



**URBAN EXPANSION AND LOSS OF AGRICULTURAL LANDS: A
CASE STUDY FROM TEZPUR URBAN AREA OF ASSAM****BARUAH S^{1*} AND KAR N²****1:** Research Scholar, Department of Geography, Rajiv Gandhi University, Arunachal Pradesh, India**2:** Professor, Department of Geography, Rajiv Gandhi University, Arunachal Pradesh, India***Corresponding Author: Sameer Baruah: E Mail: sameer.baruah91@gmail.com**Received 19th April 2021; Revised 20th June 2021; Accepted 29th July 2021; Available online 1st Oct. 2021<https://doi.org/10.31032/IJBPAS/2021/10.10.1015>**ABSTARCT**

Relationship of Urban Expansion with Agricultural Lands has now become more visible throughout major cities of the world. Urban Expansion generally occurs over agricultural lands or vacant spaces available in and around the existing cities. The rapid expansion of urban areas reduces the cultivable land in and around the urban areas, and thus leading to shortage of food supply to the urban areas. Cities of developing countries are more vulnerable to this problem than the developed ones because of their fastest growing nature. Tezpur City of Assam is one of the fastest growing urban areas in Assam with 55,084 urban population in 1991 to 1,02,505 population in 2011 with a decadal growth rate of about 35%. Similarly, the existing urban area of Tezpur is 7.10 sq.km. which is expected to cover 126 sq.km. with all its peri-urban areas. Urbanization in Tezpur is so rapid that it has already covered vast surrounding agricultural areas leading to shortage of food supply to the Tezpur urban areas. As a result, food items from other parts are being imported in order to meet the demands of the people of Tezpur urban areas. This led to high cost of the food items that affect mostly the middle and lower income group of people residing in and around the Tezpur urban areas. Thus, the question of Food Security arises, which is likely to be accompanied by other sustainability risks that threatens livelihoods. Governance of urban area expansion thus emerges as a key area for securing livelihoods in agrarian regions.

Keywords: Urbanization, Agricultural Lands, Food Security, Livelihoods

INTRODUCTION

Urbanization, referring to a growth in the proportion of a population living in urban areas, is one of the major social changes sweeping the globe [1]. Urbanization is a complex phenomenon that involves change in multiple dimensions, including a growing percentage of people who live in urban areas; the expansion of built environments; and changing norms, cultures, and ways of living. How urbanization affects food systems is focused on two issues: the physical expansion of urban areas (food supply side) and changes in diet i.e. food demand side [4].

According to the latest estimate and projection released by the Population Division, United Nations, the world's urban population continues to grow at a higher rate than the total population of the world, and 3 billion people or approximately 48% of the world population are now city dwellers [6]. Urbanization is progressing rapidly in the less developed regions and urban population is anticipated to grow an average 2.3% per year in the developing world between 2000 and 2030 [1].

A widely expressed concern about urbanization is that expanding cities will result in widespread loss of croplands. This loss of croplands is characterized by two approaches. First, built-up areas are growing faster than urban populations in

most parts of the world, and therefore, cropland loss is likely to be acute in countries where urban population growth rates are high and the economy is largely agrarian. Thus, the loss of cropland due to urban expansion is likely to be more of a regional problem than global one. Secondly, cities were historically developed in fertile agricultural areas, and therefore, future expansion of built-up areas will probably encroach on productive agricultural land. This has already occurred in India, Vietnam, China, Turkey, and the United States, where urban expansion has resulted in the loss of prime agricultural land, leading to decrease in average crop productivity [4].

Tezpur is the current administrative Head Quarter of Sonitpur district of Assam, which is situated on the north bank of the mighty Brahmaputra River. The city extends from 26°37' N latitude to 92°47' E longitude. The mean elevation of the region is about 79 m above mean sea level. The total area of the proposed study region is 126.60 sq km. (Town and Country Planning, Govt. of Assam, Dispur, Ghy-6).

DATABASE & METHODOLOGY

The entire study is based on both primary and secondary data. Primary data have been collected with well-structured questionnaire. On the other hand, secondary data have been collected from

different journals, magazines, edited book volume, concerned offices like town planning and municipality etc. Moreover, satellite data have been collected from Earth Explorer, USGS. The Land Use and

Land Cover map obtained from USGS Earth Explorer are processed with GIS Software. The entire Land Use Land Cover (LULC) maps have been obtained from the sources as following in Table.

S. No.	Image Type	Date	Satellite	Path	Row	No of Bands
1	LULC, 1990	16-01-1990	LANDSAT 5	136	41	7
2	LULC, 2000	24-03-2000	LANDSAT 7	136	42	9
3	LULC, 2010	01-03-2010	LANDSAT 7	136	42	9
4	LULC, 2020	04-02-2020	LANDSAT 8	136	42	11

Based on the above source of data, the entire study has been processes and prepared systematically.

