

## THE DYNAMIC STUDY OF LAND USE PATTERNS OF NAGAON DISTRICT , ASSAM

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### **ABSTRACT:**

Land use patterns is a dynamic concept. Land use means to the systematic utilization of land area for various purpose at a particular point of time. Systematic land use pattern is important for proper development of a region. The land may be used for many non agricultural activities, agriculture activities, forest area, culturable waste land and pasture and grazing land etc. The land use properly utilities in those areas where higher population, human settlement, industries, transport system and agriculture activities etc. The land use pattern affects various type of factors such as historical, cultural, social, economic and political factors. The present study analyze the land use pattern of Nagaon District. The study based on secondary sources of data. The study focus on the land use pattern during 2001 to 2023. Total 397300 hectares area is the geographical area of the district. Net area sown occupied in 51.62% area. During the study time, land use pattern has changes highly because increasing non agricultural activities and population pressure etc.

*Key words: Land use Patterns, distribution of land use, Net sown area, cultivated land , Nagaon*

### **1.Introduction:**

Land use refers to the a systematic utilization of surface land for various purpose at a particular point of time. Land use pattern is a dynamic concept. Systematic land use pattern is important for proper development of a region. There are various factors like physical, economic, social, historical and political factor affects the land use pattern of a region. The land may be used for non agriculture activities, agricultural activities and forest area, pasture and grazing land etc. Besides the land use pattern is determined by size of human and livestock population capability of land , residential settlement, recreational area, ownership pattern and state regulations. According to the

Agricultural department of India land are use mainly nine purpose that are given below – (i)Forest Area, (ii)Area under non agriculture,(iii)Barren and uncultivable land,(iv)Land under miscellaneous trees and groves,(v) culturable waste land,(vi)Fallow land other then current fallow,(vi) Current fallow,(vii) Permanent pasture and grazing land,(viii)Net area sown etc.

In 1919, the American geographer Carl O.Saure was first proposed the land use idea. In 1955 , Whittlesy mention the land use is the reflection of interrelationship among natural and cultural environment. In.1951-56, P.C Mahalanobis was the first begins the India land use pattern. Land use is any kind of permanent or human intervention to satisfy human needs, neither material or spiritual or both from the complex of natural and artificial resource, which together are called “Land”( Vink 1975). Nadkami and Deshpande ( 1919) highlighted the importance of institutional factors leading to under utilization of agricultural land especially when people employed in urban area keeps land using for speculative purpose. Pandey and Tewari (1987) analyzed the dynamics of land use and estimated the shift in land use with the help of simple indentify of linearly additive land use changes. The land use properly utilities in those areas where the high population, human settlement, industries, transport and communication systems but land is extensively utilized in sparse population and dispersed population area.

The present study analyze the land use pattern of Nagaon district during 2001-02 to 2022-23. Nagaon district important agrarian district of the Assam. The land use pattern of the district has very dynamic. The increasing population , residential settlement, and non agricultural activities are affect on the land use pattern of the district. In 2023 , total geographical area was 397300 hectares and the non agricultural activities has increased due to population pressure , human settlement, market complex ,recreational activities and governmental activities etc .

## **2.Study Area:**

Nagaon district situated on in the middle part of Assam and North Eastern district of India. The district located between 25.45’N latitudes to 26.45’ N latitudes and 91°50’ E longitudes to 93°20’ E longitudes. It covers geographical area of 397300 hectares. Nagaon district is administrative district of the Assam. The district is bounded by the Brahmaputra river in the north, west KarbiAnglong district and Hojai in the south, Golaghat and east kalbi-Anglong district in the east and Morigaon district in the west. The district is most populous district of the Assam, 2011 the total population was 1892550. Originally Nagaon district was with two subdivision – Morigaon subdivision and Nagaon subdivision. But 1989 , Morigaon subdivision was out of separate district. There after Nagaon district consist of Nagaon, Kaliabor and Hojai subdivision .In 2015, again Hojai subdivision out of separate district.

