

Conversion of Agricultural Land to Non-agricultural Uses in Bangladesh: Extent and Determinants

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Bangladesh is a land scarce country where per capita cultivated land is only 12.5 decimals. It is claimed that every year about one per cent of farm land in the country is being converted to non-agricultural uses (such high rate of conversion will not only hamper agricultural production but will have adverse impact on food security). The present study estimates the rate of land conversion and consequent loss of agricultural production of the country besides determining the factors affecting such conversion. The study is based mainly on field survey covering 24 villages from six divisions of the country. Annual Conversion of farm land is estimated to be 0.56 per cent and the country's loss of rice production is also estimated to be between 0.86 and 1.16 per cent. The converted land is predominantly used for construction of houses, followed by roads and establishment of business enterprises. The land poor records higher rate of land conversion. The two principal determining factors for such conversion are found to be land ownership size of a household and the non-agricultural occupation of household heads. To arrest the existing rate of land conversion, the surveyed households suggest for more profitable rates of return from farming activities besides imposing special sales tax for conversion of farm land.

I. INTRODUCTION

I.1 Background of the Study

With the growth of a country's economy, agricultural land is usually transferred to non-agriculture as the demand for non-farm products and services increases. This

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is specially so when the country's population and its per capita income rise. Transfer of farm land to non-agriculture is also needed for expansion of housing facilities in both rural and urban localities. Such transfer is also evidenced in building infrastructures such as roads, markets, educational institutions, electricity and industrial establishments, etc.

We are not aware of the extent of conversion of farm land for non-agricultural uses in Bangladesh and consequent production losses in agriculture. It is generally claimed that in Bangladesh every year over 80 thousand hectares of agricultural land i.e. nearly one per cent a year (Planning Commission 2009) is being converted to non-agriculture. This is definitely a matter of serious concern for the land-scarce country like Bangladesh where per capita cultivated area is only 15 decimals. This is too meagre an amount for the country's food security as the productivity of land in Bangladesh is also low. Another case study, carried out in 2004 by Directorate of Land Records and Surveys (DLRS) of the Ministry of Land in Palas Upazilla of Narsingdi and Sonargaon of Narayanganj district, observed a substantial decline in the share of agricultural land to the extent of 27 per cent in Palas and 16 per cent in Sonargaon during the period of 20 and 25 years respectively (1983-2003; 1978-2003) i.e. more than one per cent per year. On the other hand, there has been several-fold increase in the area under housing and permanent fallows in both these areas.

The recently completed report on Agriculture Sample Survey of Bangladesh-2005 by Bangladesh Bureau of Statistics (BBS) does not, however, show such high rate of decline in cultivated land. Total cultivated land of all holdings in rural Bangladesh amounts to 17.77 million acres in 2005 which was almost the same in 1996 i.e. before nine years (Table I). This is difficult to explain. It seems to be due to conversion of forest and low lying fishing land as well as newly accreted char land to crop cultivations; this needs careful investigation. It may, however, be noted that the cultivated area per farm household has over time reduced to 1.20 acres in 2005 from 1.50 acres, recorded in 1996. This is largely due to a sharp rise in the number of rural farm households, by 24 per cent, from 11.8 million in 1996 to 14.7 million in 2005.

The recently completed Agricultural Census-2008 finds the number of farm households (14.40 million) almost equal to the figure of 2005 (14.47 million) accounting for 56.74 per cent of total rural households of the country. During the 12 year period of 1996 to 2008 the number of rural families increased from 17.8 million to 25.36 million i.e. an increase by 42.5 per cent. All these new families must have residential accommodations largely derived from the existing Agricultural land, indicating their absolute decline over time. The Government of

Bangladesh is very much aware of such conversion of agricultural land and accordingly it has framed the National Land Use Policy-2001 keeping in view the competitive use of land for food production, housing, urbanisation and environment protection. The Policy has also emphasized the efficient use of land to ensure minimum level of food security to people and suggests restrictive use of land for housing, physical infrastructures and other constructions. For full-fledged implementation of the Policy, the Land Act is being formulated.

In Bangladesh, the average cultivated holding is too small for sustainable livelihood of farmers, especially of the marginal and small ones. The land transferred to non-agriculture is derived mainly from the land poor (upto 2.49 acres) constituting 88 per cent of total farm holdings. They are thus, becoming more vulnerable to food insecurity. Increasing number of functionally landless and the tenant farm households seem to have been already affected by the reduced size of farms and land degradation due to intensive cropping.

