

Geographical Analysis of Land Use Pattern in Sonbhadra District

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Abstract

The research paper aims to analyze and evaluate land use in the study area, specifically in the Sonbhadra district. The methodology used in the study needs to be described in the given method of research. This paper provides information about the different land use categories in the Sonbhadra district. It mentions the area of forests in each development block, the area of cultivable waste, current fallow land, other fallow lands, barren and uncultivable land, and land used for non-agricultural purposes. The data is presented in tabular form, showing the area in hectares for each land use category in different blocks of district. Graphs are also provided to visualize the distribution of forest area, cultivable waste, current fallow land, other fallow lands, and barren and uncultivable land across the blocks of the Sonbhadra district. Overall, a brief overview of the land use analysis in the Sonbhadra district highlighting the different land use categories and their distribution in the area.

Keywords- Land use, Forest, Cultivable Waste, Agriculture, Barren

Introduction

Land use results from the interrelation between physical and human (economic, social, political, and cultural). All these factors are different everywhere, and man continuously gives them new dimensions. Human movements, population distribution, density, and changing social values also affect land use. All these human activities disturb the natural balance of the land. Many problems arise, so finding a solution becomes necessary. From this perspective, land use planning is essential.

It is also noteworthy that humans use land differently according to their needs. The land is used based on residence, business, industry, transport, security, entertainment, education, administration etc. However, the agricultural land use classification is more complex as it occasionally changes along with the general land use. Not only this, many economic and institutional changes also take place in land use - for example, land ownership, tenancy, size of holding, human skill, technological development, political ups and downs, and changes in socio-cultural objectives. Changes in land use are bound to happen due to changes in purposes. Increase in population, there has been much change in the form of land use. Changes in land use due to the expansion of irrigation facilities on barren land and deforestation for the expansion of agricultural land, etc., affect land use. Due to this, many problems arise. Land use planning seems necessary for their diagnosis.

Study Area

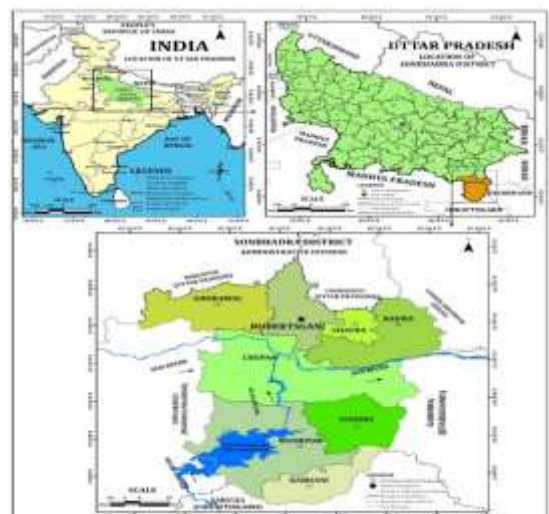
The study area is located between 23° 52' to 25° 32' north latitude and 82° 32' to 83° 33' east longitude (Map. No. 1). Sonbhadra district is surrounded by Surguja of Chhattisgarh and Sidhi of Madhya Pradesh in the south, Palamu and Garhwa of Jharkhand state in the east, Riwa of Madhya Pradesh in the west and Mirzapur and Chandauli districts in the north. Its total geographical area is 6788 square kilometres. From an administrative point of view, this district is divided into four tehsils respectively, Robertsganj, Duddhi, Ohera and Ghorawal and ten development blocks are divided into Robertsganj, Chopan, Ghorawal, Chatra, Nagwan, Myorpur, Duddhi, Babhani, Karma and Kon respectively.

Map No.1

Objectives

This research paper aims to analyze and evaluate the land use pattern in the study area and determine the different land use categories in the Sonbhadra district.

Methodology



The present study is based on secondary data sources using statistical data obtained from the district statistical magazine 2022. A location map of the study area based on the Arc GIS application and data analysis has been done MS - Excel 2019.