Location Map of the study Area

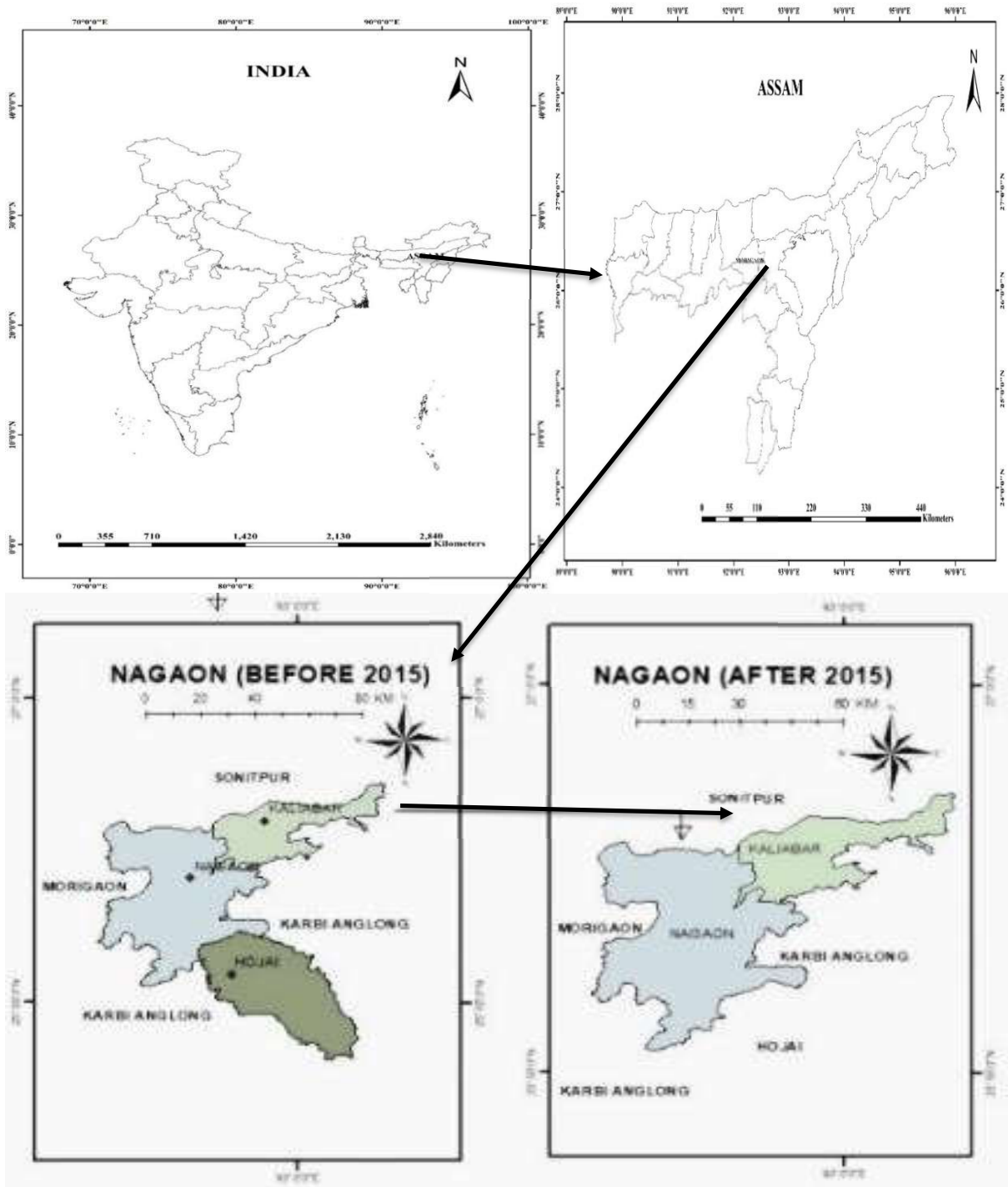


Figure: Location map of the study area

### 3.Objectives:

- a. To analyze the land use patterns of Nagaon district.
- b. To analyze the changes in land use patterns from 2001-2023
- c. To find out the reasons of changes in land use patterns of the district.

### 4.Methodology:

The study based on secondary sources of data. Secondary data are collected from following sources: Statistical handbook of Assam 2002 and 2020; Nagaon district land use report of 201920.

The following methods are applied the present study-

- i. Growth rate:  $(\text{current year} - \text{base year}) / \text{base year} \times 100$ . Growth rate are calculated in MS. Excel.
- ii. Location coefficient:  $X / Y$

Where, X means

Area of crop X in the district

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Area of all crops in the district

Y means

Area of crop X in the states

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Area of all crops in the state

A higher value for location coefficient for a district indicates the higher concentration of that particular category of land in that district. It is useful to identify the pattern of distribution of the given category of lands across different regions of a state or district (Deka N et al, 2018).

### 5.Results and Discussion:

“For proper utilization of land resources, a scientific classification of the total land of a country or of a state must be made. The Government of India adopted a classification of land use in 1950 in the line with the recommendation of the Standing Advisory Committee on Statistics, F.A.O. According to this classification, land in Assam is classified under nine categories, viz., i) Forest, ii) Barren and uncultivable lands, iii) Lands put to non-agricultural uses, iv) Cultivable waste lands, v) Permanent pastures and grazing lands, vi) Lands under miscellaneous tree crops and groves, vii)

Current fallows, viii) Fallow lands other than current fallows, and ix) Net area sown.” (Das M M, 2012).

