



ISSN: 0975-833X

Available online at <http://www.journalcra.com>

INTERNATIONAL JOURNAL
OF CURRENT RESEARCH

International Journal of Current Research
Vol. 13, Issue, 06, pp.17899-17902, June, 2021

DOI: <https://doi.org/10.24941/ijcr.41636.06.2021>

RESEARCH ARTICLE

OPEN ACCESS

DYNAMICS OF LAND USE PATTERN IN UTTAR DINAJPUR DISTRICT OF WEST BENGAL

^{1,*}Md. Faiyaz Afzal and ²Shamsul Haque Siddiqui

¹Senior Research Fellow, Department of Geography, Aligarh Muslim University, India

²Retired Professor, Department of Geography, Aligarh Muslim University, India

ARTICLE INFO

Article History:

Received 27th March, 2021
Received in revised form
15th April, 2021
Accepted 20th May, 2021
Published online 30th June, 2021

Key Words:

Land Use Pattern, Agriculture,
Net Shown Area,
Cultivated Land,
Uttar Dinajpur.

ABSTRACT

Land use pattern simply means the layout or arrangement of uses of land. The land may be used for agriculture, forest, settlement, pastures etc. The nature of land use pattern depicts the mode of transformations and sophistication of human civilization with the advancement of science and technology. Keeping in mind the significance of land use studies, this paper aims to analysis the changes in land use pattern in Uttar Dinajpur district of West Bengal during 2000-01 and 2014-15. The study is completely based on secondary sources of data. The data has been analysed through simple statistical techniques. The study reveals that, in the last fourteen years the scenario of land use pattern in the district were significantly changed. There has been an increase of 2210 hectares area under land put to non-agricultural uses, which constitutes about 10.6 per cent of the total area. A positive trend has been noticed for net sown area, which is about 88.2 per cent out of the total geographical area and considered as the highest in the entire West Bengal. The study highlights that there has been a conversion of barren and uncultivable land to non-agricultural use as well as transformation of the current fallow land and unculturable waste land to cultivated land. Hence, the change in the land use pattern in the district is the outcome of rapid population growth.

Copyright © 2021. Md. Faiyaz Afzal and Shamsul Haque Siddiqui. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Md. Faiyaz Afzal and Shamsul Haque Siddiqui, "Dynamics of land use pattern in uttar dinajpur district of West Bengal", 2021. *International Journal of Current Research*, 13, (06), 17889-17902.

INTRODUCTION

Land is a limited or scarce resource, which is very essential for all type of activities performed by Human being. The demand of land for various purposes is increasing with the increase in population and economic growth. Land use pattern simply means the layout or arrangement of uses of land. The land may be used for agriculture, forest, settlement, pastures etc. Thus, the use of land is generally determined by relief features, climate, soil, density of population, technological know-how of people, and socio-economic factors. Besides this, the land use pattern at any place is determined by size of human and livestock population, cultural tradition, capability of land, ownership pattern and state regulations. The land use pattern of any place has economic as well as ecological implications, which if ignored can have disastrous consequences.

*Corresponding author: Md. Faiyaz Afzal,
Senior Research Fellow, Department of Geography, Aligarh Muslim University, India.

The nature of land use pattern depicts the mode of transformations and sophistication of human civilization with the advancement of science and technology. In 1919, the idea of land use was first put forth by an American geographer Carl O. Sauer. Then in 1925, Whittlesey mentioned that land use is the reflection of interrelationship among natural and cultural environment. In 1961, Professor Dudley stamp prepared a comprehensive land use map of Britain in his work 'The Land of Britain: It's Use and Misuse'. In India, the land use classification begins with P. C. Mahalanobis, who was a pioneer of applied statistics and one of the members of the first Planning Commission of India (1951 – 1956). However, the first land use map of India was prepared by Professor M. Shafi in 1956. He conducted extensive survey of land use in the Ganga-Yamuna doab on the basis of statistical and quantitative techniques. S.P. Chatterjee surveyed as many as 800 villages of West Bengal and brought out eleven land use sheets on the scale of four inches to mile. Bhattacharya (2002) studied the agricultural land use of Bardhaman district of West Bengal and found the importance of irrigation, agro-service centres, modern farm techniques and improved socio-economic