Forest

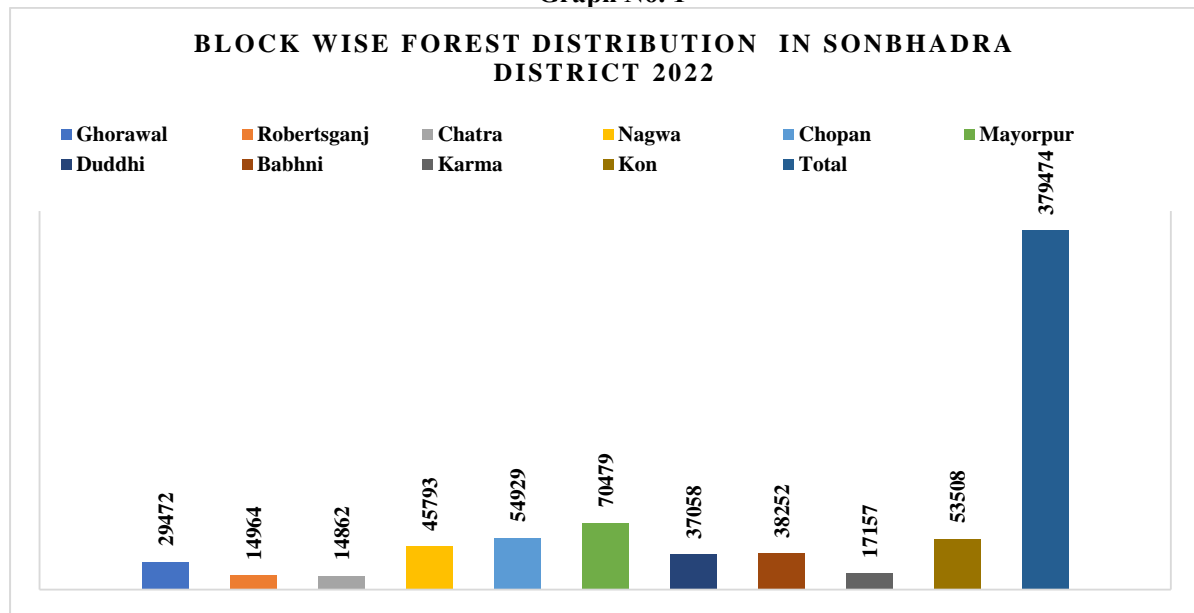
Forests are essential for human life and the life of all living beings on this earth. The importance of forests cannot be denied in any area. The data obtained by the study area's District Statistical Department (2022) shows that the total area of forests in the Sonbhadra district is 37,9474 hectares. The maximum area of forests in the Sonbhadra district is 70,479 hectares in Myorpur development block. It is in the area, followed by 54,929 hectares in the Chopan development block and 53,508 hectares in the Kon development block. While 45,793 in the Nagwa development block, 29,252 in Babhani, 37,058 in the Duddhi development block and 29,472 hectares in the Ghorawal development block, Chatra development block has 14,862 and Robertsganj has 14,964 hectares.

Table No. 1

Blockwise Forest Distribution in Sonbhadra District 2022	
Block	Forest (Hec.)
Ghorawal	29472
Robertsganj	14964
Chatra	14862
Nagwa	45793
Chopan	54929
Mayorpur	70479
Duddhi	37058
Babhni	38252
Karma	17157
Kone	53508
Total	379474

Source-District statistical magazine 2022

Graph No. 1



Karma development block has 17,157 hectares of forest area. Thus, in Sonbhadra districts, Chatra Robertsganj and Karma are the development blocks with less forest cover. While Myorpur, Chopan, and Duddhi are under the area with maximum forest cover.

Cultivable Waste

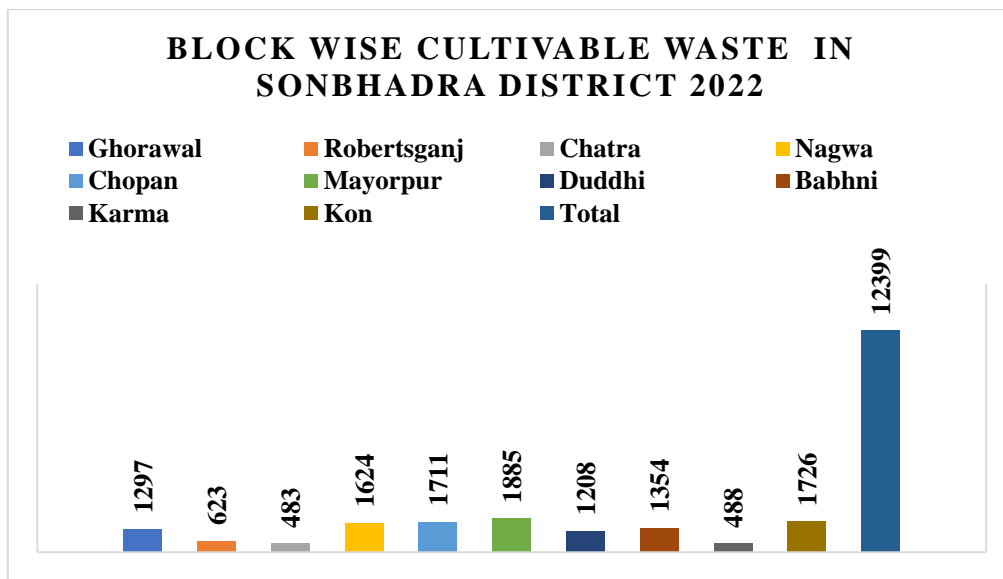
Every year some part of the field is left vacant by the farmers, whose purpose is to increase the fertility of the land. The farmer also empties some part of his field to keep pasture or ready crops, called cultivable waste.

