Section: Research Paper
ISSN 2063-5346

THE IMPACT OF URBANIZATION ON AGRICULTURAL LANDUSE: A CASE STUDY ON TARAKESWAR TOWN IN HOOGHLY DISTRICT, WEST BENGAL

Dr. Pintu Shee
Assistant Professor of Geography
Tarakeswar Degree College
Tarakeswar, Hooghly

ABSTRACT

Urbanization leads to a continuous loss of agricultural land for productive economic activities like infrastructural development for large- and small-scale industries, shops, construction of houses, complex, roads etc and for non-productive economic activities like construction of recreation places, park, swimming pool, playground etc. Human civilization is being upgrading continuously. Standard of living of human is changing with the passing of time. Urbanization and industrialization became the symbol of development of the developing countries like India. As a result, the agricultural land, wasteland, wetland in the urban and peri urban area are decreasing all over the world. Tarakeswar is a small religious town in the Hooghly district of west Bengal, India. This town was formed taking part of five villages and the total administrative area is 3.89 sq.km. So requirement of land is very high in the town and its surrounding fringe area for the development of different types of cultural land scape. This pressure is falling on the agricultural land mainly. This paper discusses about the direct and indirect influence of urbanization on the agricultural land use of Tarakeswar town and its surrounding fringe and rural area during 2001 and 2021 with Spatio-Temporal approach.

INTRODUCTION

Agricultural land use is the result of interaction between man and environment. Besides physical factors such as relief, climate, and soil, agricultural land use is also affected by socio-economic and technological factors. The term "Agricultural land use" denotes the extent of the gross cropped area during the agricultural year under various crops. It is the result of the decision made by the farmers

regarding the choice of the crops and methods for production. Thus, this decision making is based on not only the physical constraints and limitations but also on the farmer's perception of the total environment. His perception of the total environment is related to contents and nature of available information, much of which is based on the traditional approach. The physical as well as cultural environment affects production and growth of crop (Vaidya, B.C, (1997). This study is mainly directed at exploring spatial and temporal changes of the agricultural land use in the Tarakeswar and its adjacent area in the last decadal year 2001-2011 as a result of the process of urbanization.

LITERATURE REVIEW:

Agriculture is the backbone of Indian economy, which provides livelihood to 65 to 70% of the total population and employ about 52% population of the country (Pramanik and Sarkar, 2011). Rapid urban population growth because of continues migration results in increase in the demand of land, particularly for housing, water and energy (Iheke and Ihuoma, 2016). Iheke and Nto (2010) reported that urbanization is an important driving force in migration and community. Urbanization has led to conversion of agriculture land into non agriculture purpose such as factories, buildings, residential or other commercial use (Malik and Ali, 2015). Han and He (1999) found a significant positive relationship between urban population growth and farmland conversion in to cities. They also found that real estate speculation also results in agriculture land conversion. Land conversion (conversion of agriculture land into urban land) has negative impact on the agriculture land. Uncontrolled land conversion has greater impact on environment and agriculture yield. Loss in the prime agriculture land reduces the agriculture crop production, agriculture job employment (Malik and Ali, 2015). Land conversion increases the pressure on shrinking land to feed the increasing population which decline the health of land. These lands were put into uses which benefit the urban people neglecting agriculture use. Land conversion result in fragmentation of land, change in land supply and increment in land values (Iheke and Ihuoma, 2016).

THE STUDY AREA:

The Tarakeswar township area has been selected for study with infield investigation on the changing pattern of wetland landscape around its built-up area. The town is located in the Chandannagar subdivision of Hugli district in Burdwan Division of West Bengal. The town obtained the status of a municipality on 6th August in 1975. At present the area of the town is 3.88km2. This municipal area

Section: Research Paper
ISSN 2063-5346

is divided into 15 wards for administrative purpose. Tarakeswar town is situated at the centre of the Tarakeswar block. This municipality is surrounded by four-gram panchayats. To the north of this town lies the Bhanjipur Gram Panchayet, and to the south, east and west are Ramnagar, Baligory and Santoshpur Gram Panchayets respectively.

OBJECTIVES OF THE STUDY

The main objectives of the study are

•to identify the wardwise distribution of agricultural land in the Tarakeswar municipal area.

•to assess the spatial variation of agricultural land use in Tarakeswar town between 2001 and 2021.

•to assess the temporal changing pattern of the said agricultural land areas.

•to assess the causes behind the gradual decrease of agricultural land in this town.

