in West Bengal emerged on
1st January, 2002 from former undivided Midnapur. In Paschim Medinipur district,
Ghatal and Kharagpur sub-divisions are lying between 21°45´17˝ north and
22°51´45˝ North latitude and 87°7´30˝ East and 88°12´30˝ East longitude. These two
sub-divisions cover an area of 3866.26 square kilometers (District Statistical Hand
Book, 2005) with 3341588 population (2011 census) having density of 726 persons
per square kilometre. The study area comprises of 2 sub-divisions, 10 Police stations
and 15 Community development blocks with the district headquarter at Medinipur
town. The study area includes Debra, Pingla, Keshiary, Dantan (I and II),
Narayangarh, Mohanpur, Sabang, Kharagpur (I and II), Chandrokona (I and II),
Ghatal and Daspur (I and II) Blocks.

Ghatal and Kharagpur sub-divisions are bounded on the north by Hugli district, on
east and south by Purba Medinipur district. The south western boundary merges with
the state of Odisha and on the west it is bounded by Jhargram and Sadar divisions.
Ghatal and Kharagpur sub-divisions of Paschim Medinipur district looks like a large open plain composed of younger alluvium on the northern portion borne by river Hugli and its tributaries. Generally, as a whole, the study area represents dual characteristics of Chhotonagpur plateau fringe in the west and Gangetic alluvial plain in the east.

The geological formation of the area belongs to older alluvium and newer alluvium. Large part of the area shows beds of gravels, grits and sands of Tertiary age. The surface is mostly composed of pisoltic, gravels which is modular in character, while the eastern part as well as the river valley is alluvial in nature.

Ghatal and Kharagpur sub-divisions of Paschim Medinipur district looks like a large open plain composed of Younger alluvium brought by Hugli river and its tributaries. The topography here varies from moderately to gently undulating (north-western part) flat plain (south-eastern part). The general slope is from North West to south and south east. The major rivers of this area are Rupnrayan and Hugli and this study area is also intersected by rivers like Silai, Kasai, Daina and Parang. Palashai Khal connects Rupnarayan river with Kasai.

The study area is influenced by monsoon climate. The maximum and minimum temperatures are 39°C and 10°C. Cyclones from Bay of Bengal are quite frequent and occurrence of Kalbaishakhi during the months of April and May are evident.

About thousand hectares of land are cultivable and about 38.17 percent of the cultivated land is irrigated mostly by the Medinipur High Canal and Palashpai canal and other sources. The major crops are paddy, green vegetables, oil seeds and mustard seeds. Floriculture is dominant in the blocks of Daspur I and II. Pisciculture is predominant in Debra and Sabong blocks.
Source: Census of India, 2001 and NATMO

Fig. 01

Introduction
Large scale industries grew in Kharagpur sub-division and some agro based industries took place in this area. Brass and bell metal industries, handloom, weaving units, saw mills, rice mills, bricks fields, horn products making units are the important small industrial units.

Kolkata Bombay (NH-6), State Highway and South Eastern Railway cover most of the sub-divisions leading to extension and improvement in agriculture and industrial sector. These sub-divisions possess high potential for agriculture and related practices and possibilities for economic development of the area along with the changes in land use pattern are ascertained.

**OBJECTIVES**

The study of land use has become one of the most important aspects of economic geography because even today majority of the people have close relationship with the primary activities related with land. In rural areas much of the land is used for agricultural. 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 not only concerns 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 ratio, 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 settlement, population, agricultural science, geomorphology, as well as urban geography. In fact rural and urban land uses have become two aspects of land use.
study. The study of the settlement either rural or urban would not be a complete one without having background information about the land use.

However, the objective of study is to undertake a detailed and intensive land use survey of this ‘Pioneer Fringe’ and to analyse and interpret it scientifically with a view to exploring and unfurling the potential land resources of the region.