Table No. 2

Blockwise Cultivable Waste in Sonbhadra District 2022	
Block	Cultivable Waste (Hec.)
Ghorawal	1297
Robertsganj	623
Chatra	483
Nagwa	1624
Chopan	1711
Mayorpur	1885
Duddhi	1208
Babhni	1354
Karma	488
Kon	1726
Total	12399

Source-District statistical magazine 2022

Graph No. 2



The area of cultivable waste is different in all the ten development blocks of the Sonbhadra district. In the Myorpur development block, the total area of cultivable waste is a maximum of 1,885 hectares. This way, 1,726 hectares in the Kon development block, 1,711 hectares in Chopan, and 1,624 hectares in Nagwa come under agricultural wasteland. Cultivable waste is 483 hectares in the Chatra development block, followed by Karma 488 hectares of agricultural wasteland. Thus, the total area of cultivable waste in the Sonbhadra district is 12,399 hectares (Table and graph no. 2).

Current Fallow

The table no. 3 provides information about the current fallow land in the Sonbhadra district for 2022, broken down by different blocks. Fallow land refers to agricultural land that is temporarily not used for cultivation.

Here is a descriptive breakdown of table no. 3 Ghorawal Block: It has 2,102 hectares of current fallow land. This means that in Ghorawal block, 2,102 hectares of agricultural land are not currently used for cultivation. Robertsganj Block: This block has 2,223 hectares of current fallow land. It indicates that 2,223 hectares of agricultural land in Robertsganj block must be used for farming. Chatra Block: It has 727 hectares of current fallow land. In Chatra block, 727 hectares of agricultural land are presently fallow.

Nagwa Block: This block consists of 1,401 hectares of current fallow land. Nagwa block has 1,401 hectares of agricultural land that still need to be cultivated. Chopan Block has the highest amount of fallow land, with 3,372 hectares. In Chopan block, 3,372 hectares of agricultural land are temporarily unused for farming. Mayorpur Block: This block has 3,199 hectares of current fallow land. Mayorpur block consists of 3,199 hectares of agricultural land not under cultivation. Duddhi Block: It has 996 hectares of current fallow land. Duddhi block comprises 996 hectares of agricultural land that are presently fallow. Babhni Block: This block has 1,139 hectares of current fallow land. Babhni block consists of 1,139 hectares of agricultural land not used for cultivation. Karma Block: It has 936 hectares of current fallow land. Karma block consists of 936 hectares of agricultural land temporarily unused for farming. Kon Block: It has 2,600 hectares of current fallow land. Kon block consists of 2,600 hectares of agricultural land not currently under cultivation.

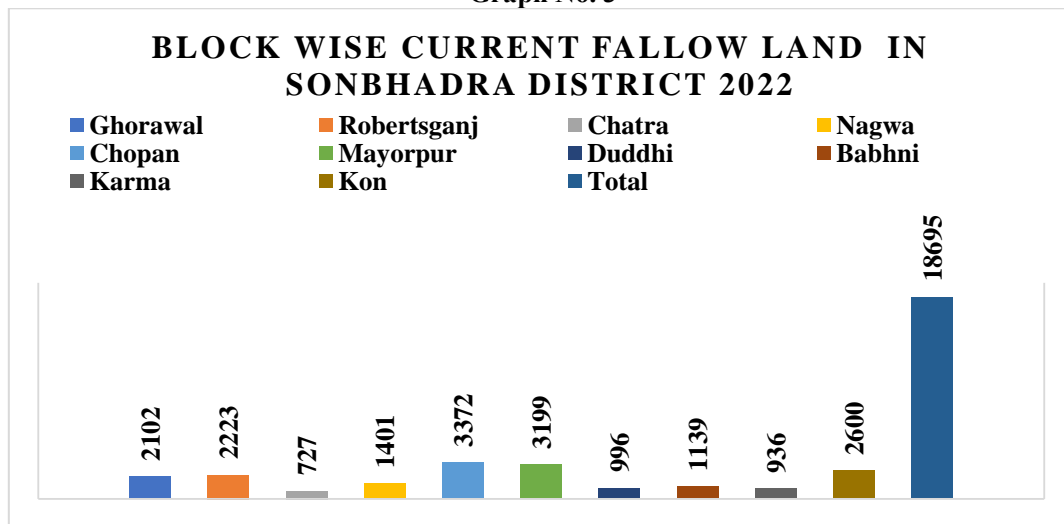
The Sonbhadra district has 18,695 hectares of current fallow land across all the blocks mentioned in the table and graph no.4. This represents the cumulative amount of agricultural land that is temporarily not being used for cultivation in the district.