condition has enabled farmers to achieve optimal land use pattern. Mukherjee and Debnath (2016) conducted block level analysis of land use pattern in Jhargram sub-division of Paschim Medinipur and found that the use of land as cropping activity has been replaced by forest area or by non-agricultural activities. In the 20th century, India experienced a six-fold increase in population coupled with economic growth that has resulted in land-use land cover transformation (Richards and Flint, 1994). The land is intensively utilized in those places where population concentration is high, economic prosperity is deeply related to agricultural production, human settlements, industries, transportation and communication system is required to accommodate the grooming population. However, in the places of sparse population, dispersed settlements and rudimentary transportation, extensive land use is practised. The heterogeneity and supremacy of agriculture, deliberate the occurrence and hierarchy of land use that affects the social, cultural and economic development of the human being. Thus, land use is very crucial for the sustainable development of rural India, where agriculture dominates the cultural landscape. The need to meet the increasing energy requirement at global level has had adverse impact on the environment especially in the developing countries, like India (Areendran *et al.*, 2013). Many attempts have earlier been made by scholars related to land use pattern in West Bengal, but no such significant research has yet been done for the study area i.e., Uttar Dinajpur district. Thus, keeping in view the importance of land use studies, an attempt is made in the present paper to examine the changing land use pattern in Uttar Dinajpur district of West Bengal.

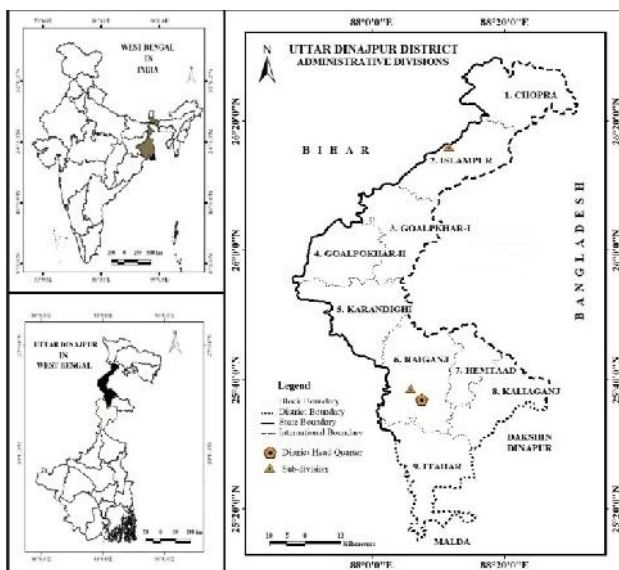


Figure 1.1. Locational Map of Study Area

Study Area: The district came into existence after the bifurcation of erstwhile West Dinajpur district on 1st April, 1992. The latitudinal extent of Uttar Dinajpur district is $25^{\circ}11' N$ to $26^{\circ}49' N$ and longitudinal extent is $87^{\circ}49' E$ to $90^{\circ}00' E$. The district has a total geographical area of 3140 sq. k.m. Uttar Dinajpur district is bounded by Darjeeling and Jalpaiguri districts on the North, Malda district on the South, Kishanganj district of Bihar on the west and Bangladesh on the east. The district had a total population of 30 lakhs and literacy rate 60.13 per cent, which is below the national average (Census 2011). More than 87 per cent population of the district lives in the rural areas, who are directly or indirectly dependent on agricultural and allied activities.