The objectives of the research work are as follows:

- To undertake a comprehensive study of the physical and cultural factors affecting land utilization.
- To work out a clear picture of the existing and past landuse on micro level on the basis of the detailed field survey, collection of data and cartographic representation.
- To undertake a systematic examination and scientific analysis and interpretation of the existing and past landuse and thus to evaluate the various factors which have determined the very complex and intricate pattern of landuse.
- To investigate the magnitude of agricultural growth production and to analyse the relationship between the existing resource base and its potentials for economic upheaval.
- To investigate the correlation between the growing population and changing landuse patterns.
- To emphasize the role of infrastructural facilities for the growth of agro based industries and manufacturing units which are creating a new horizon in regional development.
• To investigate the relationship between population growth and its spatial
distribution, highlighting agricultural production and changing landuse
scenario.

• To find out the impact of physical properties on land use especially in the field
of agriculture in the context of Ghatal and Kharagpur sub divisions, Paschim
Medinipur district.

• To suggest land use planning for the future, that is the optimal use of the
various categories of land according to their capability and suitability in the
national interest and to suggest proper steps to eradicate the problems that
hamper such an utilization.

• To suggest the methods and techniques of land use analysis which are most
suited to the study area.

HYPOTHESIS

Research hypothesis have been framed based on the above mentioned aims and
objectives.

• Resource base induces.

• Resources influence land use pattern.

• Population dynamics affect land use pattern.

On the basis of the objectives of research work some hypothetical analysis may be put
forward to make the study more relevant. Primarily the hypothetical analysis
concentrates on the nature of physical aspects like relief, geology, soil, vegetation and
their interrelationship. It emphasizes on identifying the increase of population growth
in these Sub-divisions since independence. Population growth is incessant and an
attempt has been made to identify and co-relate the nature of spatial organization and
changing pattern of agricultural land use in particular and land use changes in general. Besides this, the hypothetical analysis concentrates on the industrial growth. Change in population is evident in changing cultural landscape of the study area.

**METHODOLOGY**

The research work comprises of primary and secondary data. The primary data have been collected from the field work and survey with the help of questionnaire. Secondary data have been collected from various census records, journals, and Government publication. The study has been undertaken in three phases which are as follows:

**Pre Field Method** includes a survey of literature in the libraries and internet searching on the various aspects of the district of Paschim Medinipur or undivided Midnapur. It also includes the study of blocks maps, air photographs, collection of secondary data and maps on the respective issues from different Government and non Government organization. Different academic and non academic groups have been consulted.

**In Field Method** data have been collected by personal field survey with the help of questionnaire schedule. Secondary sources on different issues pertaining to the study area have been consulted. Maps have been collected and diagrams have been cartographically represented by the collected data.

**Post Field Method** is the most crucial section of the research work. It involves compilation, calculation, and computation, of collected data (Primary and Secondary) and final presentation of the same using statistical techniques (both qualitatively and quantitatively) along with the application of relevant software, Remote sensing and GIS.
LITERATURE REVIEW

The study of land use is important not only in agricultural dominated regions but also throughout the world because of its relationship with different phenomena. Its significance has multiplied during recent years due to scientific innovations and increase pressure on land. During early years there was enough land to support the limited population but today population explosion has remarkably affected the man-land ratio. Hence, intensive and proper uses of land have become essential.

Professor Stamp pioneered the land use study in Britain. In the year 1930, he established an independent research organization called “Land Utilization Survey of Britain”. The main motive of this organization was to prepare land use map of Britain. For this purpose, intensive field work was conducted and different land use maps were prepared. For field work, maps of the size of 18”x12” were made available because such maps were quite handy. On the basis of these maps a voluminous book entitled “The Land of Britain: its use and Misuse” was published in the year of 1962 (Stamp, L.D 1962).

In the United States also several land 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, 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 organized and 140,000 individuals mostly layman, took part in the work (Hillman, A.1957). This organization undertook the studies of land use including map making and their
analysis. Special attention was laid on 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 aspects of farming and farm size, recovery and settlements.