Table No.3

Blockwise Current Fallow Land in Sonbhadra District 2022	
Block	Current Fallow (Hec.)
Ghorawal	2102
Robertsganj	2223
Chatra	727
Nagwa	1401
Chopan	3372
Mayorpur	3199
Duddhi	996
Babhni	1139
Karma	936
Kon	2600
Total	18695

Source-District statial magazine 2022

Graph No. 3



Other Fallow

Table no. 4 provides information about the other fallow land in the Sonbhadra district for 2022, categorized by different blocks. Other fallow land refers to agricultural land that is temporarily not used for cultivation for reasons other than the current fallow land mentioned earlier. Ghorawal Block: It has 573 hectares of other fallow land. This means that in the Ghorawal block, 573 hectares of agricultural land are not currently used for cultivation for reasons other than fallow land. Robertsganj Block: This block has 349 hectares of other fallow land. It indicates that 349 hectares of agricultural land in the Robertsganj block are temporarily not being utilized for farming for reasons other than the current fallow land. Chatra Block: It

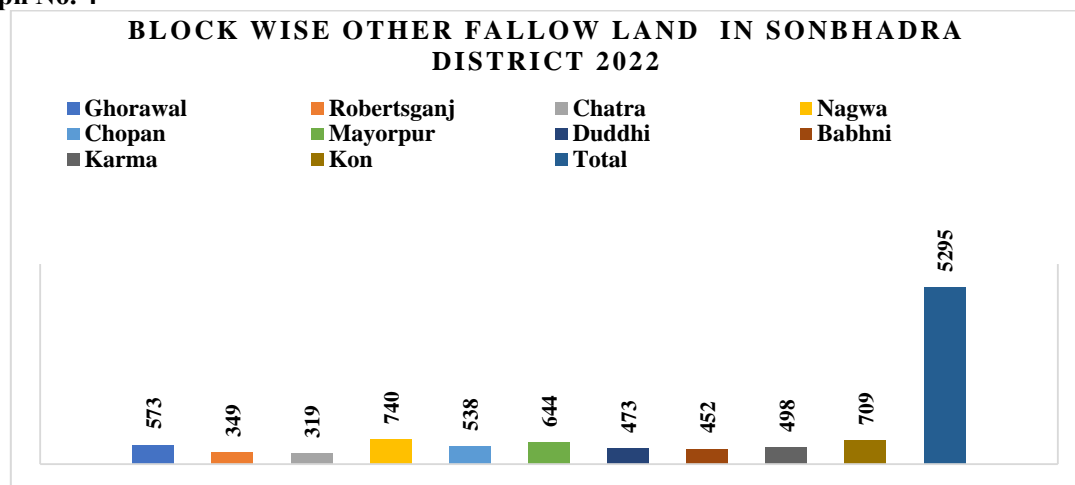
has 319 hectares of other fallow land. In Chatra block, 319 hectares of agricultural land are presently fallow for reasons other than the current fallow land. Nagwa Block: This block consists of 740 hectares of other fallow land. The Nagwa block has 740 hectares of agricultural land that are not currently under cultivation for reasons other than the current fallow land. Chopan Block: It has 538 hectares of other fallow land. In the Chopan block, 538 hectares of agricultural land are temporarily not used for farming for reasons other than the current fallow land. Mayorpur Block: This block has 644 hectares of other fallow land. Mayorpur block consists of 644 hectares of agricultural land not under cultivation for reasons other than the current fallow land. Duddhi Block: It has 473 hectares of other fallow land. Duddhi block comprises 473 hectares of agricultural land that are fallow for reasons other than the current fallow land. Babhni Block: This block has 452 hectares of other fallow land. Babhni block consists of 452 hectares of agricultural land not used for cultivation for reasons other than the current fallow land. Karma Block: It has 498 hectares of other fallow land. Karma block consists of 498 hectares of agricultural land that are temporarily unused for farming for reasons other than the current fallow land. Kon Block: It has 709 hectares of other fallow land. Kon block consists of 709 hectares of agricultural land not currently under cultivation for reasons other than the current fallow land.