The topography is generally flat and had a gentle slope towards the south. The district has older alluvium deposition which is suitable for paddy, jute, mesta, and sugarcane cultivation. The major rivers of the district are Kulki, Mahananda, Dauk, Nagar and Sudhani. There are mainly two sub-divisions in the district Raiganj and Islampur, consisting of 4 municipalities, 9 blocks and 99 panchayats. There are more or less 1577 villages in the district. In terms of its overall size, settlement density, land-use and agricultural productivity, this is the most important hydrological catchment within North Bengal.

Objectives

The following are main objectives of the present study:

-) To identify the major land use classes in the study area during 2000-01 and 2014-15.
-) To highlight the changes within the land use classes during the study period.

Database and Methodology

The present study has been done mainly with the help of secondary sources of data. The land use data have been obtained from District Statistical Handbook of Uttar Dinajpur, which have been collected from the Bureau of Applied Economics & Statistics, Department of Planning, Statistics & Program Monitoring, Government of West Bengal. The yearly data of land use classes have been collected from the records of Deputy Directorate of Agriculture, Uttar Dinajpur district. The data of two time periods is taken into consideration i.e., 2000-01 and 2014-15. Block have been taken as the basic unit of present study. Besides this, various reports and articles of government and non-governmental sources is used. The data has been analysed by applying simple statistical techniques and tabulation is being done manually. Also, suitable figures and diagrams are used to represent the result and findings.

RESULTS AND DISCUSSION

The area under various land use categories in Uttar Dinajpur district and their percentage to the total reported area during 2000-01 to 2014-15 presents an interesting pattern which is given in Table 1.1. The change in the area available for cultivation as well as the net sown area can give us a clear understanding of the level of achievement in the field of agricultural development. With the reporting area of 312470 hectares, the district of Uttar Dinajpur accounted for about 3.6 per cent of the total geographical area of West Bengal.

Land use pattern in 2000-01: In 2000-01, the net sown area of the district was 87.5 per cent. The forest area occupied an area of about 580 hectares (0.19 per cent) and land put to non-agricultural use was 30890 hectares (9.89 per cent). Hence, the major share of land after agricultural use was devoted to non-agricultural use, specially to residential settlements, building constructions, market complexes and recreational areas. Besides this, the land under miscellaneous trees, orchards and groves had 0.80 per cent, i.e., 2490 hectare of the total reporting area. The permanent pastures and other grazing land acquired only 0.02 per cent area, while among the agricultural land, the culturable wasteland was 140 hectares, i.e., 0.04 per cent and fallow land was 1.52 per cent. The Barren and uncultivated land was 120 hectares (0.04 per cent) (Figure 1.2).

Thus, the land use pattern of Uttar Dinajpur was dominated by agricultural land use as majority of the population of the districts were engaged in agricultural sector for their livelihood during that time.

