

Land People - a dynamic interaction of Purba Medinipur district, West Bengal

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Abstract : The land is considered as fundamental base for the economic growth and development of human society. The people of purba Medinipur, W.B. are highly dependent on agriculture land which is of only mono-cropped, and less diversified. Resource is indispensable to human existence. Humans are bound to their physical and biological resources in terms of their shelter, food and sustenance. The natural resources in the form of land, water, vegetation, mineral etc. form the backbone of an economy. Availability and achievability of these resources are the pre-requisite for the economic strength and prosperity of civilization develops and rests upon the land for its survival. It also offers a number of opportunities foods, fodder, fibre, etc. land, a major component of Economic resources, influences almost every, activities of man. Agriculture, a major claimant and occupier of land determines people's socio-economic conditions of any agrarian society. Land, by its, very nature influences agriculture and agriculture by its productive capability shapes human society. Therefore, an understanding of land and its impact in people is essential in modern day planning. Land differs markedly in their values. Land use continues to be influenced by varied, competing and offer conflicting interest. Land use pattern generally follows qualities of land, which include relief, slope, soils and its various properties. All these qualities of land, offer opportunities as well as greater understanding of the exploitable nature, limitation and upgrading the qualities of life are extremely necessary. Therefore, the greater part of this valuable resource is devoted to agriculture, of primary, and activity of people. Land use pattern is dynamic. Man through his scientific pursuits can alter, shape and redesign traditional land use pattern. So, apart from land, cultural landscape also plays an important role in exploitation of land potentially. In present paper an attempt has been made to examine the land-people interaction of Purba Medinipur district.

Keywords - cultural landscape, human society, Land use, mono-cropped.

I. INTRODUCTION

The general objective of this research paper is to improve the understanding of the existing land use systems and the range of livelihood options of local resource users in the Purba Medinipur district. To understand the dynamics of the resource use pattern, and the factors which are the drivers of change is a prerequisite for planners and decision makers to be able to come up with zoning recommendations, design management plans and determine levels of use and introduce effective control mechanisms to ensure sustainability and protection of the natural resources.

The distribution of the particular types of land use in Purba Medinipur district depends largely on natural factors like the distribution of water, soil and range land quality (Langdale-Brown & Spooner, 1963), and the presence of vector-borne diseases (tsetse flies), but is also strongly related to the traditional preferences of different ethnic groups for particular economic activities (Bendsen & Gelmroth, 1983). Furthermore, government policies and the zoning and land use planning decisions made by district and tribal authorities have influenced the spatial coverage of different land use activities.

Land use and land cover changes have been extensively researched (Lambin et al., 2001) due to its key role in environmental goods and services. The large-scale results show that, due to increasing deforestation, forests are rapidly decreasing even as farmlands extend. Land use change is the modification in the purpose and usage of the land, which is not necessarily only the change in land cover but also changes in intensity and management (Verburg, et al, 2000). Information about land use change is necessary to update land cover maps and for effective management and planning of the resources for sustainable development (Alphan 2003; Muttitanon and Trpathy 2005). Early settlements were established on the coastal areas for both commercial and naval purposes (Nurlu and Erdem 2002). Over the years, remote sensing has been used for land use/land cover mapping in different parts of India (Gautam and Narayanan, 1983; Sharma et al., 1984; Jain, 1992; Brahabhatt et al., 2000). Accurate and upto date land cover change information is necessary to understanding and assess the environmental consequences of such changes (Giri et.al, 2005). With the development of economy, the social economic condition of Purba Medinipur District has changed a lot. Land use change is the most remarkable

among the changes which has deep influence on economic development, ecology change, and land sustainable development, et al, especially on the urbanization, more direct and remarkable.

This study presents the underlying dynamics of land use change at the micro watershed level, which can further contribute to policy development in conservation and development at the macro-scale.

II. LAND PEOPLE- A DYNAMIC INTERACTION

Land differs markedly in their values. Land use continues to be influenced by varied, challenging and often conflicting interests. Land use pattern generally follows qualities of land, which include relief, slope, soil and its various properties. All these qualities of land offer opportunities as well as limitations depending upon which people utilize these vital resources. For effective land use planning, greater understanding of the exploitable nature, limitations and upgrading the qualities of life are extremely necessary. Therefore, the greater part of these variable resources is devoted to agriculture, the primary activity of people. Land use pattern is dynamic. Man through his scientific pursuits can alter, shape and redesign traditional land use pattern. So, apart from land, cultural landscape also plays an important role in exploitation of land potentiality.

