International Journal of Interdisciplinary Research in Science Society and Culture(IJIRSSC)
Vol: 12, Issue:1, (June Issue), 2026
ISSN: (P) 2395-4345, (O) 2455-2909
Impact Factor: 4.575

FOREST COVER OF ASSAM WITH SPECIAL REFERENCE TO KAMRUP AND KAMRUP METROPOLITAN DISTRICTS

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ABSTRACT :
Assam's forests cover over 36% of its geographical area with Land Use and Land Cover predominantly dominated by dense and open forest canopies. These vital ecosystems act as a critical carbon sink and regulate the region's climate and water retention. Assam's total recorded forest area is 26,832 sq.km which accounts for roughly 34.21% of the state's total land. Land use and land cover in Kamrup and Kamrup Metropolitan districts is characterized by a mix of moist mixed deciduous forests, agricultural lands and rapid urban sprawl particularly around Guwahati. Deforestation and urbanization have steadily reduced the district's natural forest cover in recent decades. It constitutes forest cover area between 25% and 27% of the district's total geographical area. Urban settlements and Built-up land are concentrated primarily in the Kamrup Metro area (Guwahati) which expanding industrialization and urban agglomeration are actively encroaching on forest fringes and open areas. Agricultural land primarily consists of crop lands located in valleys and peripheral rural plains. However, these are increasingly being converted to commercial plantations and residential infrastructure. Wasteland and scrubland include sheet rock areas and land with or without scrub that is slowly being absorbed by urban expansion and infrastructure development. Water bodies and wetlands is crucial ecological features like the Deepor Beel wildlife sanctuary serve as vital wetland buffers but face severe ecological stress from surrounding urban land use.

Keywords: *Forest, Land Use, Land Cover, Kamrup District, Kamrup Metropolitan District*

I.Introduction:

A forest is a large, densely vegetated area dominated by trees and other woody plants, forming a complex ecosystem that supports diverse plant and animal life. Forests play a vital role in regulating the global climate by absorbing carbon dioxide and producing oxygen, sustaining biodiversity and providing essential resources like food, water and fuel for millions of people. Forests cover approximately 31% of the Earth's land surface, totalling around 4.06 billion hectares. This coverage is unevenly distributed with

more than half of the world's forests. More than one-third of forests are "primary forests" which are naturally regenerated with native species and have not been significantly disturbed by human activity. India's total forest and tree cover has reached 25.17% of the country's geographical area, which is equivalent to 827,357 square kilometres, according to the PIB and Drishti IAS. This includes 715,343 square kilometers (21.76%) of forest cover and 112,014 square kilometers (3.41%) of tree cover. The latest India State of Forest Report (ISFR) 2023, published by the Forest Survey of India (FSI) indicates a positive shift in forest and tree cover despite growing environmental pressures. In Kamrup district, the total forest cover is 485.80 sq km, representing about 31.03% of its geographical area according to the 2023 assessment by the NER Databank. For Kamrup Metropolitan district, there is a slightly higher percentage of forest cover with 241.05 sq km and around 48.17% of its land as of the 2023 assessment. Kamrup and Kamrup Metropolitan are two distinct districts in Assam. Kamrup includes rural and suburban areas, while Kamrup Metro houses the urban center of Guwahati. Both are rich in natural reserves and protected forest lands. Kamrup district which is located along the foothills and sprawling sal and mixed deciduous forests. It includes major forests like Garbhanga reserve forest (which is also shared with Kamrup Metro), Rani reserve forest (It is also known for Vulture Conservation Breeding Centre), Kulsi reserve forest, Talimara reserve forest, Mayong Hill reserve forest, Mataikhal reserve forest. Kamrup Metro encompasses highly biodiverse sanctuaries and city-adjacent reserve forests. It includes protected areas like Amchang wildlife sanctuary, Deepor Beel wildlife sanctuary (A prominent wetland bird sanctuary in Guwahati), Garbhanga reserve forest, Rani reserve forest, Fatasil reserve forest, Motapahar reserve forest, Sarania reserve forest, Jalukbari reserve forest and Gotanagar reserve forest.

II. Objectives of the Study:

The present study has been undertaken with the following objectives:

1. To study the present status of forests in Kamrup and Kamrup Metropolitan districts.
2. To detect the forest cover changes in Kamrup and Kamrup Metropolitan districts.
3. To study the conservation strategies and government policies in the forest cover area of Kamrup and Kamrup Metropolitan districts.