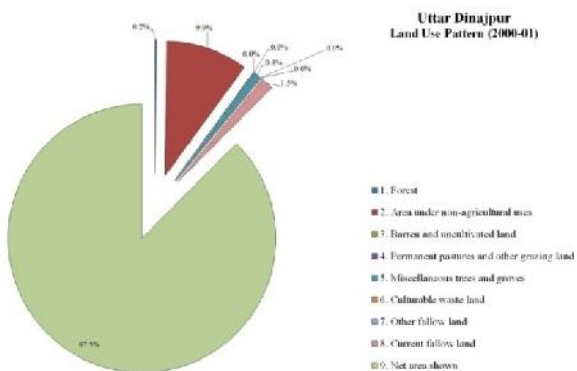


Figure 1.2

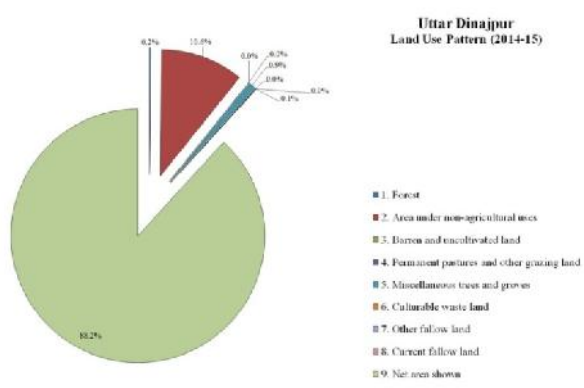


Figure 1.3

Land use pattern in 2014-15: In 2014-15, the district had 275.6 thousand hectares net sown area, which constitute about 88.2 per cent of the total geographical area. It signifies that the district is still dominated by agricultural land use, where current fallow land comprises 270 hectares (0.08 per cent), Fallow land other than current fallow comprises 70 hectares (0.02 per cent) and 90 hectares (0.03 per cent) comes under culturable waste land. The forest area remained unchanged with 580 hectares (0.19 per cent) and about 33100 hectares (10.6 per cent) area falls under land put to non-agricultural use i.e., residential houses, buildings, settlements, transport networks and market places. After agricultural land, the maximum area i.e., 2680 hectares (0.86 per cent) falls under the category of land under miscellaneous trees and grooves. While, permanent pastures and barren & uncultivated land comprises about 30 hectares and 40 hectares respectively. Figure 1.2 shows the land use pattern of Uttar Dinajpur district in 2014-15.

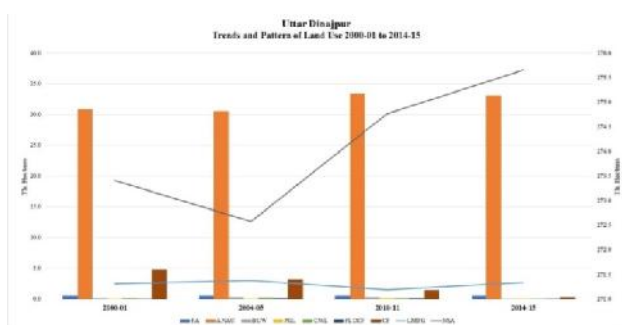


Figure 1.4

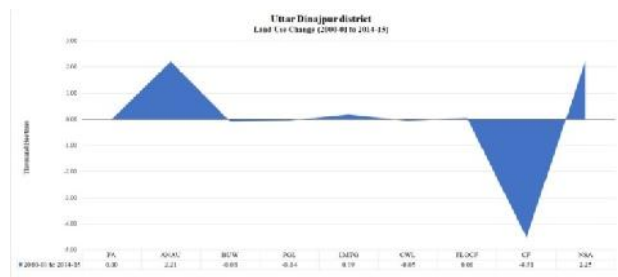


Figure 1.5

Trends and Pattern of Land Use in Uttar Dinajpur district:

Table 1.2 reveals that the net sown area has declined from 273.4 thousand hectare in 2000-01 to 272.5 thousand hectares in 2004-05 and after that there has been increasing trend of net sown area from 274.7 thousand hectares in 2010-11 to 275.7 thousand hectares in 2014-15. The area under non-agricultural use has declined from 2000-01 to 2004-05, but an increasing trend has been noticed from 30.5 thousand hectares in 2004-05 to 33.1 thousand hectares in 2014-15. The barren and unculturable land have increased from 120 hectares in 2000-01 to 240 hectares in 2004-05 and then declined to 40 hectares in 2014-15. The pastures and grazing land have a declining trend from 70 hectares in 2000-01 to 30 hectares in 2014-15, except the year 2010-11 when the area has increased to 130 hectares. The land under miscellaneous tree and grooves have increased from 2.49 thousand hectares in 2000-01 to 3.01 thousand hectares in 2004-05, but again it declined to 1.51 thousand hectares in 2010-11 and then increased to 268 thousand hectares in 2014-15. The culturable waste land has increased from 140 hectares in 2000-01 to 220 hectares in 2004-05 and then declined to 90 hectares in 2014-15. The fallow land other than current fallow had an increasing trend from 10 hectares to 160 hectares during 2000-01 to 2010-11 and then declined to 70 hectares in 2014-15. The current fallow land has recorded a declining trend from 4.76 thousand hectares in 2000-01 to 3.2 thousand hectares in 2004-05 and from 1.5 thousand hectares in 2010-11 to 0.25 thousand hectares in 2014-15.