Land, agriculture and human life are interrelated, one influencing and the other. Quality of life of an agrarian society generally reflects agriculture potentiality and cultural adaptability of people. Use of land for agriculture requires gentle slope, fertile soil and irrigation water particularly in the dry season. Land with poor exploitable opportunities requires other alternatives to overcome increasing population pressure on the land. As all these aspects are dynamically interrelated, any change in one aspect affects other two aspects and so on. With introduction of high yielding seeds-chemical fertilizers-irrigation systems modern implements in agriculture human life get a fillip at the cost of sustainable development. This is a grave concern resulting environmental deterioration and hazards. But at the same time overcrowding and the consequent pressure of population on land have led to intensive agricultural systems inevitable. As it has been proved beyond doubt, that more population increase means demand for more food, more income and more employment, pressure on its finite resource become unsupportable. As a result of which, despite mechanized agricultural practices, overcrowding in agriculture have led to decline in the area of land per capita, disguised unemployment in agriculture, and marginal productivity of labour. In such a situation instead of being preoccupied with traditional agricultural pattern, it is inevitable to switch over to more profitable non-agricultural land use pattern. So, land and most importantly agricultural land use demands a paradigm shift. In the present paper an attempt has been made to examine the land-people interaction of Purba Medinipur district, West Bengal.

III. OBJECTIVES

- a. The objective of the present study includes,
- b. To analyse the cause the change of land uses.
- c. To find out the relation between economic development and change of land use.
- d. To check out the degradation of bio-diversity for the land use change.
- e. To prepare the suitable method for sustainable land use.
- f. To give the suggestion for utilization of land.
- g. To give the new way for land use development economic.

IV. AREA AND POPULATION OF STUDY AREA

Purba Medinipur district shares the constraints and deficits of the coastal region of West Bengal – underdevelopment, poor agricultural development, large unirrigated area, inadequacy of alternative sources of income, high vulnerability to environmental hazards, poor resources base and overdependence on poorly developed agriculture. The pedo-geomorphological, socio-economic and cultural profiles of Purba Medinipur district abundantly bear the stamp of the coastal regions of West Bengal.

Purba Medinipur district is a part of the Lower Ganga Plain (Coastal Belt on the Bay of Bengal), West Bengal, India and its geographical location lying between 21° 36' 35"N to 22° 02' 23"N and 87° 22' 48"E to 88° 01' 12"E, and its covering an area of 4295.00 sq km. Purba Medinipur district is surrounded by Paschim Medinipur and Howrah in north, Bay of Bengal in the south, South 24 Parganas and Howrah in east and also Orissa state in the west. Total population is 5,094,238. Population density 1076 km² (census, 2011). This district has formed by the 25 block and 5 municipality area.