RESULTS & DISCUSSION

Expansion of Tezpur Town

Urban land expansion coincides with the loss of income and displacement of peri-urban livelihoods [5]. Urban expansion is highly likely to occur in areas currently under cultivation in future. Globally, 46 Million Hectare of croplands in 2000 is located in areas that are expected to be urbanized by 2030, corresponding to 3.2% of existing cultivated land [2]. Tezpur is one of the fastest growing cities of Assam. Urbanization in Tezpur is so rapid that within a short period of time it would cover vast surrounding areas. Due to the expansion of Tezpur, agricultural lands are getting smaller leading to shortage of food supply to the Tezpur urban areas.

Urbanization and the expansion of Tezpur City are well reflected from the analysis of its Demographic Profile as well as Land Use pattern. The population of

Tezpur Municipality and its surrounding areas has been increasing continuously. In 1961, the population of Tezpur Municipality region was only 24,159, but it has been creased to 1,02,505 in 2011. Similarly, population of peri-urban areas of Tezpur has also been increasing. In 1961, the population of Tezpur Master Plan area including the municipality region was 76,100, but it has been increased to more than 3 lakh in 2011 with a decadal growth rate of 35% percent (Table 1).

Similarly, the existing as well as future land use pattern (estimated by Town & Country Planning Office, Tezpur) reflects how Tezpur is expanding at the cost of its fertile agricultural lands (Table 2).

The existing land use pattern of the region is emphasizing more and more for the residential use and agricultural use. On the other hand, industrial and commercial areas find few places in the existing land use pattern of the region.

A future land use pattern has been proposed for the Tezpur area 2031. In the new land use pattern residential sector has given more emphasis that contributes 24.83% of the total land use of the region. The proportion of areas for residential use has increased in the future land use pattern. On the other hand, the areas for agriculture & forest sectors have decreased in the proposed land use scenario (Table 3).

From the existing and proposed land use scenario of the Tezpur city region, it has been found that most of the lands of the region are proposed to be devoted for the residential use. Due to expansion of residential area, the proportion of agricultural and forest land have been decreasing. Due to this fact, urban area of the region will face scarcity of food items in near future.

Loss of Agricultural Lands

Analysis of the existing (Table 2) as well as future land use pattern (Table 3)

reflects increasing area of Built up zone and declining of agricultural and forest areas. The present areas of agricultural and forest contributes about 49% of the total geographical area. This portion has already been estimated as only 37% in future (2031) with a loss of about 12% agricultural and forest lands, indicating the expansion of town over the lands that are currently under forest and agriculture. A GIS based analysis on the expansion of Tezpur in different time periods and loss of agricultural lands has been made (Figure 1, 2, 3, 4).

The entire study spreads over a time span of 30 years (1990-2020). In this long span of time, significant changes have been observed in different land use categories of Tezpur region. The most important changes have been observed in the categories of Built up areas, River & Water Bodies and Agriculture (Table 4).

Year	Population of Tezpur Municipal Area	Population of Tezpur Master Plan Area Including Municipality Area (In Lakh)	Decadal Growth rate (%)
1961	24,159	0.76	
1971	39,870	1.03	35.86
1991	55,084	1.61	55.58
2001	80,576	2.28	38.50
2011	1,02,505	3.11	35.00

Source: Town & Country Planning Department, Tezpur, Assam

Sl. No	Land Use Category	Area (Hect.)	% to Total Area
1	Residential Use	2531.08	19.99
2	Commercial Use	217.24	1.72
3	Industrial	155.93	1.23
4	Public & Semi-Public	1358.25	10.73
5	Parks & Play Ground	40.64	0.32
6	Transport & Communication	978.39	7.73
7	Agriculture & Forest	6249.34	49.36
8	Water Bodies	693.34	5.48
9	Low Laying & Hilly Areas	435.5	3.44
	Total Planning Area	12659.71	100.00

Source: Town & Country Planning Office, Tezpur, Assam

Sl. No	Land Use Category	Area (Hect.)	% to Total Area
1	Residential Use	3143.83	24.83
2	Commercial Use	276.92	2.19
3	Industrial	387.69	3.06
4	Public & Semi-Public	1667.11	13.17
5	Parks & Play Ground	276.92	2.19
6	Transport & Communication	1010	7.98
7	Agriculture	3112.12	24.58
8	Green Belt Zone	1656.28	13.08
9	Water Bodies	693.34	5.48
10	Low Laying & Hilly Areas	435.5	3.47
	Total Planning Area	12659.71	100.00

Source: Town & Country Planning Office, Tezpur, Assam

Land Use Category	Year			
	1990	2000	2010	2020
	Area (Sq.Km)	Area (Sq. Km)	Area (Sq.Km)	Area (Sq.Km)
Built up Zone	56.42	77.8	82.62	91.55
Agriculture	77.35	67.39	54.54	47.73
Water Bodies	20.57	2.57	11.71	5.1