Changes in Land use pattern from 2000-01 to 2014-15:

From 2000-01 to 2014-15, the net sown area of the district has increased 2250 hectares and became 88.2 per cent of the total reported area, which the highest in entire West Bengal state. The increase in the net sown area means there is growth in agricultural land use in the district. This is because the majority of the people in the district are engaging in agricultural activities. The forest area remained unchanged during the study period. There has been an increase of 2210 hectares (7.15 per cent) area under the category of land put to non-agricultural use, the reason of which could be devoted to large scale establishment of settlements, roadways, market places, shopping complexes and recreational places to accommodate the expeditious population growth. The barren and uncultivated land has decreased by -66.7 per cent with a decrease of area of about 80 hectares. The permanent pastures and grazing lands decreased by -57.1 per cent, and culturable wasteland also decreased by -35.7 per cent. The decline in the area of barren land, pastures, and culturable waste is a good sign of positive development of land. The land under miscellaneous trees and grooves has increased by 7.63 per cent. The highest increase of 600 per cent was recorded for the area under fallow land other than current fallow, which increased from 10 hectares in 2000-01 to 70 hectares in 2014-15. The increase in the other fallow land has resulted in a decrease in the current fallow land by -94.7 per cent (Figure 1.5).

Table 1.1. Land-use pattern of Uttar Dinajpur district from 2000-01 to 2014-15

Land Use Categories	2000-01		2014-15		Percentage change
	Hectares	Per cent	Hectares	Per cent	
Forest Area (FA)	580	0.19	580	0.19	0.00
Area under Non-agricultural use (ANAU)	30890	9.89	33100	10.59	7.15
Barren & unculturable land (BUW)	120	0.04	40	0.01	-66.67
Permanent pastures & other grazing land (PGL)	70	0.02	30	0.01	-57.14
Land under misc. tree groves (LMTG)	2490	0.80	2680	0.86	7.63
Culturable waste land (CWL)	140	0.04	90	0.03	-35.71
Fallow land other than Current fallow (FLOCF)	10	0.003	70	0.02	600.00
Current fallow (CF)	4760	1.52	250	0.08	-94.75
Net area sown (NSA)	273410	87.50	275660	88.22	0.82
Total Reporting Area	312470	100.00	312470	100.00	0.00

Source: Directorate of Agriculture (Evaluation), Govt. of W.B.

Table 1.2. Area under different Land Use Categories in Uttar Dinajpur district, from 2000-01 to 2014-15

Land Use Categories	2000-01	2004-05	2010-11	2014-15
Forest Area (FA)	0.58	0.58	0.58	0.58
Area under Non-agricultural use (ANAU)	30.89	30.55	33.43	33.1
Barren & unculturable land (BUW)	0.12	0.24	0.27	0.04
Permanent pastures & other grazing land (PGL)	0.07	0.05	0.13	0.03
Land under misc. tree groves (LMTG)	2.49	3.01	1.51	2.68
Culturable waste land (CWL)	0.14	0.22	0.12	0.09
Fallow land other than Current fallow (FLOCF)	0.01	0.12	0.16	0.07
Current fallow (CF)	4.76	3.21	1.50	0.25
Net area sown (NSA)	273.41	272.58	274.77	275.66

Source: Directorate of Agriculture (Evaluation), Govt. of W.B. (Area in Th. Hectares)