DATABASE

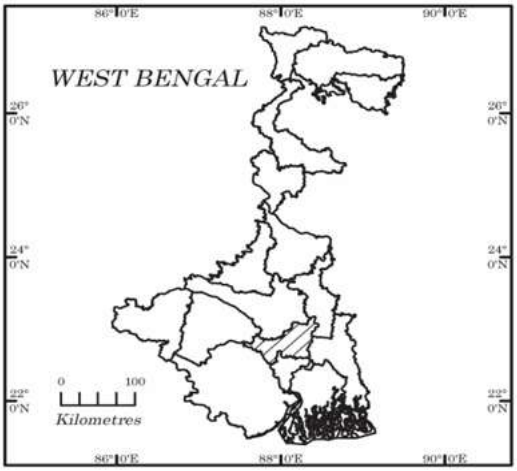
Both primary and secondary data have been used for the study. Secondary sources of data, particularly in the form of Remote Sensing, have been used to detect the changing pattern of agricultural land in the study area while the primary source of data include perception study of the inhabitants and photography from field.

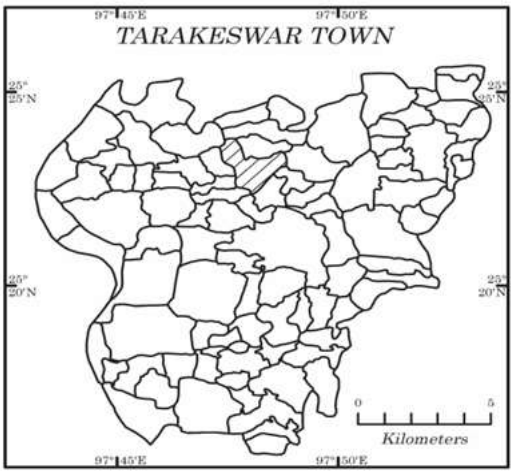
METHODOLOGY

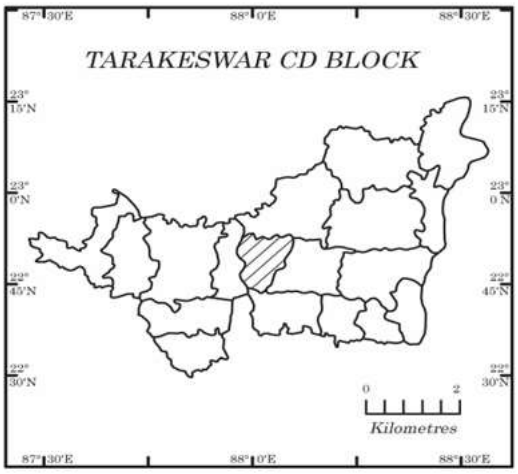
The original data used in this paper is remote sensing data of 2001, 2011 and 2021. By applying G.I.S software, the spatial attributes information of agricultural land has been derived from the Remote Sensing data. Then the attributed data have been processed and calculated by using Excel software and shown in graph and tabular formats.

Section: Research Paper
ISSN 2063-5346

LOCATION MAP OF STUDY AREA







Section: Research Paper
ISSN 2063-5346

TEMPORAL CHANGE OF AGRICULTURAL LAND USE DURING (2001-2021)

Tarakeswar town was formed taking some parts of five rural mouzas in 1975. So an inherited rural environment always exists around this town. About 84.05hectare area is covered by the agricultural land in Tarakeswar town in 2001 which is 21.61% to the total area of the township. But due to rapid urbanization, growing population pressure with building up of government offices, construction of other buildings to satisfy commercial needs the area under agricultural land use decreased to 82.26 hectare (21.15%) in 2011.In the year 2021 the total agricultural land reduced to 80.16 hectare. The total agricultural land decreased to 1.79 hectare in between the decadal year of 2001 and 2011.About 2.1-hectare agricultural land reduced between 2011 and 2021.Total 3.89-hectare agricultural land use decreased between 2001 and 2021.