Source: Calculated from LANDSAT Satellite Images

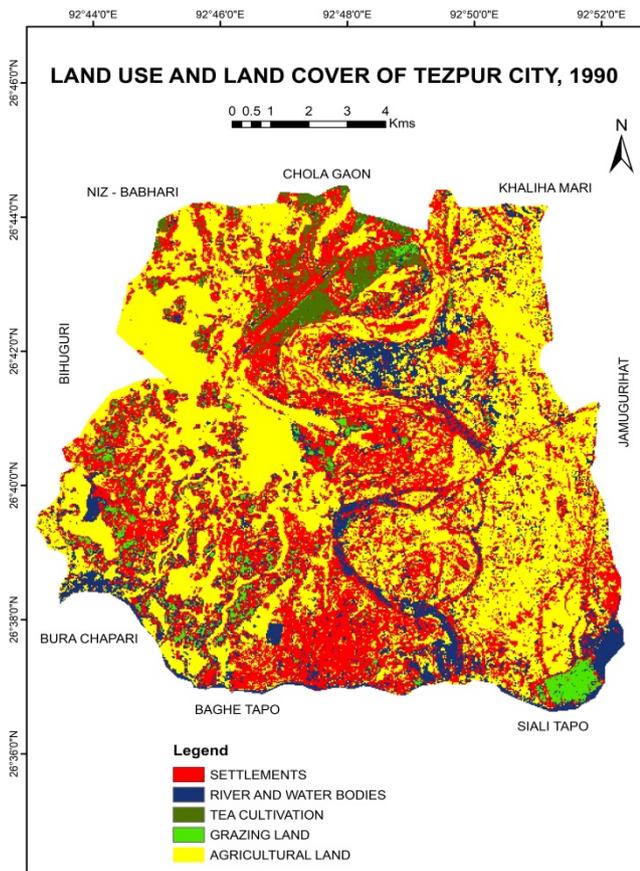


Figure 1: LULC of Tezpur, 1990

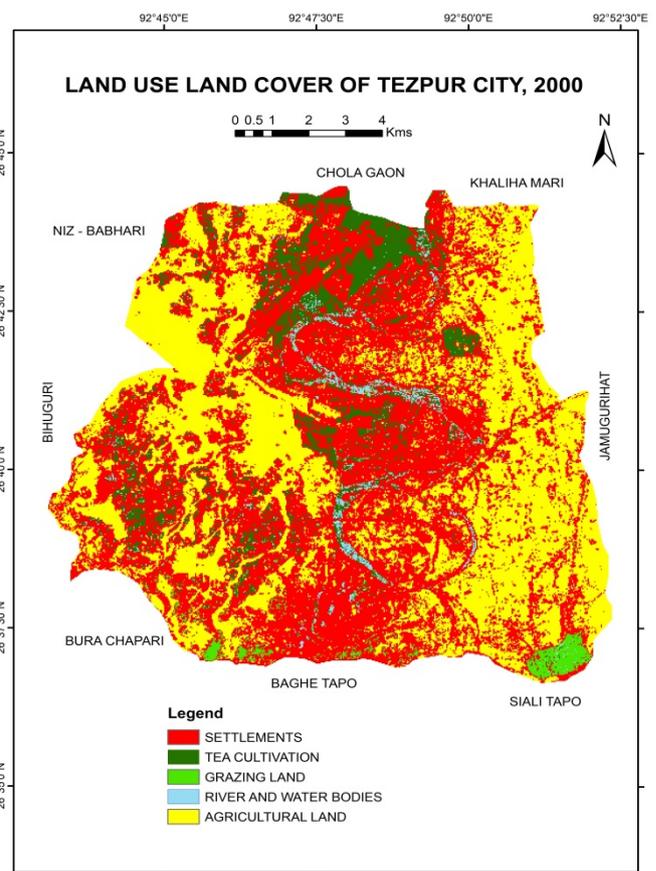


Figure 2: LULC of Tezpur, 2000

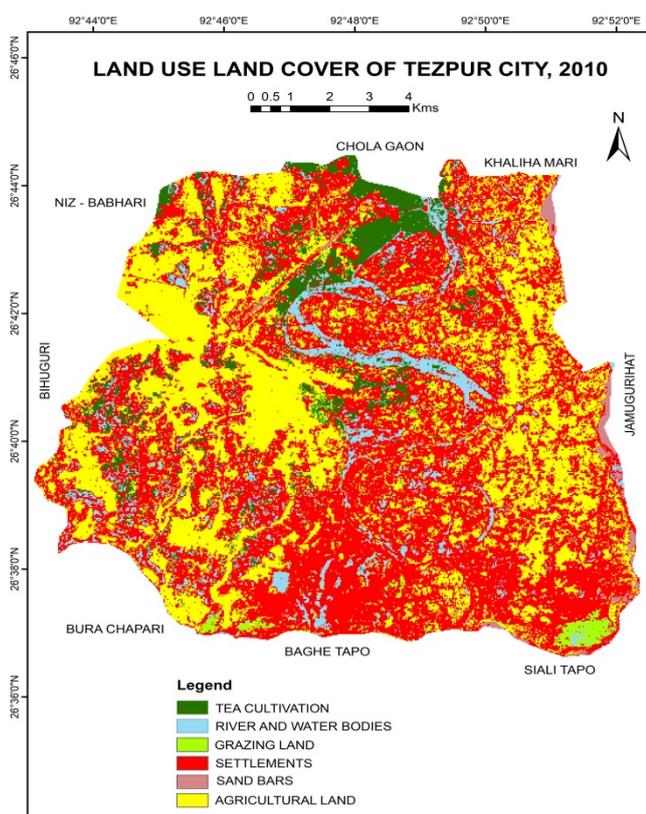


Figure 3: LULC of Tezpur, 2010

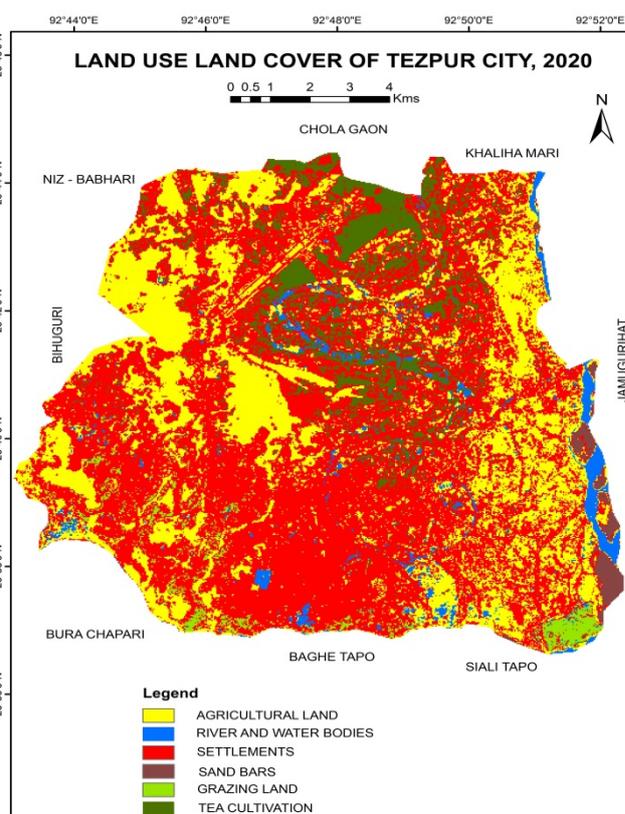


Figure 4: LULC of Tezpur, 2020

From the above figures, it has been observed that Tezpur town is spreading towards northern and south-eastern direction. Most of the agricultural lands and water bodies have been diminished due to the continuous expansion of Tezpur. Continuous expansion of urban area results in the decrease of fertile agricultural lands of 30 Sq.km between 1990 and 2020. On the other hand, the Built-up areas of about 36 Sq.km have been increased during the same period. As a result of that, agricultural area has been replaced by built-up zones, leading to the shortage of food supply to the Tezpur urban area. Consequently, food items from other parts or peri-urban areas

of Tezpur are being imported in order to meet the needs of the people of Tezpur urban areas. This led to high cost of the food items that affect mostly the middle and lower income group of people residing in and around the Tezpur urban areas.

CONCLUSION

Although urban expansion cannot be stopped, with proper management and planning it can be restricted and directed in a desirable and sustainable way, protecting fertile agricultural lands. Their needs to be a stricter implementation of agricultural land conversion laws and greater encouragement for farmers to remain in farming activities, since this would reduce

the incentive for rural to urban migration. Land capability maps should be considered for developing rational land utilization for urban expansion since this would allow urban expansion to be directed towards Class III category lands rather than taking place on Class I land. The multi-purpose use of land should be taken into consideration wherever possible and no piece of land should be allowed, as far as possible, to remain vacant or as wasteland [3].

The next few decades will be a period of large-scale urban expansion, and in many parts of the world, this will take place on prime cropland. The loss of cropland will significantly reduce the total share of national cropland [2]. As most of the cropland expected to be converted is more productive than the global average, efforts will need to compensate for that loss, whether by intensifying remaining cropland or by expanding agricultural production into new areas. In an increasingly interconnected world, the sustainability of urban areas cannot be considered in isolation from the sustainability of resources and livelihoods elsewhere.

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