Conclusion

It has been noticed that positive changes took place in terms of land put to non-agricultural use and land under miscellaneous uses. Whereas, a negative change took place in terms of barren and uncultivated land and current fallow land in the districts. Moreover, culturable wasteland has declined, and fallow land other than current fallow and the net sown area has increased in Uttar Dinajpur. A rapid growth of population and dependence of 80 per cent people on agriculture have put a major effect on land use change in the district. To accommodate the increasing population and to bring essential services to the reach of the people, many developmental works is taking place in the district especially in the municipal towns. These works include construction of residential buildings, government offices, public as well as private schools, shopping complexes, hotels, restaurants and transport communication network. It is worth mentioning here that during the recent years two new bypass roads (Islampur bypass and Dalkhola bypass) have been constructed in the district. The culturable waste land and barren and unculturable land are decreasing due increase in land under other than agriculture. On the other hand, irrigation extension and use of chemical fertilizers has resulted into decrease in current fallow land. However, decrease in the grazing and pasture land has created problem of animal husbandry in the urban area. Therefore, there is a need to encourage judicious use of land in the district.

REFERENCES

- Areendran, G. *et al.* 2013. Land use/ land cover change dynamics analysis in mining areas of Singrauli district in Madhya Pradesh, India. *Tropical Ecology*, 54 (2): 239-250
- Bhattacharya, K. 2002. Agricultural Land Use in Bardhaman District. *Geographical Review of India*, 64: 69-77
- Chhaukar, A. K. & Mittal, Y. 2007. Changing pattern of crop land use in Dadritahsil (Haryana) 1966- 93. Ali, M. *et. al.*

- (Ed.), Fifty years of Indian Agriculture. Concept Publishing Company, New Delhi. Vol. 2: 175- 189
- Comprehensive District Agricultural Plan (C-DAP), Deputy Directorate of Agriculture, Uttar Dinajpur district, Govt. of West Bengal
- Deka, C. 2015. Spatio-temporal variation of land use pattern in Morigaon district of Assam. *The International Journal of Humanities and Social Studies*. 3 (5): 39- 44.
- District Statistical Handbook. 2000-01 & 2014-15. Bureau of Applied Economics and Statistics. Uttar Dinajpur district, Govt. of West Bengal
- Farrukh, S. *et. al.* 2018. Changing Land Use Pattern in Bulandshahr district, Uttar Pradesh. Ahmed, A. *et. al.* (Ed). Agriculture, Environment and Climate Change, A.K. Publications, Delhi. ISBN 978-93-88465-09-0: 257-266
- Giri, R. 1983. Changes in Land Use Pattern in Punjab. *Indian Journal of Agri-Economics*, XXIV (2).
- Mukherjee, S. and Debnath, G. C. 2016). Block Level Spatio Temporal Analysis of Land Use Pattern in Jhargram Subdivision, Paschim Medinipur during 1996-97 & 2010-11. *Imperial Journal of Interdisciplinary Research*, 2 (12): 1000-1005 ISSN: 2454-1362
- Ranjana 2012. Trends in Crop Diversification in Punjab-Haryana Plains: 1965-66 to 2005-06. Ph.D Thesis, Department of Geography, Punjabi University, Patiala
- Shafi, M. 1969. Land use and classified the land categories and their capability. *The Geographer*, 14: 1-6
- Sharma, V. N. & Tiwari, A. K. 2013. Land Use Pattern in Uttar Pradesh. *Population and Regional Development* (Dixit, S. K.), Radha Publications, New Delhi: 164-176, ISBN: 81-7487-816-5.
- Singh J. and Dhillon S.S. (ed.) 1976. *Agricultural Geography*. Tata McGraw Hill Publishing Company Ltd., New Delhi.
- Singh, S.P., Singh, A.K. & Dwivedi Sudhakar 2010. Land Use and Cropping Pattern Followed by Vegetable Growers in Eastern Uttar Pradesh. *Research Journal of Agricultural Sciences*, 1 (4): 448-450.
- Vink, A. P. A. 1975. Land use in advancing agriculture, *Advanced Series in Agricultural Science 1*, Vol. 1, Springer, Berlin