III.Methodology:

The research study is based on the forest cover of assam with special reference to kamrup and kamrup metropolitan districts. The study has been conducted on the basis of secondary source of information. In this study, GIS based analysis and statistical tool has been used such as GIS software,

Maps, Landsat image, LISS image, Google Earth etc. Satellite imagery and GIS tools has been used to know about the forest cover changes of the research area.

IV. Study Area

The research is focused on the forest cover of Kamrup and Kamrup Metropolitan districts of Assam. Assam is a state in northeastern India and south of the eastern Himalayas along the Brahmaputra and Barak River valleys. Assam covers an area of 78,438 square kilometres.

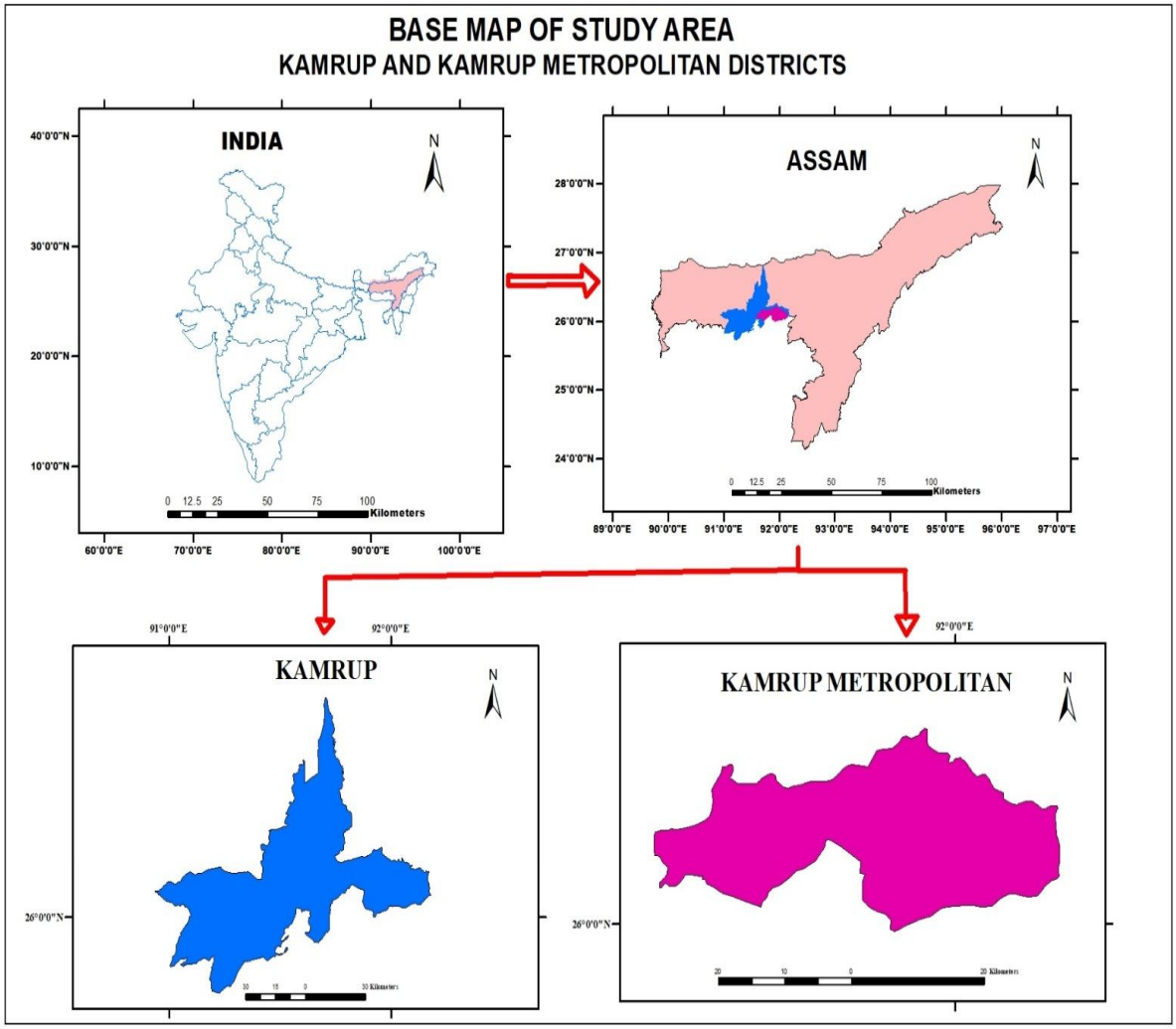

Fig 1: Study Area Map Of Kamrup And Kamrup Metropolitan Districts Of Assam

It is the second largest state in northeastern India by area and largest in population with more than 31 million inhabitants. The state is bordered by Bhutan and Arunachal Pradesh to the north, Nagaland and Manipur to the east, Meghalaya, Tripura, Mizoram and Bangladesh to the south and West Bengal to the west. The Assam state is extending from 22 19' to 28 16' North Latitude and 89 42' to 96 30' East Longitude. Kamrup District is an administrative district in the state of Assam in India formed by dividing the old kamrup district into two in the year 2003 and other being Kamrup Metropolitan district named after the region it constitutes. Kamrup district occupies an area of 4,345 square kilometres. Kamrup district is situated between 25 46' and 26 49' North Latitude and between 90 48' and 91 50' East Longitude. This district along with Nalbari, Barpeta, Kamrup Metropolitan, Bajali and Baksha districts has been created from the undivided kamrup district. Rangiya is the Sub-District of Kamrup. The present Kamrup district has its headquarters at Amingaon.Kamrup Metropolitan district is one of the 35 districts in Assam state in north-eastern India. The administrative headquarters of Kamrup Metropolitan district is at Guwahati city. The district occupies an area of 1527.84 square kilometres. Kamrup metropolitan district is located between 25 43' and 26 51' N latitude and 90 36' and 92 12'E longitude.

V.Review of Literature

Although the volumes of literature on forest cover changes contributed by the scholars of developed and developing countries are vast. Some important ones are as follows:

Rajveer et al. (1999) assess the Land use/Land cover changes cover a time of 30 years were contemplated utilizing far off detecting innovation in a piece of Gohparu block, Shahdol region of Madhya Pradesh. Land use/Land cover maps were prepared by visual interpretation of two period remotely sensed data. Post-classification comparison technique was adopted for this purpose. The loss of vegetation cover was estimated to be 22% and 14% of the land was found to have been transformed into wasteland between 1967 and 1966. Overall rate of change was found to be 1.8 per year during this period.