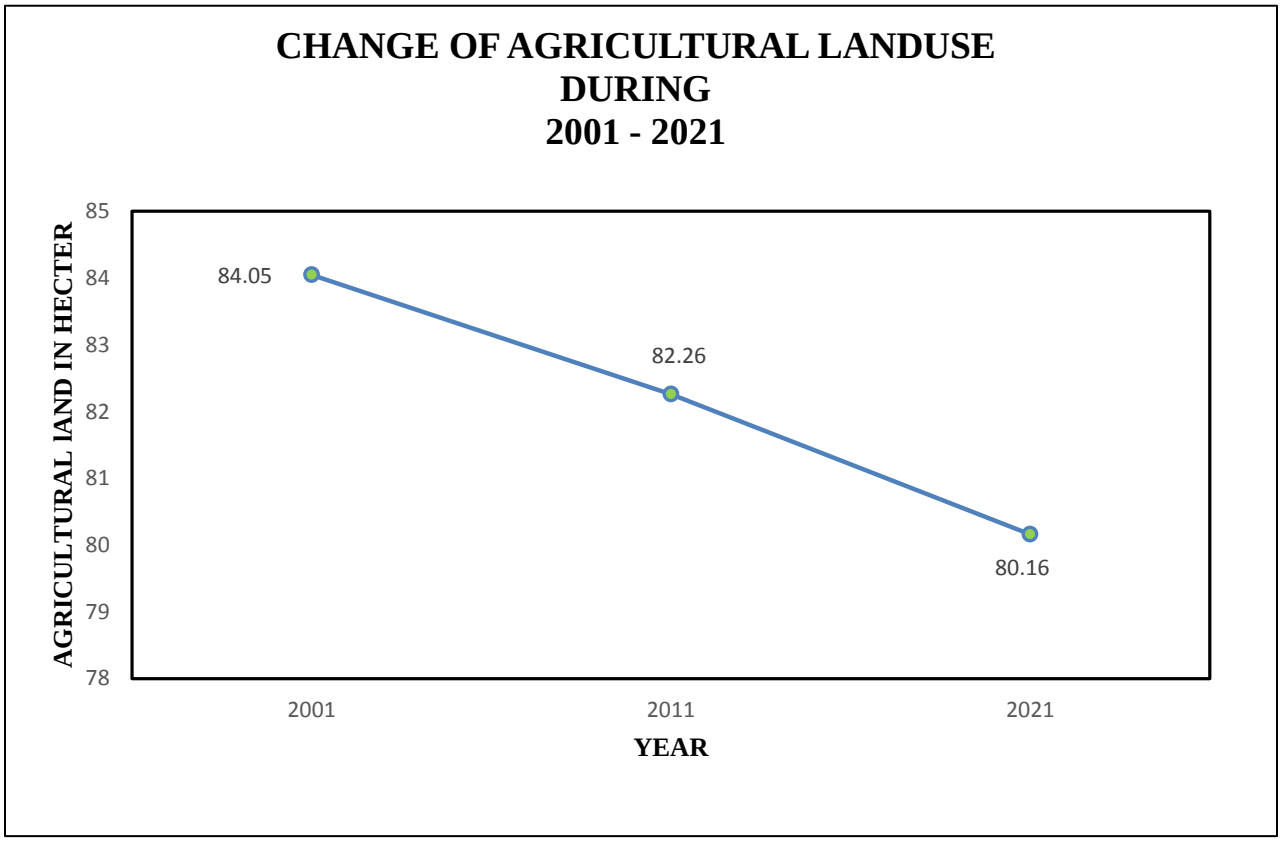
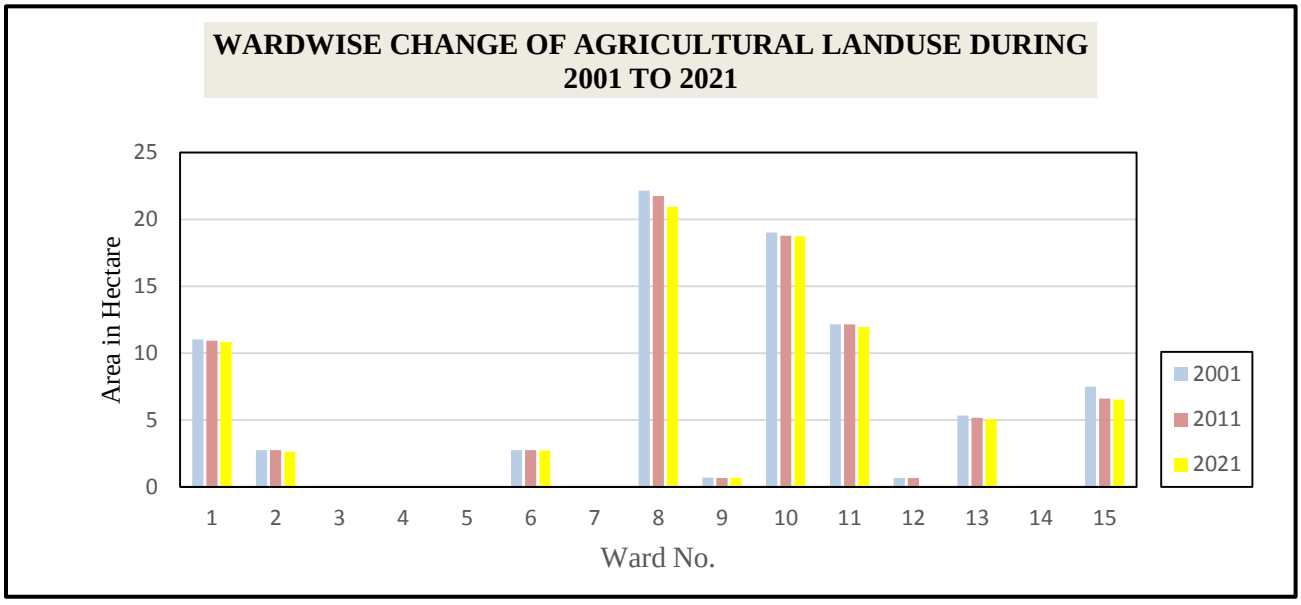