Table No. 4

Blockwise Other Fallow Land in Sonbhadra District 2022	
Block	Other Fallow land (Hec.)
Ghorawal	573
Robertsganj	349
Chatra	319
Nagwa	740
Chopan	538
Mayorpur	644
Duddhi	473
Babhni	452
Karma	498
Kon	709
Total	5295

Source-District statical magazine 2022

Graph No. 4



The Sonbhadra district has 5,295 hectares of other fallow land across all the blocks mentioned in the table and graph no 4. This represents the cumulative amount of agricultural land that is temporarily not being used for cultivation for reasons other than the current fallow land in the district.

Barren and Uncultivable

Table no. 5 provides information about the barren and uncultivable land in the Sonbhadra district for 2022, categorised by different blocks. Barren and uncultivable land refers to land that is not suitable for agricultural cultivation or is unproductive. Ghorawal Block: It has 987 hectares of barren and uncultivable

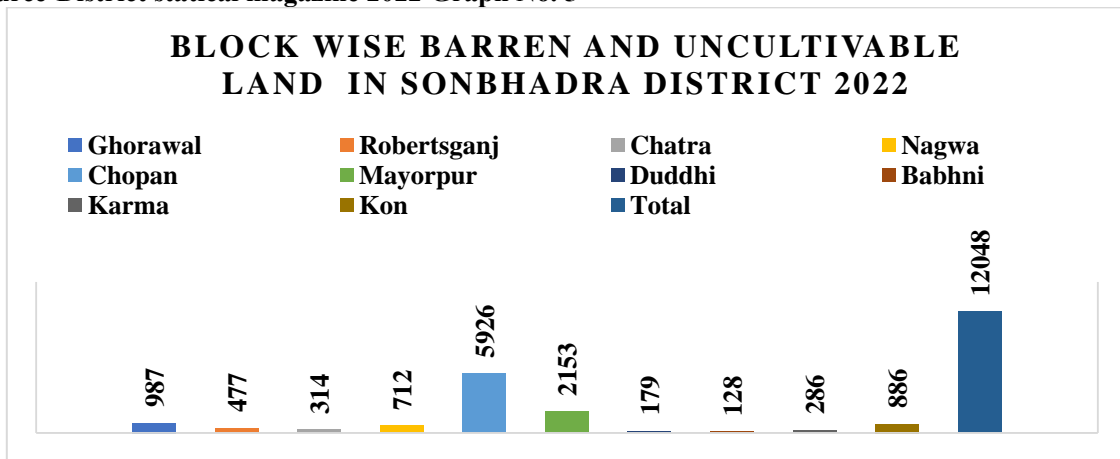
land. This means that in the Ghorawal block, 987 hectares of land need to be more suitable for agriculture or unproductive. Robertsganj Block: This block has 477 hectares of barren and uncultivable land. It indicates that 477 hectares of land in the Robertsganj block are unsuitable for agriculture or unproductive. Chatra Block: It has 314 hectares of barren and uncultivable land. In Chatra block, 314 hectares of land must be more suitable for agriculture or unproductive. Nagwa Block: This block comprises 712 hectares of barren and uncultivable land. The Nagwa block has 712 hectares of land unsuitable for agriculture or unproductive. Chopan Block has the highest barren and uncultivable land, with 5,926 hectares. In the Chopan block, 5,926 hectares of land must be more suitable for agriculture or unproductive. Mayorpur Block: This block has 2,153 hectares of barren and uncultivable land. Mayorpur block consists of 2,153 hectares of land unsuitable for agriculture or unproductive. Duddhi Block: It has 179 hectares of barren and uncultivable land. Duddhi block comprises 179 hectares of land unsuitable for agriculture or unproductive. Babhni Block: This block has 128 hectares of barren and uncultivable land. Babhni block consists of 128 hectares of land unsuitable for agriculture or unproductive. Karma Block: It has 286 hectares of barren and uncultivable land. Karma block consists of 286 hectares of land unsuitable for agriculture or unproductive. Kon Block: It has 886 hectares of barren and uncultivable land. Kon block consists of 886 hectares of land unsuitable for agriculture or unproductive.

The Sonbhadra district has 12,048 hectares of barren and uncultivable land across all the blocks mentioned in the table and graph no.5. This represents the cumulative amount of land unsuitable for agricultural cultivation or unproductive in the district.

Table No. 5

Blockwise Barren and Uncultivable Land in Sonbhadra District 2022	
Block	Barren and Uncultivable land (Hec.)
Ghorawal	987
Robertsganj	477
Chatra	314
Nagwa	712
Chopan	5926
Mayorpur	2153
Duddhi	179
Babhni	128
Karma	286
Kon	886
Total	12048

Source-District statical magazine 2022 Graph No. 5



Land of use other than agriculture

The table no. 6 provides information about the land used for purposes other than agriculture in the Sonbhadra district for 2022, categorised by different blocks. This refers to land that is utilized for non-agricultural activities or purposes.