Jha et al. (2000) conducted a study on the estimated changes in forest cover between 1973 and 1995 in the southern part of the western ghats using satellite data. The study area of approximately 40,000 square kilometres showed a loss of 25.6% in forest cover over 22 years.

The dense forest was reduced by 19.5% and open forest decreased by 33.2%. As a consequence, degraded forest increased by 26.64%. There has been a lot of spatial fluctuation in the example of backwoods misfortune and land use change all through the locale. Our evaluations of deforestation in the locale for the contemporary time frame are the most elevated detailed up until now.

Meenu Rani et al. (2011) focused attention on forests have played a vital role in the economics and civilizing development of the India. Forest management of forest cover, forest types, deforestation rate etc. is essential data for forest management. These data are now being secured applying on GIS and Remote Sensing. The present study focus on the forest management plane of Sariska Tiger Reserve using forest inventory method and geospatial techniques. Forests have the potential to be managed to reduce atmospheric concentration of C02 and thus mitigate climate change. Four forest species types, namely Anogeissuspendula, Boswelliaserrata, mixed Anogeissusbutea and mixed Acacia zizyphus mainly dominant in the forest cover of Sariska Tiger Reserve. The multistage statistical technique with incorporated the satellite data of LANDSAT ETM+ (2006) gives a precise information of vegetation. Satellite remote sensing has played a pivotal role in generating information about forest cover, vegetation type and Landuse changes.

VI. Results and Discussion:

In this study, researcher has adopted for this methodology and as a result of which the following data came into light:

Sl.No.	Names of the forest	Area in sq. km
1.	Rani R.F.	43.70
2.	Garbhanga R.F.	114.64
3.	Fatasil R.F.	6.7
4.	Gotanagar R.F.	1.99
5.	Sarania R.F.	0.79

6.	Jalukbari R.F.	0.97
7.	South Amchang R.F.	15.51
8.	Hengerabari R.F.	6.86
9.	South Kalapahar R.F.	0.71
10.	Amchang WLS	78.64
11.	Khanapara R.F.	9.87
12.	Apricola west	60.72
13.	Marakdola R.F.	14.96
14.	Motapahar R.F.	2.25
15.	Teteligutri R.F.	1.27
16.	Chamata R.F.	0.3
17.	Hohora P.R.F.	4.91
18.	Garowami P.R.F.	5.97
19.	Apricola East P.R.F.	106.11

According to 2015 (International Journal of Science and Engineering Invention) given this data of forest areas of Kamrup Metropolitan district. This given data shows Garbhanga R.F. has the highest forest area of 114.64 sq. km from Guwahati which is situated in the southern part of Assam, bordering the foothills of Meghalaya. It is located very close to the Deepor Bill and because of its location in an urban area it is considered a key wildlife area of Guwahati City.