TABLE I
CULTIVATED AREA IN THE THREE CENSUS/SURVEYS
OF BANGLADESH

(in '000 acres)

Census/Survey Year	Cultivated Area of	
	All Holdings	Farm Holdings
Agriculture Sample Survey-2005		
Total	18,084	18,047
Rural	17,725	17,692
Agriculture Census-Rural 1996	17,771	17,749
Agriculture Census-1983/84	20,158	20,139

Source: BBS (2006).

Note: Net cultivated area is the area actually cropped during the census year regardless of the number of crops grown and it includes the area under temporary crops, current fallow, and permanent crops (Fruits wood trees); In other words, it is the actual area occupying perennial and non-perennial crops and area under current fallow.

I.2 Objectives of the Study

There has hardly been any study in the area of conversion of farm land to non-agricultural uses. The present study has been initiated with the objective of assessing the loss of farm land to non-agriculture during the eight year period of 2001-2008 and identify the factors affecting such conversion of land and also

investigate into the current pattern of non-agricultural uses. To be more specific, the main objectives of the study are to:

- i. Estimate annual conversion of agricultural land to non-agriculture and consequent loss of crop production during the eight year period of 2001 to 2008;
- ii. Investigate into the present pattern of non-agricultural uses of the converted land;
- iii. Determine the factors affecting such conversion of agricultural land to non-agriculture; and
- iv. Suggest suitable policy measures towards protection of farm land in the country.

I.3 The Survey Methodology and Analysis of Data

The study is based primarily on a field survey carried out in 24 villages spread over in all six administrative divisions of the country i.e. four in each division. In each division besides the city localities one district town and in that selected district, one Upazilla town was selected purposively. The selected district was Laxmipur in the Chittagong division and Sunamganj from Sylhet, Faridpur from Dhaka, Naogaon from Rajshahi, Jhenaidah from Khulna and Pirojpur from Barisal Division. The Upazillas selected in those districts were respectively Raipur, Jamalganj, Sadarpur, Mohadevpur, Kaliganj and Sharup Kathi as Shown in Table II. In each of the selected Upazillas another set of six villages in rural areas was also included in the survey to compare the extent of land conversion in actual rural areas vis-avis urban conditions at every level of the City, District and Upazilla, termed as Metro village, Urban village, Peri-urban village respectively. The name of the village and their locations may be seen in Table II .

The selection of villages for field survey at the outskirts of the cities and towns was quite complex as we first had to capture the area potential for urban expansion and industrialisation that existed eight years ago keeping in mind the level of land conversion that took place during the study period of early 2001 to end 2008. To understand the recent trend in the changes in land use, the selected villages should have the normal access to the cities and towns leaving at present 20 to 30 per cent of the village area under agriculture indicating that there is still scope for land conversion to non-agriculture. It also suggests that eight years back there was no limitation to land conversion as far as land availability was concerned. Furthermore, the villages should not be of very much low-lying topography that was abnormally flooded that might restrict land conversion. So, for the selection of representative

villages at the outskirts of each category of town, one needs to visit several villages around all the selected towns and consult several groups of urban and peri-urban dwellers to understand the previous situations. In the selection of rural villages care was also taken to cover very similar to the one selected near the Upazilla centre.

In each of the selected villages 25 households were selected at random from the list of resident farmers, prepared earlier by the Sub-Assistant Agricultural Officers (SAAO) of the Department of Agricultural Extension (DAE). The enlisted farmers were found to include predominantly the resident land owners of different sizes. These households were interviewed following a structured questionnaire that contains household information relating to area owned and its uses, size of the family, occupation of the household head, amount of land converted in the last 8 years from January 2001 to December 2008, current non-agriculture uses of converted land, loss of agriculture production, changes in the levels of food security, causes of land conversion, etc. The household survey was conducted in July-September 2009. It may be mentioned that in each division four villages were selected for which three were located at the outskirts of the city, district town and Upazilla town and another was the rural village. In all these villages in a division 100 households were interviewed totaling to 600 in the six divisions of Bangladesh, as shown in Table II.