Figure 4.1: Temporal Change of agricultural land during 2001 and 2021

Section: Research Paper
ISSN 2063-5346

SPATIAL ANALYSIS OF AGRICULTURAL LAND CONVERSION (2001-2021)

There was not a single patch of land covered by the agricultural land in Ward Nos. 3, 4, 5,7 and 14 during the period 2001 and 2021 because these wards have become fully urbanized. This is the core region of Tarakeswar township area. According to satellite image data Ward Nos. 2(2.77 ha), 6(2.75 ha),9(0.70 ha) and 1(12.16 ha) area was covered by the agricultural land in 2001.During the last decade 2001 and 2011 no change identified in agricultural land. During the last decade 2011 and 2021 agricultural land decreased in this wards slowly like ward no.2(-0.13 ha),6(-0.01ha),9(-0.01 ha)and 11(-0.19 ha). In some ward like ward no.1,8,10,13 and 15 agricultural land decreased during the last two decades but the rate of decrease was different. In ward no.1,10,13, and 15 the rate of decrease of agricultural land was faster during 2001 and 2011 than the rate of decrease during 2011 and 2021. In ward no.8 the rate of decrease of agricultural land was slower during 2001 and 2011 than 2011 and 2021. The ward like 1,8,10,13 and 15 are situated in the periphery of Tarakeswar town and rural environment exists in that region. The value of agricultural land is lower in this peripheral ward than the core wards. People of surrounding of this town are purchasing agricultural lands of this wards for housing purpose. Some rich people and land brokers are purchasing the peripheral agricultural land in low price and after converting it to vastu they are constructing houses on this land and selling this house with high price. The land purchase and sell became a source of income of some rich.Because Schools, college, market, hospital, health centers, bus stand and rail station located within a communicable distance zeee



Section: Research Paper
ISSN 2063-5346

Table 4.1: Ward wise Changing pattern of agricultural land during (2001 to 2021)

Ward no.	*2001*		*2011*		*2021*		*Change Area in Ha. During 2001-2011*	*Change Area in Ha. During 2011-2021*
	Area in ha.	*Percent area*	*Area in Ha.*	*Percent area*	*Area in Ha*	*Percent area*		
1	11.02	13.11	10.93	13.00	10.83	13.51	-0.09	-0.10
2	2.77	3.30	2.77	3.30	2.64	3.29	0.00	-0.13
3	0.00	0.00	0.00	0.00	0	0	0.00	0.00
4	0.00	0.00	0.00	0.00	0	0	0.00	0.00
5	0.00	0.00	0.00	0.00	0	0	0.00	0.00
6	2.75	3.27	2.75	3.34	2.74	3.42	0.00	-0.01
7	0.00	0.00	0.00	0.00	0	0	0.00	0.00
8	22.14	26.34	21.74	26.43	20.94	26.12	-0.40	-0.80
9	0.70	0.83	0.69	0.84	0.68	0.85	-0.01	-0.01
10	19.01	22.62	18.78	22.83	18.73	23.37	-0.23	-0.05
11	12.16	14.47	12.16	14.78	11.97	14.93	0.00	-0.19
12	0.67	0.80	0.67	0.81	0	0.00	0.00	-0.67
13	5.33	6.37	5.17	6.97	5.09	6.35	-0.16	-0.08
14	0.00	0.00	0.00	0.00	0	0	0.00	0.00
15	7.50	8.92	6.60	8.02	6.54	8.16	-0.90	-0.06
Total	84.05	100	82.26	100	80.16	100	-1.79	-2.10