Ghorawal Block: It has 5,409 hectares of land used for purposes other than agriculture. This means that in the Ghorawal block, 5,409 hectares of land are utilized for non-agricultural activities. Robertsganj Block: This block has 4,307 hectares of land used for purposes other than agriculture. It indicates that 4,307 hectares of land in the Robertsganj block are utilized for non-agricultural activities. Chatra Block: It has 1,355 hectares of land used for purposes other than agriculture. In Chatra block, 1,355 hectares of land are utilized for non-agricultural activities. Nagwa Block: This block consists of 6,043 hectares of land used for purposes other than agriculture. The Nagwa block has 6,043 hectares of land utilized for non-agricultural activities. Chopan Block: It has the highest amount of land used for purposes other than agriculture, with 10,200 hectares. In the Chopan block, 10,200 hectares of land are utilized for non-agricultural activities. Mayorpur Block: This block has 8,585 hectares of land used for purposes other than agriculture. Mayorpur block consists of 8,585 hectares of land utilized for non-agricultural activities. Duddhi Block: It has 3,757 hectares of land used for purposes other than agriculture. Duddhi block comprises 3,757 hectares of land utilized for non-agricultural activities. Babhni Block: This block has 2,363 hectares of land used for purposes other than agriculture. Babhni block consists of 2,363 hectares of land utilized for non-agricultural activities. Karma Block: It has 3,729 hectares of land used for purposes other than agriculture. Karma block consists of 3,729 hectares of land utilized for non-agricultural activities. Kon Block: It has 4,257 hectares of land used for purposes other than agriculture. Kon block consists of 4,257 hectares of land utilized for non-agricultural activities.

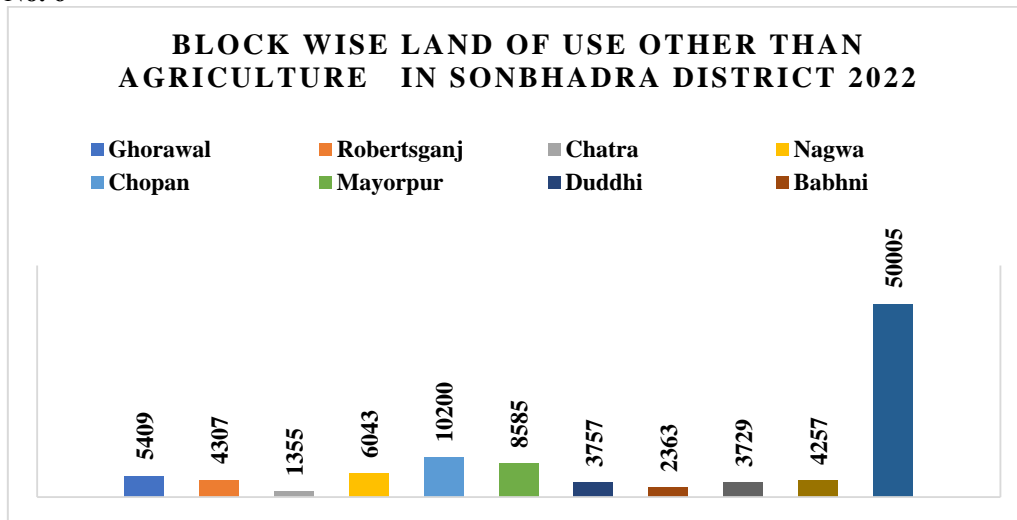
The Sonbhadra district has 50,005 hectares of land used for purposes other than agriculture across all the blocks mentioned in the table and graph no. 6. This represents the district's cumulative amount of land utilized for non-agricultural activities.

Table No. 6

Blockwise Land of use other than Agriculture in Sonbhadra District 2022	
Block	Land of use other than agriculture (Hec.)
Ghorawal	5409
Robertsganj	4307
Chatra	1355
Nagwa	6043
Chopan	10200
Mayorpur	8585
Duddhi	3757
Babhni	2363
Karma	3729
Kon	4257
Total	50005

Source-District statical magazine 2022

Graph No. 6



Pasture and Grazing land

The table no. 7 provides information about the pasture and grazing land in the Sonbhadra district for 2022, categorized by different blocks. Pasture and grazing land refer to areas specifically designated for livestock grazing.