Land use surveys are in progress in various countries of the world, particularly in highly crowded countries, like 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 were published by J. Kostrowiekai, Department of Geography, Polish Academy of Sciences, regarding developed typology, agricultural regionalization and programmed agricultural development (Kostrowiekai, J.1968).

As regards land use studies in India it should be noted that several geographers have paid attention on different aspects of land use studies. Certainly most of them have followed the guidelines of Stamp, in fact Indian geographers got inspiration from him when he attended the 25th session of the Indian science Congress held at Calcutta in the year 1938. Land utilization survey of 24-Parganas (Chatterjee, S.P.1945) and Howrah (Chatterjee, S. P.1952) districts was made by S.P.Chatterjee and by M. Shafi in Eastern Uttar Pradesh (Shafi, M.1961). They have emphasized that land use survey should be carried out along with the survey of land capability. It will help in determining the best use of land. 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 Prof 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 1:1000,000.

M. Shafi (Shafi, M. 1966) 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 samplings as it is very difficult to procure data for all the villages to be surveyed. Moreover, there is a great similarity in the land use pattern of a particular region comprising of several villages. Shafi has brought out a scheme based on sampling techniques for the land use survey of India. He preferred sampling to the other four types- Random, stratified, Cluster and systematic sampling. Describing the trend in the study of land use M. Shafi was of the view that the studies are recently shifted towards the application of quantitative techniques in the analysis of various land use components (Shafi, M. 1972).

M. Shafi also assessed the measurement of land resources in terms of food production efficiency per unit area and its conversion into calories (Shafi, M. 1969). In this way he studied land capability classification and measures the potentials of land after considering the effects of positive and negative variables.

E. Ahamed (Ahmad, E. 1954) 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. Three consecutive Community Development blocks, i.e., Bihar Sharif, Noorsarai and Rahul in Nalanda district were surveyed under the guidance of P. Dayal and A. Sharan (Dayal, P. and Sharan, A. 1972). R. N. P. Sinha intensively studied the land use of Canal Irrigated Area of Patna district (Sinha, R. N. P. 1965). K. Z. Amani brought out a paper on land utilization in village Golagarhi (Amani, K. Z. 1968).
Mishra (Mishra, S. N.1969) in his study of land use in khaddar and raines of the Lower Middle Gomati Valley attempted land Use Planning for better adjustment of agriculture to the physical environment for optimum exploitation and conservation of Natural Resources. Ayyar (Ayyar, N. P.1968) suggested maximum distance method to group important crops into association. Sharma (Sharma, H.S.1972) tested Benneyy’s method of land capability classification. Learmouth and Bhat (Learmouth and Bhat, L.S.1968) were of the opinion that sharp regional contrast in agricultural land use needs a spatial analysis. Sing (Singh, V. R. 1970) calculated the land capability with potential productive unit and the standard nutrition unit. Das (Das, K.N.1969) studied the land use of Kosi Basin in North Bihar while Roy (Roy, S.R.1976) selected the district of Bhojpur and Rohtas for such study. Rao (Rao, V.L.S.P.1947) emphasized the technique of soil survey for the analysis of land use in the Godavari Region. Lahiri (Lahiri, R.1950) studied the major land use types and agricultural problems for typical villages, near Jasidih. Karimi (Karimi, S.M.1949-50) made study of land use in Dinapur Ghusahra village near Patna. Bharadwaj (Bharadwas, O.P.1960) dealt with land use in the low lands of the Beas River in the Bist-Jullundur Doab with particular reference to two villages Mohalla and Aki Tunda. Roy (Roy, B.K.1968) made a sample study in land utilization of five villages in Balia district and has also contributed a paper on measurement of rural land use in Azamgarh, Middle Ganga Valley. Weaver’s method of crop combination regions has been applied by Mandal (Mandal, B.1969), Sinha (Sinha, B.N.1968), Tripathi (Tripati, V.B.1968) and Grag (Garg, S.P.1968). Sinha (Sinha, B.N.1968) took the help of Nelson’s techniques while Tripathi and Garg have applied DOI’s method also. Jha (Jha, b.N.1980) studied the problems of land utilization in the Kosi Basin. Yadav (Yadav, J.P.S.1965) studied the broad regional variations in agricultural land use in Rajasthan. Bhat suggested the
concept of planning from below, *i.e.*, villages, block and district levels. Further works on land use studies were done by Das (Das, K.K.L.1969) and Das (Das, S.L.1979) in their Ph.D. Thesis. Indu Priya (Priya, I.1971), Prasad (Prasad, m.1979) and Singh (Sing, H.1980) studied the land use problem of different community development blocks of Bihar. Ataullah (Ataullah, M.1979) in his study of urban land use in major towns along the Ganga in Bihar differentiated between the urban and rural land uses. Mandal (Mondal, R.B.1982) did a commendable work on land utilization in which he discussed natural principles, techniques, models and the role of remote sensing and air photographs in land use analysis. The pioneer work on land use was done in South India by V.L.S. Prakas Rao. He emphasized on the techniques of the soil survey that he adopted in the study of Godavari region. He advocated that the field survey, though essential, would be difficult to undertake in such a large country and hence sample technique should be adopted.