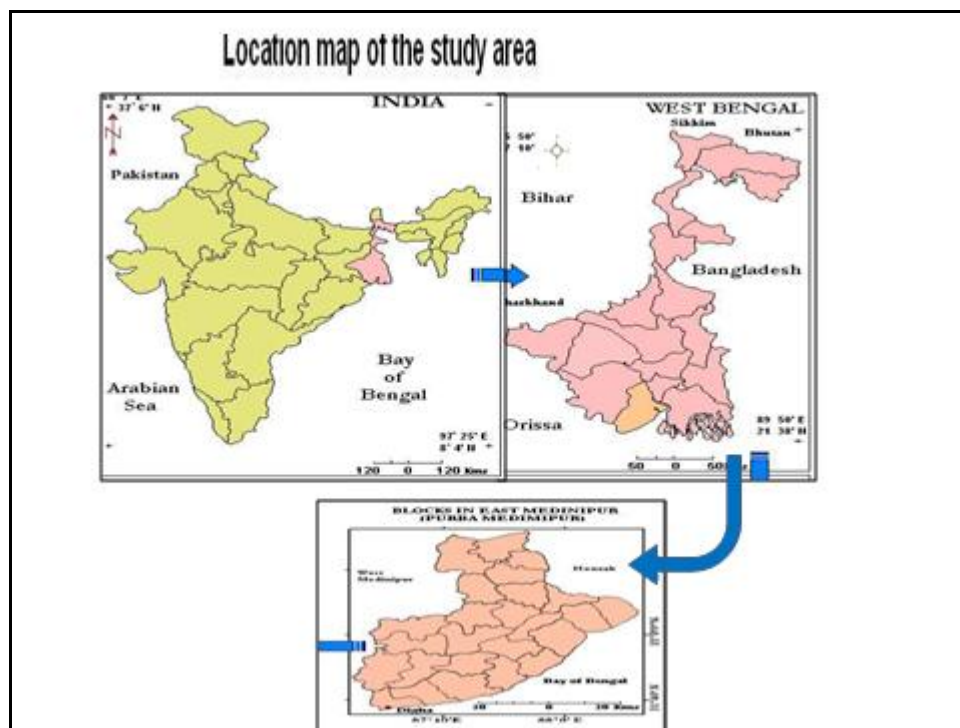


Figure 1. Location map

V. PHYSIOGRAPHY

Topographically, the district can be divided into two parts. (a) almost entirely flat plains on the east, and west and north. (b) the Contai coastal plain on the south. The land of Purba Medinipur district is a Quaternary alluvial deposition. As the district area is bounded by water bodies in two sides, it is a formation of fluvio-tidal deposition. Geologically the area is of recent origin. The relief of the study area is nearly flat surface with very slow run-off. The average elevation is nearly 5-7 metres above mean sea level. Average slope range from 0-5 degree. Due to its fluvio-tidal location, the district is subjected to high tides causing drainage congestion in the low land area. Rupnarayan, Kasai-haldi, Keleghai, Chandia and Rosulpur are the main rivers of the district.

The soils of the district are alluvial types. The soils are deep to very deep. As the district is under coastal alluvium and has been formed by the recent alluvial deposition, the soils of this district are developed mostly on Tertiary sediments comprising of sand, silt and clay. The district is situated on flood plains of the Rupnarayan, Haldi and Hooghli rivers. As a result of which huge amount of clay (60 %) particles dominate in soil texture. The soil are medium to fine textured. Owing to high clay content in the soil profile permeability is moderate to poor resulting into water logging conditions during rainy seasons, even during normal rainfall. Due to poor permeability, the soils are imperfect to poorly drained. Above mentioned physical qualities of soils influence the land use pattern of the area to a considerable extent.

According to statistics of 2007-08 (Principal Agricultural Office), the reported area has been 396590 hectares. Of these 292730 hectares or 73.81% is the net sown area. From the comparative figure of land use pattern in the district in 1990 and 2007-08, it has been found that the net sown area has witnessed an increase of about 2.71%. Near about 27.52 % of the total area has been under non- agricultural use and the area under orchard was 5.32% of the reported area. In 1990 (PAO), net sown area was about 67.42% of the reported area, about 3.21% of the reported area was devoted to orchard and area under non- agricultural use was 30.54% . From the above findings it is evident that agriculture dominates in land use pattern in the district.

The major problems are waterlogging and associated flooding more over the salinity of surface soils acts as the major constraint in land use pattern of the study area.

VI. WATER RESOURCES

Land and water resources are inseparable as water is indispensable to agriculture. A regular, abundant and continuous supply of water is essential for increase in agricultural production. Purba Medinipur district is one of those districts, which is blessed with better rainfall and perennial rivers but unfortunately fares badly in irrigation development. The area receives more than 1800-2250mm. of rain fall during rainy season. As the district is a low lying flat surface characterized with clay to silty clay type of soils water logging during kharif seasons is a major threat to exploitation of land potentiality.

Ground water, another important source of irrigation, is unfortunately ubiquitously distributed in the district. The underlying aquifers of this district are brackish in nature. The average depth of achievable fresh ground water is below 220 metres from ground level, which is neither feasible nor desirable (DPHE-2007-08). Therefore lack of exploitable ground water resources pose a serious limit to ensure double or multiple cropping.

Irrigation from drainage arteries like rivers, canals and khals is also not desirable as during the dry months brackish water is found even upto Kolaghat, but during the rainy season the salt water is driven out by the fresh water brought down from upcountry (O' Malley). So, poor discharge of fresh water from the upper reaches of the rivers pose a major threat to development of any canal irrigation system in the study area.