Source: Computed from satellite image, 2001, 2011 and 2021

Plate 4.1: A water logged paddy field of ward No.10

Plate 4.2: A view of conversion of agricultural land to reidential area

Section: Research Paper
ISSN 2063-5346

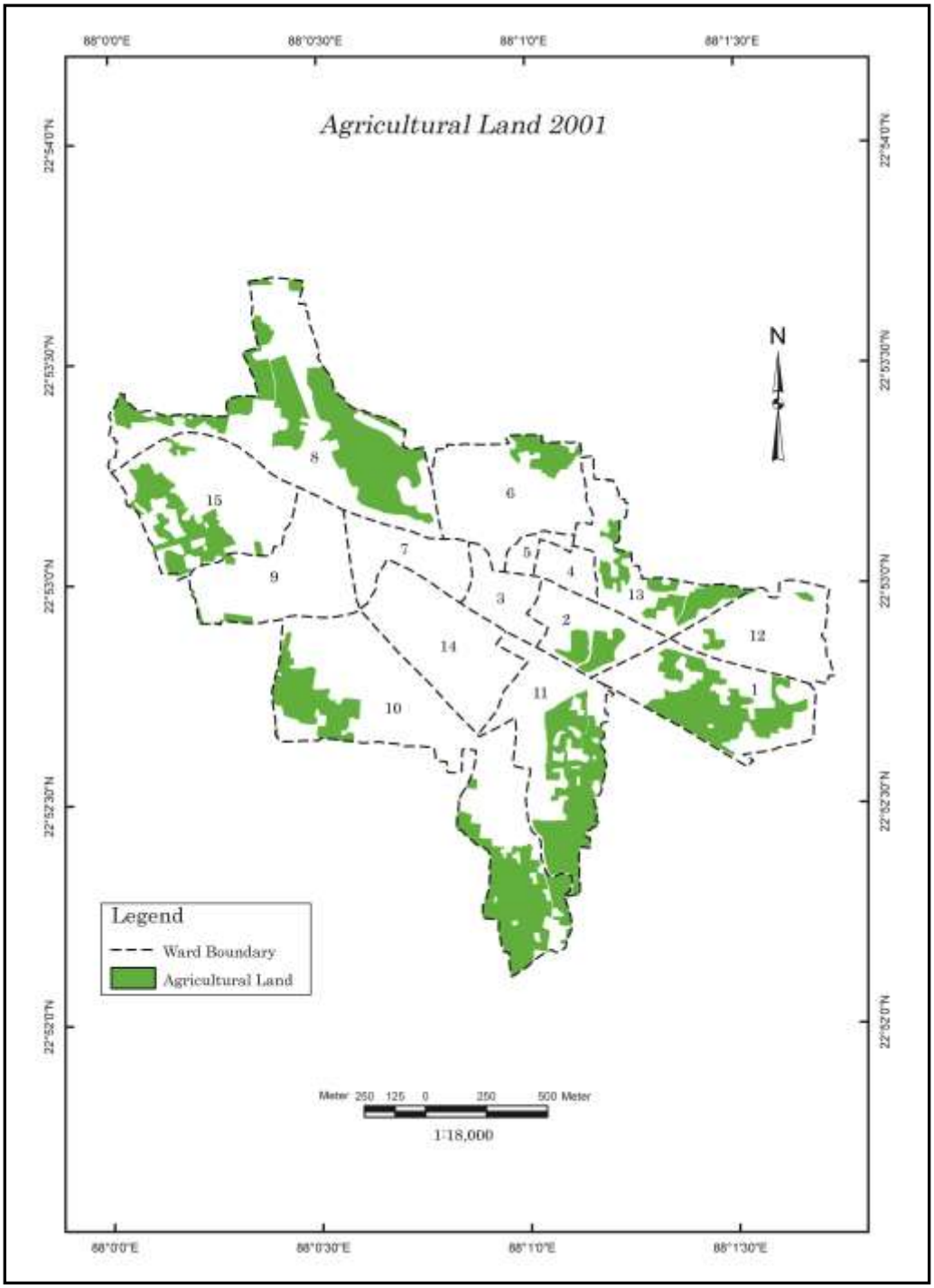


Figure 4.1: Ward wise distribution of agricultural land in 2001

Section: Research Paper
ISSN 2063-5346

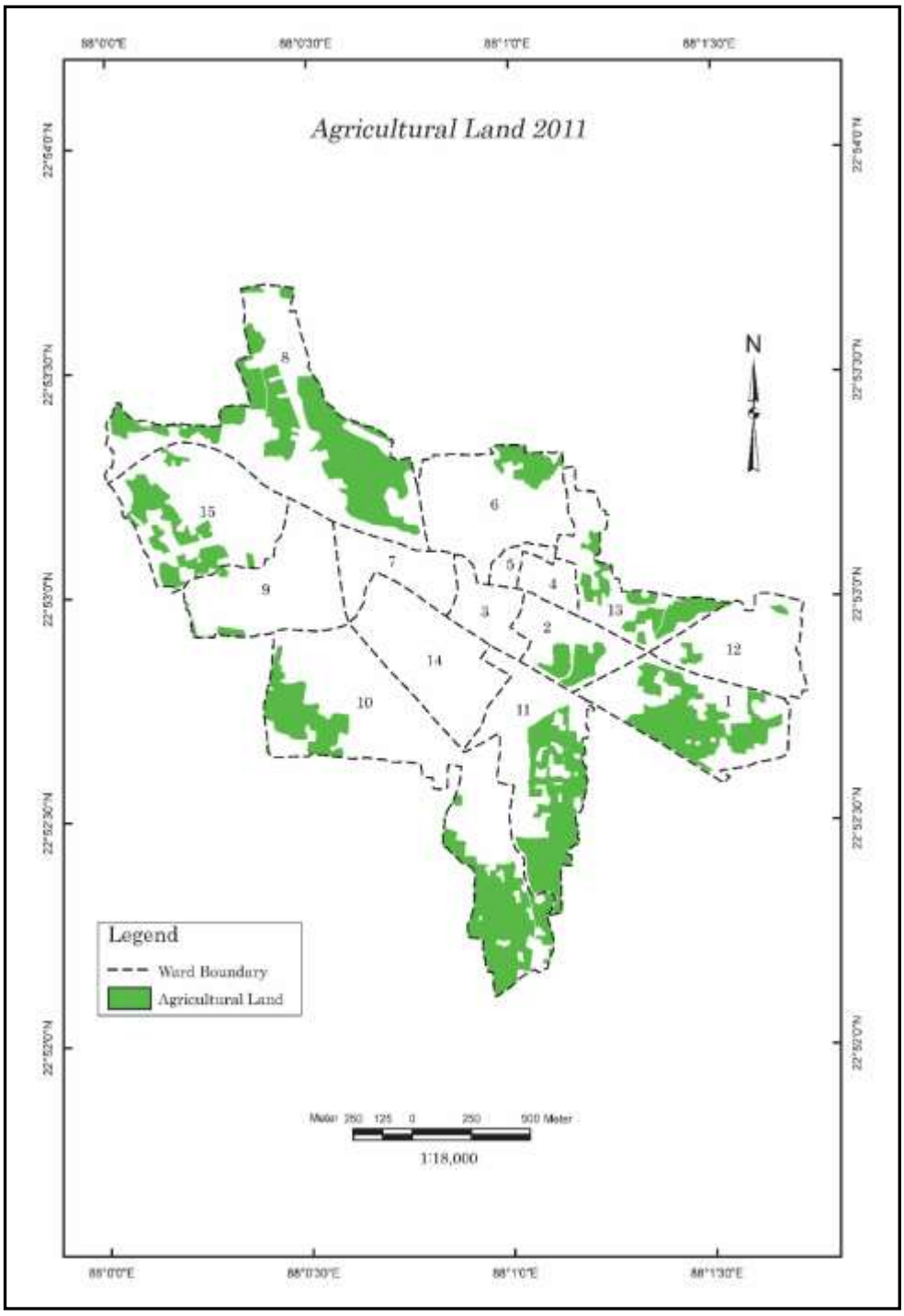


Figure 4.2: Ward wise distribution of agricultural land in 2011

Section: Research Paper