TABLE II
SELECTED STUDY VILLAGES BY DIVISION IN 2008

Division	Metro-Village (City Corporation)	Urban Village (District Town)	Peri-urban Village (Upazila)	Rural Area (Upazilla)	Total Households Interviewed (No)
Barisal	Karamja (Barisal Sadar)	Uttar Namajpur (Pirojpur)	Auria (Sharup Kathi)	Sangit Kathi (Sharup Kathi)	100
Khulna	Lata (Dumuria)	Bisay Khali (Jhenaidah)	Helai (Kaliganj)	Shalikha (Kaliganj)	100
Rajshahi	Dharampur (Motihar)	Bhabani Gathi (Naogaon)	Bil-Mohammadpur (Mohadebpur)	Chok Harballav (Mohadebpur)	100
Dhaka	Gacha (Joydebpur)	Paschim-Khabaspur (Faridpur)	Saturo Roshi (Sadarpur)	Amirabad (Sadarpur)	100
Sylhet	Bangshi Dhar (Sylhet Sadar)	Ganipur (Sunamganj)	Talia (Jamalganj)	Shahapur (Jamalganj)	100
Chittagong	Madhayam Mohra (Chittgong)	Atia Tali (Taxmipur)	Purba Lach (Raipur)	Debipur (Raipur)	100

The analysis in the report has been made on the basis of residential status of the households as (a) metropolitan, (b) urban i.e. district town, (c) peri-urban i.e. upazilla town and (d) rural. In addition to residential status, survey findings have also been examined with respect to land ownership size as functionally landless (upto 0.5 acre), marginal (0.51 acre to 1.0 acre), small (1.01 acres to 2.5 acres), medium (2.51 acres to 5.0 acres) and large (5.01 acres and above). The main hypothesis of the study is that proportional share of converted agricultural land to non-agriculture rises with the level of urbanisation while declines with the increase in land ownership size of the household. That implies that the rates of land conversion are higher in metro and urban villages and also among the land poor and, hence, they are becoming more vulnerable to food insecurity.

II. SOCIO-ECONOMIC CHARACTERISTICS OF THE SAMPLE HOUSEHOLDS

II.1 Size of the Family and Occupational Distribution

The average size of the family in the study areas was 5.1, which is little higher than the national average of 4.85 in 2007 (BBS 2007). The largest family size was found in large land owners' group and the least in the case of landless households that reflects the country's general situation.

About the occupational distribution of the household heads in the surveyed villages, cultivation was identified to be the highest occupation, followed by trading and labour. Forty four per cent of the households were occupied in agriculture against BBS findings of 47.5 per cent in 2005. The occupational distribution also shows that the proportional share of the cultivator households expected, while that of the traders declines from 31 per cent to 15 per cent (Table III). Such declining trend was also noted in both the service holders' and that transport workers' groups. The pattern of occupational distribution in the study areas thus is very similar to the country's average situation.

II.2 Land Use in the Surveyed Villages

As far as the land use is concerned, the crop land had the highest coverage of 78 per cent with marginal variation by the residential status of the localities (74 to 81 per cent). The next important land use was in the homestead area sharing 11 per cent of total area coverage. Its average size was estimated to be 0.18 acre, very close to the national average. The two other important land uses were recorded in orchard and bamboo bushes and the non-crop agriculture (Table IV). Non-crop agriculture had a larger share in metropolitan village, may be occupied by poultry and dairy farms.

II.3 Land Ownership Distribution

The average land ownership size was 1.68 acres ranging from 1.46 acres in metropolitan village to 1.86 acres in rural village. The largest size was recorded in the rural area as expected.

The average land ownership size of the landless households was 0.22 acre and in the case of large owners the size was estimated to be 8.40 acres (Table V).

The distribution of households shows that about one-third of them was functionally landless (upto 0.5 acre), followed by small land owners (1.0 to 2.5 acres) estimated to be 26 per cent as shown in Table VI. The BBS survey 2007 on household income and expenditures, on the other hand, found higher proportion of the functionally landless (60 per cent) and the small land owners only 17.6 per cent. The lower proportion of the landless in the present survey was mainly due to exclusion of the completely landless households numbering to over 10 per cent of total households while selecting the households from the list prepared by the SAAOs of the DAE.

The number of large owner households was 7.0 per cent owning 35 per cent of total land. The marginal land owners including the functionally landless households shared 14 per cent of total owned by the interviewed households (Table VI). It may be pointed out that the share of large owners' land to all land was 39 per cent in both the metro-village and the urban village, indicating more skewed distribution of land in these villages. Any way, the overall pattern of land distribution in the surveyed villages is very similar to the average distribution pattern of land in Bangladesh.

TABLE III
OCCUPATIONAL DISTRIBUTION OF HOUSEHOLD HEADS BY RESIDENCE

(Per Cent)

Principal Occupation	Metropolitan	Urban	Pre-urban	Rural	Total
Crop Agriculture	30.0	42.7	46.0	54.7	43.3
Non-crop Agriculture	0.7	2.0	0	1.3	1.0
Labour	12.0	4.7	12.0	10.7	9.8
Transport	3.3	4.0	2.0	1.3	2.7
Trading	30.7	24.0	26.0	15.3	24.0
Service	14.0	10.7	8.0	5.3	9.5
House Work	0.7	3.3	1.3	3.3	2.2
Industry	0	0.7	0	0.7	0.3
Old age	4.7	3.3	3.3	6.0	4.3
Retired	4.0	4.7	1.3	1.3	2.8
Total	100.0	100.0	100.0	100.0	100.0

Source: Field Survey, BUP, 2009.