Further analysis of the forest cover map for the Kamrup Metropolitan district of Assam is shown below**:**

The map shows the forest cover area of the Kamrup Metropolitan district in the years 2003 and 2020.

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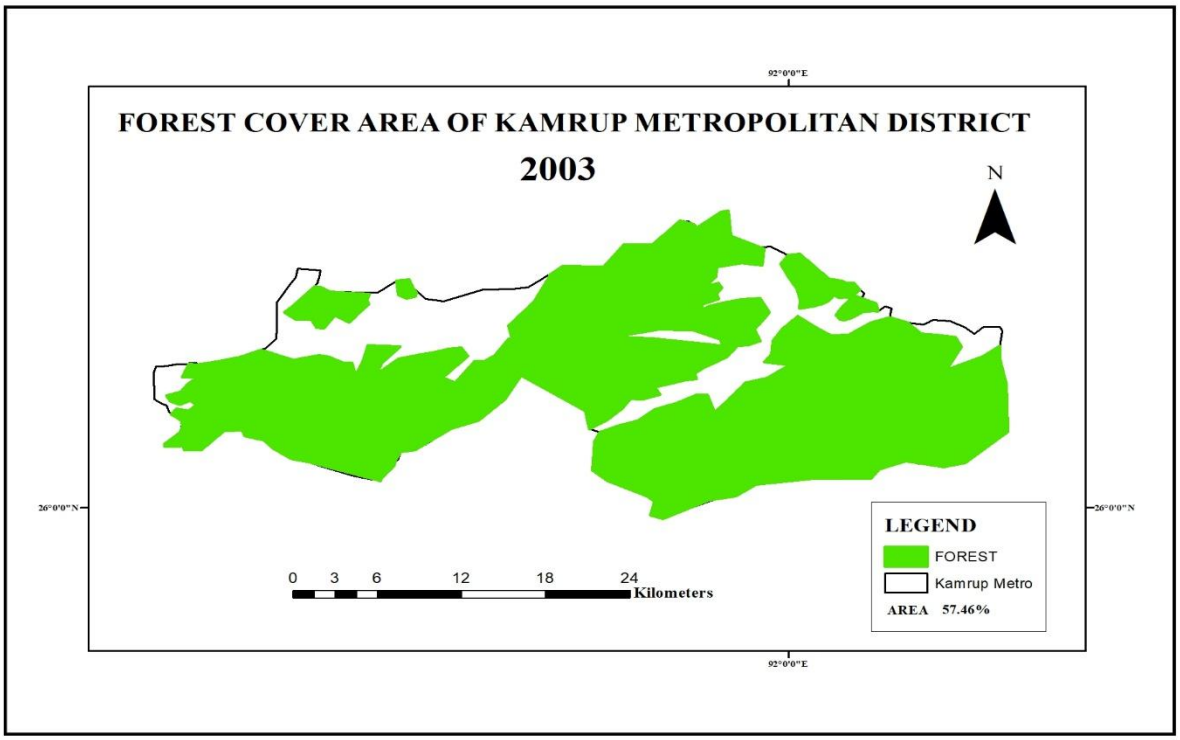