ISSN 2063-5346

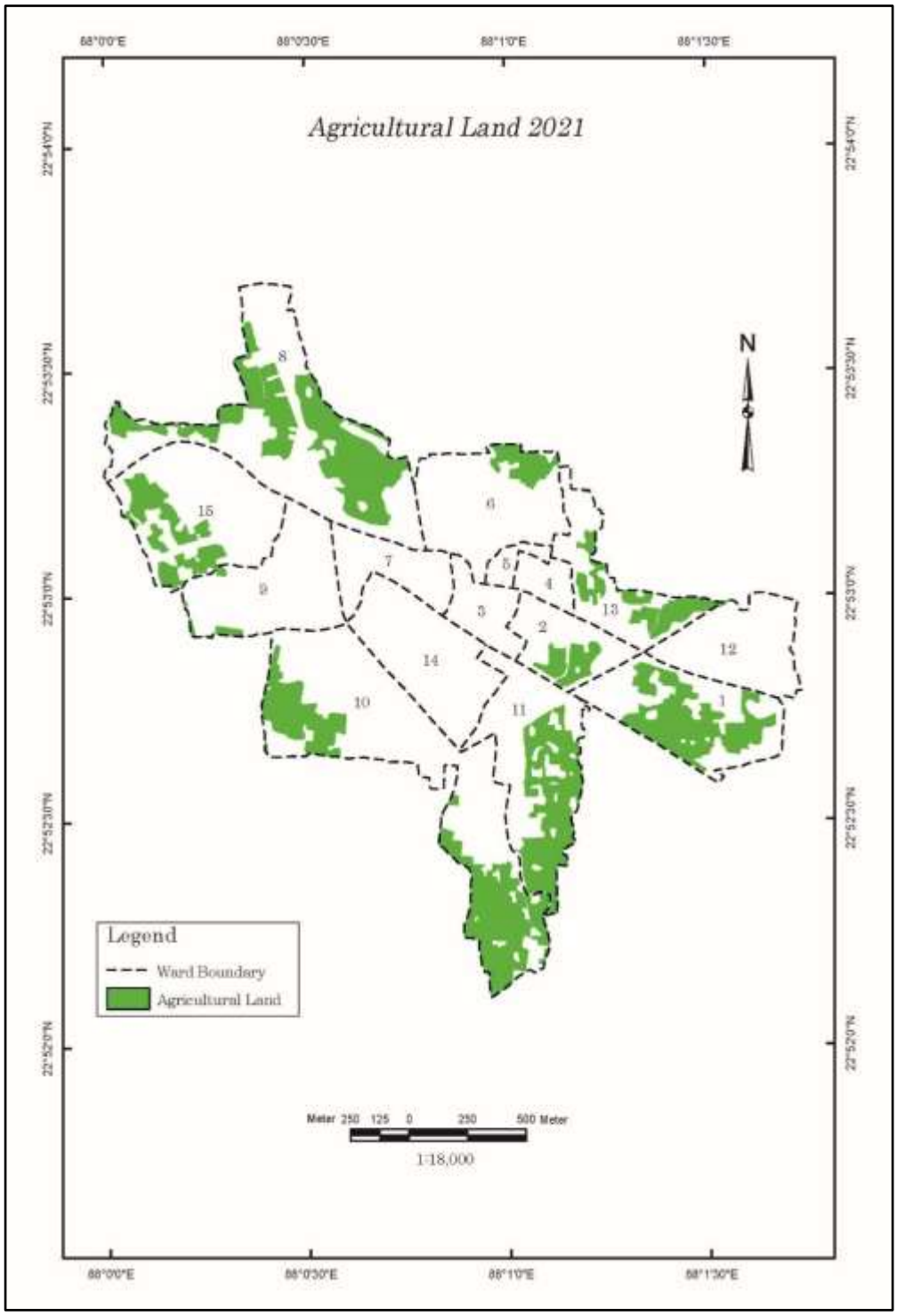


Figure 4.2: Ward wise distribution of agricultural land in 2021

Section: Research Paper
ISSN 2063-5346

MAJOR FACTORS INFLUENCING AGRICULTURAL LAND CONVERSION

Agricultural land of Tarakeswar town have been converted to other urban land uses mainly for rapid urbanization and growing population. Agricultural lands are most affected by rapid urbanization and its functions of demand. A major problem of rapid urban growth is changing land use patterns. Urban population is growing with no equivalent growth in land supply. Land is fixed in supply and does not increase with increasing population growth. Land uses for residential, commercial, civic and culture tend to dominate agricultural lands in the bid for space in the urban place. This dominance tends to deprive farmers of arable land to cultivate thereby reducing agricultural productivity. There is a clear depiction of this situation in the Tarakeswar Town and its adjacent area.