TABLE IV
LAND USE AND ITS AVERAGE OWNERSHIP SIZE BY RESIDENCE IN 2008

Land use	Metropolitan		Urban		Peri-urban		Rural		All areas	
	% of Land	Average (acre)	% of Land	Average (acre)	% of Land	Average (acre)	% of Land	Average (acre)	% of Land	Average (acre)
Homestead and its Adjacent Area	10.2	0.15	10.5	0.19	9.8	0.16	12.3	0.23	10.8	0.18
Crop Land	73.8	1.46	79.1	1.87	80.9	1.50	76.0	1.67	77.6	1.62
Orchard and Bamboo Bush	2.9	0.11	4.8	0.22	5.0	0.15	6.6	0.18	5.0	0.17
Non-crop Agricultural Land	9.0	0.31	2.7	0.12	3.3	0.11	2.9	0.11	4.3	0.16
Non-Agricultural Establishments	3.1	0.12	2.1	0.12	1.0	0.07	1.3	0.14	1.8	0.11
Others	1.0	0.41	0.6	0.24	0.1	0.1	0.8	0.47	0.6	0.34
Total	100.0	1.46	100.0	1.78	100.0	1.62	100.0	1.86	100.0	1.68

Source: Field Survey, BUP, 2009.

TABLE V
AVERAGE LAND AREA OWNED AND THE FAMILY SIZE BY LAND OWNERSHIP SIZE OF HOUSEHOLDS

Land Ownership Size	Area Owned (acre)	Family Size (no)
Landless	0.22	4.8
Marginal	0.47	5.1
Small	1.63	4.9
Medium	3.42	5.7
Large	8.40	6.2
All Households	1.68	5.1

Source: Field Survey, BUP, 2009.

Note: Landless upto 0.5 acre; Marginal 0.51 to 1.0 acres, small 1.01 acres to 2.5 acres; Medium 2.51 acres to 5.0 acres, and Large – 5.01 acres and above.

TABLE VI
DISTRIBUTION OF HOUSEHOLDS BY LAND OWNERSHIP SIZE AND RESIDENCE (PERCENTAGE OF HOUSEHOLDS AND AREA OWNED)

Residence	Landless (below 50 decimal)	Marginal (50-99 decimal)	Small (100 to 249 decimals)	Medium (250 to 499 decimal)	Large (500 decimals and above)	Total Households (No.)	Average Ownership Size (acre)
Metropolitan	38.7 (4.9)	24.7 (11.9)	18.7 (20.6)	10.0 (23.3)	8.0 (39.3)	150 (100)	1.46
Urban	36.7 (4.0)	20.0 (8.1)	23.3 (21.5)	13.3 (27.2)	6.7 (39.2)	150 (100)	1.78
Peri-urban	28.0 (4.6)	25.3 (12.2)	26.7 (26.5)	12.7 (25.8)	7.3 (31.0)	150 (100)	1.62
Rural	23.3 (3.3)	22.0 (8.8)	34.0 (30.1)	14.7 (26.5)	6.0 (31.3)	150 (100)	1.86
All Households	31.7 (4.1)	23.0 (10.1)	25.7 (24.9)	12.7 (25.8)	7.0 (35.0)	600 (100)	1.68

Source: Field Survey, BUP, 2009.

Note: Figures within brackets indicate the per cent area owned by them in each residential area.

III. AGRICULTURAL LAND CONVERTED TO NON-AGRICULTURE

III.1 Amount of Land Converted

The current survey estimated that during the eight year study period of 2001 to 2008, 46.25 acres of agricultural land was converted to non-agriculture (Table VII). In such conversion 251 land owners i.e. 42 per cent of interviewed households were involved. Land converters during the period were maximum in metro-village (54 per cent) and the lowest in peri-urban and rural villages (35 per cent). Among the divisions, Dhaka recorded the highest proportion of converters (52 per cent) in the area and the least in Sylhet (27 per cent) as shown in Annexure Table I.