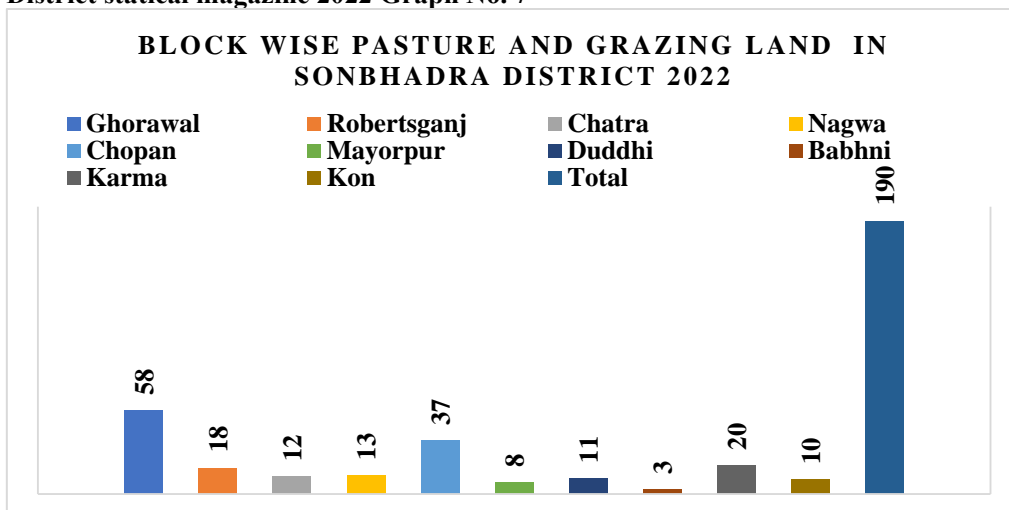
Ghorawal Block: It has 58 hectares of pasture and grazing land. This means that in the Ghorawal block, there are 58 hectares of land designated explicitly for livestock grazing. Robertsganj Block: This block has 18 hectares of pasture and grazing land. It indicates that 18 hectares of land in the Robertsganj block are designated explicitly for livestock grazing. Chatra Block: It has 12 hectares of pasture and grazing land. In Chatra block, 12 hectares of land are designated explicitly for livestock grazing. Nagwa Block: This block comprises 13 hectares of pasture and grazing land. The Nagwa block has 13 hectares of land designated explicitly for livestock grazing. Chopan Block: It has 37 hectares of pasture and grazing land. In the Chopan block, 37 hectares of land are designated explicitly for livestock grazing. Mayorpur Block: This block has 8 hectares of pasture and grazing land. Mayorpur block consists of 8 hectares of land designated explicitly for livestock grazing. Duddhi Block: It has 11 hectares of pasture and grazing land. Duddhi block comprises 11 hectares of land designated explicitly for livestock grazing. Babhni Block: This block has 3 hectares of pasture and grazing land. Babhni block consists of 3 hectares of land designated explicitly for livestock grazing. Karma Block: It has 20 hectares of pasture and grazing land. Karma block consists of 20 hectares of land designated explicitly for livestock grazing. Kon Block: It has 10 hectares of pasture and grazing land. Kon block consists of 10 hectares of land designated explicitly for livestock grazing.

The Sonbhadra district has 190 hectares of pasture and grazing land across all the blocks mentioned in the table and graph no. 7. This represents the district's cumulative amount of land designated for livestock grazing.

Table No. 7

Blockwise Pasture and Grazing land in Sonbhadra District 2022	
Block	Pasture and Grazing land (Hec.)
Ghorawal	58
Robertsganj	18
Chatra	12
Nagwa	13
Chopan	37
Mayorpur	8
Duddhi	11
Babhni	3
Karma	20
Kon	10
Total	190

Source-District statical magazine 2022 Graph No. 7



Trees and Shrubs

The table no. 8 provides information about the trees and shrubs in the Sonbhadra district for the year 2022, categorized by different blocks. Trees and shrubs refer to the vegetation consisting of larger plants and smaller woody plants.

Ghorawal Block: It has 975 hectares of trees and shrubs. This means that in the Ghorawal block, 975 hectares of land are covered with trees and shrubs. Robertsganj Block: This block has 241 hectares of trees and shrubs, and it indicates that 241 hectares of land in the Robertsganj block are covered with trees and shrubs. Chatra Block: It has 850 hectares of trees and shrubs. In Chatra block, 850 hectares of land are covered with trees and shrubs. Nagwa Block: This block consists of 2,811 hectares of trees and shrubs. The Nagwa block has 2,811 hectares of land covered with trees and shrubs. Chopan Block: It has 2,621 hectares of trees and shrubs. In the Chopan block, 2,621 hectares of land are covered with trees and shrubs. Mayorpur Block: This block has 2,240 hectares of trees and shrubs. Mayorpur block consists of 2,240 hectares of land covered with trees and shrubs. Duddhi Block: It has 1,015 hectares of trees and shrubs. Duddhi block comprises 1,015 hectares of land covered with trees and shrubs. Babhni Block: This block has 1,545 hectares of trees and shrubs. Babhni block consists of 1,545 hectares of land covered with trees and shrubs. Karma Block: It has 1,241 hectares of trees and shrubs. Karma Block consists of 1,241 hectares of land covered with trees and shrubs. Kon Block: It has 2,311 hectares of trees and shrubs. Kon block consists of 2,311 hectares of land covered with trees and shrubs.