VII. POTENTIALITIES AND THREATS OF AGRICULTURAL LAND USE

Near about more than 73% of the total reported area is under cultivation. Out of which nearly 78 % cultivation land has been occupied by food crops. Among food crops paddy is the most widespread crop being grown through out the arable belt. Paddy more importantly aman dominates in cropping pattern (Table-1). The performance of other two types of paddy like aus and rabi is unsatisfactory. A very small agricultural land is devoted to pulses and oilseeds. From 1990, a very small area has been devoted to khesari dal. Among oilseeds, mustard dominates in cropping pattern though in a very limited extent. Due to heavy clay texture, poor susceptibility to water logging and lack of irrigation crops like potato are unsuitable here. In recent years a very limited area has been devoted to sunflower and vegetables.

Year	Area (ha)		Area change (ha)	Percent of total area		Change %
	2001	2011		2001	2011	
Forest area	0.9	0.9		0.226935	0.226917	-1.71651
Area under non -agriculture use	82.54	99.25	16.71	20.81243	25.02395	4.21152646
Barren & unculturable land	0.81	0.48	-0.33	0.204241	0.121023	-0.08321851
Permanent pasture & other grazing land	0.25	0.51	0.26	0.063037	0.128587	0.065549163
Land under misc tree & groves not included	3.21	2.65	-0.56	0.8094	0.668146	-0.14125430
Culturable waste land	0.26	0.31	0.05	0.065559	0.07816	0.012601566
Fallow land other than current fallow	0.68	0.31	-0.37	0.171462	0.07816	-0.09330125
Current fallow	0.9	2.35	1.45	0.226935	0.592507	0.365572064
Net area sown	307.04	289.57	-17.47	77.42001	73.00943	-4.41057586
Total area (in ,000 hectares)	396.59	396.62		100	100	

Table 1. Land use pattern

Year	<i>Area under Principal crops in the Purba Medinipur District(000' hectats)</i>								
	Aus	Aman	Baro	Wheat	Pulses	Mustard	Jut	Potato	Chillies(dry)
2000-01	13.1	294.3	136.2	0.1	5.1	4.2	2.1	2.3	3.1
2001-02	13.1	287.5	136.4	0.1	5.1	4.2	2.2	2.3	3.1
2002-03	13.2	277.6	137.1	0.1	5.1	4.2	2.2	2.1	3.1
2003-04	13.2	271.5	137.6	0.1	5.6	4.2	2.1	2.8	3.1
2004-05	13.5	264.5	138.2	0.5	9.1	4	0.9	3.5	3.2
2005-06	14.9	259.5	140.5	0.1	10.4	4	1.5	3.3	3.4
2006-07	15.3	267.4	147.6	0.5	10.8	4	1.5	4.7	3.4
2007-08	15.5	223.8	157.1	0.5	11	4.1	0.5	4.6	3.4
2008-09	16.1	223.6	159.6	0.5	11.2	4.1	0.5	4.7	3.4
2009-10	16.4	219.6	163.3	0.6	11.7	4.2	0.4	4.9	3.5
2010-11	16.9	219.3	167.4	0.6	11.7	4	0.4	5.2	3.5

Due to heavy soil texture, poor drainage condition and more importantly lack of adequate irrigation facilities the district enjoys limited opportunities in modification of cropping pattern. Due to these limited opportunities, the district is characterized with over generalized monotonous cropping sequence dominated by paddy. Unfortunately, the only reliable aman crop has to depend entirely on unreliable, erratic and unpredictable monsoonal rainfall. Hazards associated with this periodic rainfall often make the people, particularly marginal and landless labours to utter starvation. During the rabi season very small is devoted to boro cultivation. The generally cropping pattern of the district very diversity. Therefore, both horizontal and vertical expansion of agriculture is restricted.

Due to limited irrigation opportunities, intensity of cropping is very low. Intensity of cropping which is a clear reflection of intensity of land use is highly correlated with the extent of area sown more than once. In 2010-11, out of 396590 hectares of net cultivation land nearly 295770 hectares land has been cropped more than once. During the same period, the intensity of cropping of the district was 139 % . Therefore, land most importantly agricultural land of the district remains underutilized, unirrigated, single cropped and low yielding.