**a.Land use Patterns of Nagaon district in 2001-02:** In 2001-02, the geographical area of the district was 383100 hectares . The forest area occupied an area of about 90342 hectares ( 23.58%), net sown area was 232837 hectares (60.77%) and non agriculture land use was 31472 hectares (8.21%). The major non agriculture land use specially to residential settlement, building constructions, market complexes, shopping centers and recreational areas. Besides the miscellaneous trees and groves area use was 11189 hectares ( 2.92%), permanent pastures and other grazing land areas 9966 hectares ( 2.60%) , culturable waste land was 3833 hectares (1.00%), fallow land areas 8862 hectares ( 2.31%) and barren and uncultivated land areas 22529 (5.88%) (Table:.1). Thus the land use patterns of Nagaon district was dominated by mainly agriculture land use, because majority of the population of the district were engaged in agricultural activities for their livelihood during that time.

Table 5.1: Land use Patterns of Nagaon district in 2001-02

Source: statistical hand book of Assam, 2023

**b.Land use patterns of Nagaon district in 2022-23 :** In 2022-23,the geographical areas was 397300 hectares in the Nagaon district. The net sown area use was 205125 hectares ( . 51.62%) of the district. It signifies that the district is still dominated by agriculture land , residential areas, market areas and recreational areas etc. Where the district occupied current fallow land use was 5845 hectares ( 1.47%), forest areas 77580 hectares ( 19.52%), other current fallow land areas 6002 hectares (1.51%), and non agriculture land area use was 46569 hectares ( 11..72%). The non agriculture land area use specially to residential houses, buildings, settlements, transport network is and market places. The under the miscellaneous trees and groves area occupied 11041 hectares (2.77%) while the permanent pasture area use was 13654 hectares ( 3.46%) and barren & uncultivated area about 17319 hectares ( 4.35%) respectively. Table 5.2, show the land use patterns of Nagaon district in 2022-23

Table 5.2: Land use patterns of Nagaon district in 2022-23

| Particulars                          |                   | Area ( hectares) | Percentage (%) |
|--------------------------------------|-------------------|------------------|----------------|
| Total geographical area according to | Professional area | 397300           |                |
|                                      | Village papers    | 397300           |                |
| Forest                               |                   | 77580            | 19.52          |

| Particulars                              |  | Area ( hectares) | Percentage (%) |
|--|--|------------------|----------------|
| Geographical area                        | Reported area                                  | 383100           |                |
|  | Village paper                                  | 383100           |                |
| Forest                                   |  | 90342            | 23.58          |
| Not available for cultivation            | Area under non agricultural uses               | 31472            | 8.21           |
|  | Barren and uncultivable land                   | 22529            | 5.88           |
| Other uncultivated excluding fallow land | Permanent pasture & other grazing land         | 9966             | 2.60           |
|  | Land under miscellaneous trees and groves etc. | 11189            | 2.92           |
|  | Culturable waste land                          | 3833             | 1.00           |
| Fallow land                              | Fallow land other than current fallow          | 2057             | 0.53           |
|  | Current fallow                                 | 6805             | 1.77           |
| Net sown area                            |  | 232837           | 60.77          |
| Total cropped area                       |  | 364518           | 93.92          |
| Area sown more than once                 |  | 131681           | 34.37          |
| Not available for cultivation            | Area under non agricultural uses               | 46569            | 11.72          |

|  |   |        |       |
|--|---|--------|-------|
|  | Barren & uncultivable land                | 17319  | 4.35  |
| Other uncultivated excluding fallow land | Permanent Pastures & other grazing land   | 13654  | 3.46  |
|  | Land under Miscellaneous tree groves etc. | 11041  | 2.77  |
|  | Cultivable waste land                     | 13324  | 3.35  |
| Fallow land                              | Fallow land other than current fallow     | 6002   | 1.51  |
|  | Current fallow                            | 5845   | 1.47  |
| Net area sown                            |   | 205125 | 51.62 |
| Total cropped area                       |   | 339496 | 85.45 |
| Area sown more than once                 |   | 144371 | 3.38  |

Source: Statistical hand book of Assam, 2023

### c.Land use Patterns from 2001-02 to 2022-23

From 2001-02 to 2019-20, The net sown area of the district has decreased -181888 hectares because increasing population growth , increases residential settlement and dividing the district is the main reason of the district. The forest area changed during that time and the 12762 hectares area decrease in 2001 to 2020. The non agriculture land has been increased of -15097 hectares, the reason of which could be developed to large-scale establishment of settlement, roadways, market places, shopping complex and recreational places etc. On the other hand, Permanent pastures & other grazing land has increased, Cultivable waste land, fallow lands have increased significantly. The area sown more than once has decreased significantly. It means pressure of population increase or increase the pressure of non agricultural activities on agricultural land. The net sown area more than once has decreased during 2001-02 to 2019-20. From the above analysis, it is clear that pressure of non agricultural activity increases on agricultural land.