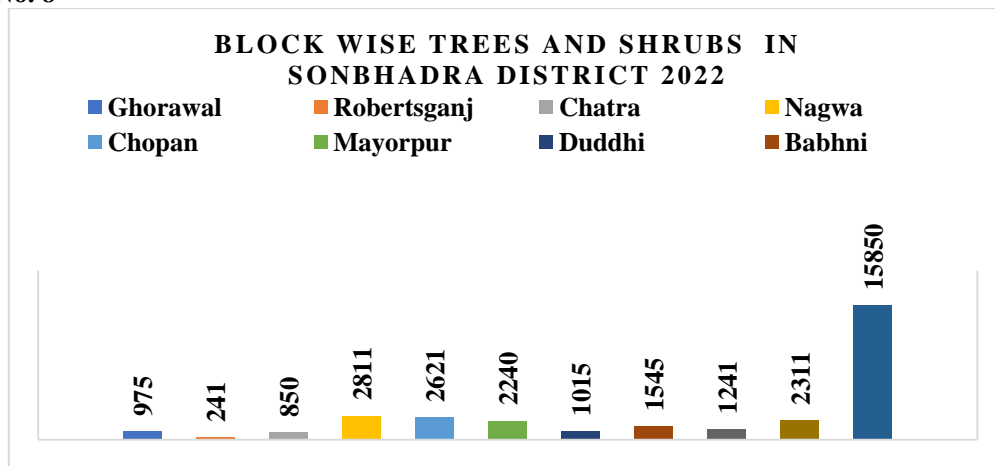
The Sonbhadra district has 15,850 hectares of land covered with trees and shrubs across all the blocks mentioned in table and graph no.8. This represents the cumulative area of land where trees and shrubs are present.

Table No. 8

Blockwise Trees and Shrubs in Sonbhadra District 2022	
Block	Trees and Shrubs (Hec.)
Ghorawal	975
Robertsganj	241
Chatra	850
Nagwa	2811
Chopan	2621
Mayorpur	2240
Duddhi	1015
Babhni	1545
Karma	1241
Kon	2311
Total	15850

Source-District stational magazine 2022

Graph No. 8



Conclusion

This paper discusses the geographical analysis of land use in the Sonbhadra district. It highlights different categories of land use and provides information on land use distribution in various blocks within the district.

Here is a summary of the key points. Land use is influenced by physical and human factors, including economic, social, political, and cultural aspects. Human activities and changes in societal needs impact land use, necessitating land use planning. Study Area: Sonbhadra district is located between 23° 52' to 25° 32' north latitude and 82° 32' to 83° 33' east longitude. It shares borders with Surguja of Chhattisgarh and Sidhi of Madhya Pradesh in the south, Palamu and Garhwa of Jharkhand in the east, Riwa of Madhya Pradesh in the west, and Mirzapur and Chandauli districts in the north. The total geographical area of the district is 6,788 square kilometres, divided into four tehsils and ten development blocks.

Forest: The total forest area in Sonbhadra district is 379,474 hectares. Myorpur, Chopan, and Duddhi have the highest forest cover, while Chatra, Robertsganj, and Karma have less forest cover. **Cultivable Waste:** The area of cultivable wastelands in different blocks of the district. The total area of cultivable waste in the Sonbhadra district is 12,399 hectares, with Myorpur having the highest area. **Current Fallow:** This refers to agricultural land temporarily not used for cultivation. The district has 18,695 hectares of current fallow land, with Chopan having the highest area. **Other Fallow:** Other fallow land is agricultural land that is temporarily not used for cultivation for reasons other than current fallow land. Sonbhadra district has 5,295 hectares of other fallow land, with Chopan having the highest area. **Barren and Uncultivable:** This category includes land unsuitable for agricultural cultivation or unproductive land. The district has 12,048 hectares of barren and uncultivable land, with Chopan having the highest area. **Land Use Other than Agriculture:** This category represents land used for non-agricultural activities. Chopan has the highest area (10,200 hectares) utilized for purposes other than agriculture.

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