SUGGESTIONS FOR MITIGATION OF AGRICULTURAL LAND CONVERSION

Tarakeswar town was formed after taking some parts of five mouza. The soils of these mouzas are highly fertile for agriculture. So soil of the town is also fertile and agricultural land is one of the dominating land use pattern. Agricultural land is playing a vital role for the development of the economic condition of the town and its adjacent area. So some steps can be taken to protect the conversion of the agricultural lands of the town.

(1) Agricultural land zoning

Very good (fertile) agricultural land should be zoned as agricultural land use down to the least fertile land. Expansion of the towns as a result of rapid urbanization should therefore be channeled to the least fertile agricultural lands first before those that are very fertile.

(2) Increase the market value of agricultural land

Government should increase the market value of the agricultural lands so that the collection of revenue from the buying and selling of those lands will be high. Due to high registration money the rate of buying and selling of the agricultural lands among the common people will be decrease automatically.

(3) Favorable government policy to develop and progress agriculture

(a) Government should be careful about the market price of the agricultural products and its business.
(b) Government should control the market price of insecticide, pesticide, chemical fertilizer and seed.
(c) Irrigation system and infrastructure should be modernized. If Daily used water of urban area can be collected in artificial reservoir and filtered, this water will be a important source for the irrigation of the agricultural land of the urban and peri urban region in the dry season.

Section: Research Paper
ISSN 2063-5346

CONCLUSION

From the above discussion it can be remark that most of the change of agricultural land use is due to the conversion to residential area in the low-density area and along major roads. The spatial growth or expansion in other land cover types has directly taken place on the agricultural land. The breakdown of joint families to the growing cultural of nuclear family and high population density increased the demand for housing resulting in the process of land conversion becoming more precipitous. Migrated people who are living in the Tarakeswar town in a rental house for a long time are purchasing agricultural land to build their own houses. Besides some rich businessman or persons of Tarakeswar town and surrounding area are purchasing agricultural land of the peripheral wards of the region because the market value of agricultural land is lower than the value of any vacant land in the core region of the town. These agricultural lands are just left as vacant land by hope market price will be high in the future. These lands are not used for agriculture or residential purpose.The rate of urbanization in the town and its surrounding area is medium. At present the area close to the famous temple of Baba Takaknath is being developed under Tarakeswar development authority(T.D.A).The roads under state government is being also renovated. Potentiality of urbanization is increasing in the study area in future. Land is necessary for the development of urban cultural landscape like stadium, auditorium, cinema hall, park, medical center, education center, shopping mall, complex, residential area etc. There are few vacant lands are remaining in the core township area. The vacant land is existing in the township area in the form of wet land, pond, waste land etc. The maximum land in Tarakeswar town is directly or indirectly linked with Baba Taraknth state. So only agricultural land is safe and economic to purchase to construct the above-mentioned land uses. So, it can be concluded that the agricultural land of Tarakeswar towns is being decreased during 2001 and 2021 mainly due to expansion of the residential area. Ward wise spatial variation of conversion of agricultural land could be identified because the rate of urbanization is not similar in various wards. Door to door awareness programme is necessary to grow awareness about the value of agricultural land among the general people.Different government organization like land revenue office ,Block Development Office should observe this matter carefully for the future generation because with out agricultural land we are unable to produce any kind of agricultural crops.So we must take this matter seriously with sustainable development approach.

Section: Research Paper
ISSN 2063-5346

REFERENCES:

(1) Han, S.S. and He, C.X., (1999): Diminishing farmland and urban development in China: 1993–1996. Geo Journal, 49(3): 257-267.

(2) Iheke, O.R. and Nto, P.O., (2010): Effect of Population Pressure/Urbanization on the Adoption of Sustainable Agricultural Practices by Farmers: a Case Study of South Eastern Nigeria. Journal of Food and Fibre Production, 3(1): 543-549.

(3) Iheke, O.R. and Ihuoma, U., (2016): Effect of urbanization on agricultural production in Abia State. International Journal of Agricultural Science, Research and Technology in Extension and Education Systems, 5(2): 83-89.

(4) Malik, R. and Ali, M., (2015): The impact of urbanization on agriculture sector: A case study of Peshawar, Pakistan. Journal of resources development and management, 8: 79-85.

(5) Pramanik, C. and Sarkar, A. (2011): Effect of Urbanization on Agriculture in India.

(6) Vaidya, B.C. (1997): Agricultural land use in India: A study in Yashoda basin. Manak Publications, 1997.