Table 5.3: Changes of land use patterns of Nagaon district 2001 to 2010

| Particulars | 2001-02 | 2019-20 | Increase/<br>decrease area | Growth rate (%) |
|-------------|---------|---------|----------------------------|-----------------|
| Forest      | 90342   | 77580   | 12762                      | 14.12           |

|   |        |        |         |         |
|---|--------|--------|---------|---------|
| Area under non agricultural uses          | 31472  | 46569  | -15097  | -47.96  |
| Barren & uncultivable land                | 22529  | 17319  | 151390  | 671.97  |
| Permanent Pastures & other grazing land   | 9966   | 13654  | -3688   | -37.00  |
| Land under Miscellaneous tree groves etc. | 11189  | 11041  | 148     | 1.32    |
| Cultivable waste land                     | 3833   | 13324  | -9491   | -247.61 |
| Fallow land other than current fallow     | 2057   | 6002   | -3945   | -191.78 |
| Current fallow                            | 6805   | 5845   | 960     | 14.10   |
| Net area sown                             | 232837 | 205125 | -181888 | -78.11  |
| Total cropped area                        | 364518 | 339496 | 25022   | 6.86    |
| Area sown more than once                  | 231681 | 13437  | -12690  | -108.63 |

Source: Statistical hand book of Assam 2002 and 2023

#### **d.Dynamic distribution of land use of the Nagaon district**

The location coefficient provided the information about dynamics of distribution of different categories of land in Nagaon district. Table 5.4 indicates that the highest concentration of land was found in Assam for land under Area sown more than once (2.08), followed by total cropped area (1.68), Cultivable waste land(1.63), Permanent pasture and grazing land (1.56), Fallow land other than current fallow (1.19), Miscellaneous trees and groves area (0.99), Current fallow (0.98), Forest (0.83), Area under non- agriculture land(0.70) and Barren and uncultivated land (0.28).

Table 5.4:Dynamics of distribution of different categories of land in Nagaon district, 2019-20

| Particulars                        | Nagaon | Assam   | Location coefficient |
|------------------------------------|--------|---------|----------------------|
| Geographical Area                  | 397300 | 7843800 |                      |
| Forest                             | 77580  | 1852695 | 0.83                 |
| Area under non - agricultural uses | 46569  | 1304952 | 0.70                 |



|   |        |         |      |
|---|--------|---------|------|
| Barren &<br>Uncultivable land                   | 17319  | 1217177 | 0.28 |
| Permanent & pastures<br>Other grazing land      | 13654  | 172718  | 1.56 |
| Land under<br>Miscellaneous<br>tree groves etc. | 11041  | 219349  | 0.99 |
| cultivable waste land                           | 13324  | 160937  | 1.63 |
| Fallow land other than<br>current fallow        | 6002   | 99152   | 1.19 |
| Current fallow                                  | 5845   | 117353  | 0.98 |
| Net area sown                                   | 205125 | 2699467 | 1.50 |
| Total cropped area                              | 339496 | 3974812 | 1.68 |
| Area sown more than<br>once                     | 134371 | 1275345 | 2.08 |

Source: Statistical hand book of Assam ,2023

## 6.Findings:

- The study area dominated 50% geographical area and the agriculture activities is the main occupation of the majority people in Nagaon district. The economy in Nagaon district is based on agriculture sector.
- Area under non-agriculture land has increased during the study period in Nagaon district. It indicates that due to mainly increase of population pressure.
- The negative growth rate of the Net area sown because due to the increasing of non agricultural work and pressure of population of the study area.
- The present study are analyze the highest concentration of land was found in Assam for land under area sown more than once (L.Q- 2.08).

**7.Conclusions:**

- Scientific and systematic land use policy should be applied in the Nagaon district . Population pressure and migration is the main reason of food crisis of the study area.
- Government should be focus on implement of land use policy of the Nagaon district.
- A rapid growth of population and non-agricultural works have put in major effect on the land use change of the district. So government should be control the population growth rate of the district.

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