VIII. HUMAN LIFE

Agriculture is an important part of the economy of Purba Medinipur district. Agricultural land is their asset, their capital and most importantly their means of sustenance as well as survival. Agriculture has the largest share in their income, it is the source of livelihood for major portion of people, and a very high percentage of working population is engaged in agriculture. During 2001-2011, the population of the district has increased from 4417377 persons to 5094238 persons with the decadal growth rate of 15.32 % . The density of population has increased from 933 per sq. km. in 2001 to 1076 per sq. km. in 2011.

Table 2. workers status

Year	Total workers		Class of Total Workers				Main Workers	Marginal Workers	Non-workers	Total Population
	Number	P. C.	Cultivators	Agricultural labours	Household Ind. Workers	Others Workers				
1991	1285211	33.42	364357	398415	77122	445325	884496	423019	2538118	3845633
2001	1619510	36.66	415723	443702	113623	646462	1062790	556720	2797867	4417377
2011	1953640	38.35	449337.3	468873.7	195364	840065.3	1202240	713193	3178805	5094238

The standard of living is low and housing condition are very poor. The qualities of land are clearly reflected in the qualities of human life. The people of Purba Medinipur district are poor, children are malnourished and school drop out rate is also higher (DPO-2009-10). In Purba Medinipur district poverty is more widespread, more chronic and causes greater social and health problems. About 56 % of the total child in the age group of 0-5 years are under deficiency in nutrition (District Project Office,2010). The Census 2011, survey reveals that near about 16% of its household enjoy the facilities of television, near about 1.6% enjoy the facility of a motor cycle or scooter, and approximately 48% of their household enjoys the facility of a by-cycle. The district has nearly 42% of its population living below poverty line (District Food Supply Office,2010). Not only they have poor asset base but also they possess very poor hard-wearing consumer goods.

Agricultural land with poor employment potentiality employs number of working population. These work forces remain idle, jobless and are forced to be employed in under-paid activities. What is most alarming is that while area sown more than once has registered very low increase, the agricultural population maintains a steady growth. Due to poor resource base, people's vulnerability to the exploitation from other sectors also increases. Therefore, it can be said that agriculture does not satisfy the demands of the people of Purba Medinipur district.

IX. FINDING

The level of agricultural development in the study area is not satisfactory. On the other hand, population pressure on land is increasing in a slow but steady rate. As a result of which their already impoverished socio – economic status deteriorates day by day. There are a number of problems which has been found as the major obstacles for poor quality of life of the study area. These are: Lack of infrastructure facilities like irrigation and canal system is a major problem of the study area. High diversification of cropping pattern of the study area. A considerable area of the district is inundated during rainy seasons. Even during normal rainfall water logging in the low land areas is a major problem. The major part of agricultural land of the district has been transformed into piscicultural which is environmental unsustainable. Apart from agriculture, poor development of non-agricultural activities is another problem which needs to be addressed seriously.

X. CONCLUSION

Cultivation of crops is full of hard work for little reward and much stress. There are limitations to land use modification, constraints to exploitation of land potentiality and agricultural extension. In such situation, the greater challenge to the district is to satisfy the basic needs of the growing population and to achieve the basic needs for a human quality of life such as production and consumption of nutritious food, decent shelter, clean water, sanitation and to make the basic health facilities and education affordable. To create alternative income generating activities, a steady input of diversified economic activities that will not only limit risks but also divert rural energies from the tradition bound farming currently operated.

An assured supply of water through irrigation can ensure agricultural development by increasing of cropping and it also reduces its dependence on variable and unreliable monsoonal rainfall. Proper attention should be given on the storage rainwater on during seasons. Crops like Mug, Till, Watermelon could be introduction as these need less irrigation. Priority should be given to the small and marginal farmers in prawn cultivation, with financial assistance from government.

Tradition ridden agriculture with major emphasis on paddy alone cannot revitalize the economy of Purba Medinipur district. With limits to crop diversification, there are compelling reasons for Purba Medinipur district activity to encourage a movement to labour based industrialization, accompanied by complementary improvements in infrastructure such as electricity, transportation, communication and services.

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