Fig 2: Forest Cover Area Of Kamrup Metropolitan District 2003

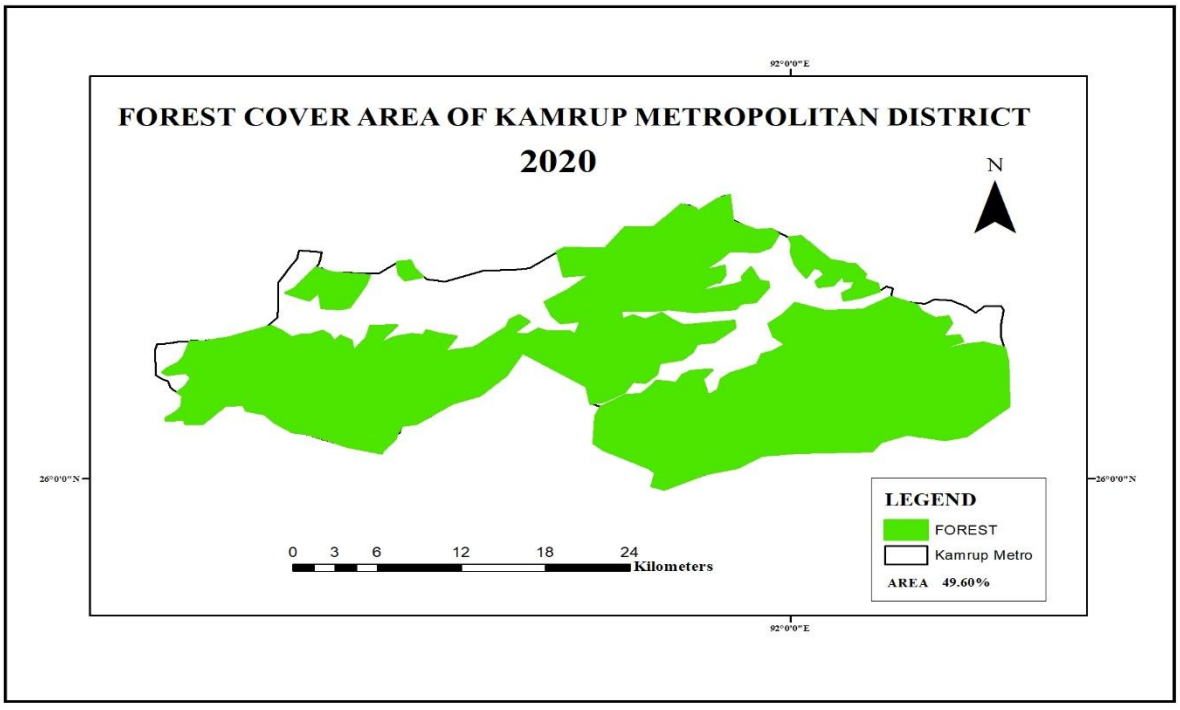

Fig 3: Forest Cover Area of Kamrup Metropolitan District 2020

Based on both map analyses, the results show that the forest cover area was 57.46% in 2003 and is 49.60% in 2020. This is due to the deforestation, shifting cultivation, rapid growth of population etc. In the Kamrup and Kamrup Metropolitan districts of Assam, land use and land cover studies reveal a steady decline in forest cover due to rapid urbanization, agricultural expansion and commercial plantations. Between 1977 and recent years, dense forest cover has reduced significantly, with large areas converting to built-up infrastructure and rubber plantations.

VII. Conclusion:

Forests are vital for the planet's health and human well-being, offering a multitude of benefits including carbon storage, habitat provision, climate regulation and resource provision. We get medicinal plants, timber and many other useful products from forests. Many people live in forests, and forests provide them with food, water, shelter and medicines. Conservation of forests involves controlling deforestation, sustainable land management, forest fire prevention, reforestation, and improvement of farming practices. Forest policies need to adopt the eco-centric principles of communities residing in these forest villages. The government authorities should work with the NGOs and local communities to build sustainable forest-based livelihoods and employment generation. Many wildlife NGOs are working towards conservation of forest like Aaranyak, Assam Wildlife Rescue and Research Organization etc.

To save the fast-depleting forests of Kamrup and Kamrup Metropolitan districts, action must focus on strictly curbing urban encroachment, restoring ecologically critical hills like Fatasil and Garbhanga, which are protecting local wetlands like Deepor Beel, and promoting community-driven afforestation and eco-development initiatives. Authorities must conduct regular, targeted eviction drives in highly threatened urban reserve forests such as Sarania, Fatasil and South Kalapahar to halt illegal settlements. The government upgrades vulnerable reserve forests like Rani and Garbhanga to strictly protected wildlife sanctuaries can prevent illegal logging and restrict commercial real estate expansion. Government should take initiatives active engagement of local and indigenous communities by supporting sustainable agro-forestry,

non-timber forest produce such as bamboo, medicinal plants, honey collection and community-led ecotourism and locals become partners in conservation rather than exploiters. Government should protect surrounding water bodies and eco-zones is critical for local biodiversity. Waste dumping and unauthorized construction in these areas must be immediately halted to maintain the ecological balance and reduce man-animal conflicts. People should report illegal logging and encroachment to the Guwahati Social Forestry Division (Basistha), which oversees urban tree cover and city plantations.

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