Nibedita Roy Barman (1999) studied the patterns of agricultural development in Midnapur. In her study she pointed out the various agricultural retail and whole sale markets, the role of transportation in the development of agriculture and improvement in the rural transportation facilities and market infrastructural facilities greatly influenced the agricultural efficiency. H.R.Betal (1974) in his study on quantitative mapping of Midnapur brought out various physical and demographic aspects of the district and all these aspects were represented by quantitative techniques. Gouri Dutta (1984) analyzed the various characteristic features of population in Midnapur. Arunima B Choudhuri(2004) brought out the various approaches to choropleth mapping based on the data sets of Midnapur district.
Different Government agencies have also contributed to the knowledge of land use studies. The “Agriculture Atlas of India” (Government of India 1958) the “National Atlas” (Chatterjee, S.P.1957) and “Census Atlases” (Census of India 1961) of different States contain choropleth and dot maps of land use and crops.

Since the ultimate goal of land use study is to suggest the planning for better utilization of available land of society and land use planning is not in most areas, scholars should influence the implementing agencies for its practice so that proper use of land and improved techniques of cultivation would not only solve the food problems of the nation but it would provide surplus products for export purposes.

HISTORICAL BACKGROUND

In the early ages Paschim Medinipur district was a tract only slightly above sea level and intersected by different rivers. This tract was occupied by tribes of fishermen boatmen and sailors. Medinikar, the son of king Prankar wrote one “Medinikosh”, a dictionary in Sanskrit language and name of the district has been derived from this. The name of the area dates back to 13th Century A.D in the medieval period of the history of Bengal. The history of the district is very old and associated with historical facts and incidents. This district was a stronghold of kaibartas, fishing and boating community which was mentioned in the pillar edict v of Asoka as Kevata. It is said that during the medieval period the Nawabs like Alibordi Khan, Sirajaulla, Mirjafar Khan and Mir Kasim stayed for some time in this region. In 1760 the East India Company deposed Mir Jafar Khan and elevated Mir Kasim to the Governorship of Bengal. As the price of his elevation Mir Kasim by a treaty dated 7th September, 1760, ceded to the company the three districts of Chittagong, Burdwan and Midnapur, which were then estimated to furnish one third of the whole revenue of Bengal. In the
modern period the British rulers were not in a position to rule the district in peace. From the very beginning of their rule, there was the spark of revolt and that spark of revolt continued till the independence of the country. Freedom fighters like Kshudiram Basu, Matangini Hazra, Bimal Dasgupta and Social Reformer Iswar Chandra Vidyasagar are the persons of this soil.

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