Conversion of agricultural land with respect to total land owned in the year 2001 in the surveyed villages during the study period amounts to 4.50 per cent or 0.56 per cent per year. The annual rate of conversion varies from 0.25 to 0.74 per cent in peri-urban and urban-village respectively (Table VII). The present estimate is lower than the previous figure of about one per cent, often quoted. The higher rates of conversion in the current survey were noted in both urban and metro-villages as hypothesised. This is considered to be mainly due to higher price of land (Annexure Table II). It is also important to note that the price of homestead land is higher by 45 per cent compared to that of farm land, recording wide variation among the Divisions. Farm land in Sylhet is observed to be cheapest as it is generally single cropped and people do not prefer farming. The lower conversion in peri-urban villages might be due to stagnation in physical infrastructure building and in the functioning of the local government-Upazilla Parishad during the period.

III.2 Conversion of Land by Division

About the annual rate of conversion of land by region, the highest rate of conversion during the period was recorded in Dhaka division (estimated to be 1.45 per cent per year), while the lowest rate of conversion was experienced in Khulna division, only 0.26 per cent a year (Annexure Table I). Chittagong and Sylhet divisions had the conversion rate of 0.45 and 0.47 per cent respectively.

Average amount of land converted during the period amounts to 18.4 decimals by the converter households and 7.7 decimals when considered all households. Among the converters it was as high as 28.5 decimals in Dhaka Division, while the lowest was in Barisal (7.6 decimals) as shown in Annexure Table III. According to residential status, maximum converted area per household was recorded in both rural and urban area (24.8 decimals each). Of all the converters the highest number was observed in the metro-villages constituting about one-third of this total household in this category.

III.3 Conversion of Land by Land Ownership Size

According to land ownership size the proportion of land converters generally increases with their size, the average being 42 per cent. It increases from 30 per cent among landless households to 35 per cent among the large landowners during 2001 to 2008, which is expected (Table VIII). But in terms of land owned by them, the highest rate of conversion was recorded among the functionally landless households estimated to be 23 per cent or 2.9 per cent a year and the lowest among the large land ownership groups (1.6 per cent) or only 0.2 per cent of their land per year. In the remaining three other groups, the rate of conversion was observed to be about 0.6 per cent per year. The highest rate of conversion among landless households suggests that they are becoming more vulnerable to food security, especially when their land ownership size is alarmingly low (0.22 acre).

III.4 Land Converted under Different Possessions

During the eight year study period, land was converted to non-agricultural uses under different possession rights other than self-ownership. Some land was sold, some acquired by the government and some was donated. The data show that the major proportion (45 per cent) of the converted was sold while only 34 per cent was converted under self ownership, where peri-urban village dominate covering 55 per cent of total converted land (Table IX). Land acquired by the government had also significant share (19 per cent), mostly observed in urban village (38 per cent). It may be noted that conversion after sales was substantially high in rural and in metro-village, as compared to other this categories. Such analysis by land ownership size indicates that 63 per cent of large land owners' converted land took place under self-ownership, while only 17 per cent was in the case of landless category (Table X). Conversion that occurred after sales of the land was quite high among the medium land owners. Surprisingly, over half of the converted land of the landless households was derived from acquired land. Such share for the large land owners was negligible (2.1 per cent), indicating that the land poor is more adversely affected by the acquisition of land by the state.

III.5 Share of Crop Land to Converted Land

It has been observed that of the total converted agricultural land, crop land occupied 90 per cent where different crops were cultivated. The remaining 10 per cent was used either in bamboo bushes and jungles or left fallow. There was some

land where unplanned orchards and trees were also grown. The share of crop land was the highest in rural villages (95 per cent) and the lowest (85 per cent) in both the peri-urban and metropolitan villages (Table VII).¹ Among the five land ownership categories, the share of crop land in the converted land was the highest (93 per cent) in small category and the lowest (85 per cent) among the marginal land category (Table VIII). In Dhaka division, 95 per cent of the converted land was derived from crop land, indicating that there is little scope for further urban expansion in the division without losing valuable crop land, which is a matter of serious concern.

III.6 Agricultural Land Converted at the National Level

According to our estimate, agricultural land is being converted at a rate of 0.56 per cent per year. On the basis of this rate of conversion and the country's total cultivated area of all farm households amounting to 7.19 million hectares in 1996, conversion of land amounts to 40,452 hectares per year.

Another estimate based on annual per household conversion of land @ 0.0096 acre $\{(46.25 \text{ acres} \div 600) \div 8\}$ and the rural land owning households numbering to 16.01 million or $\{(17.828 - 1.815) \text{ or } 10.18\%$ completely landless $\}$ in 1996 annual converted land is estimated to be 62,478 hectares. None of these estimates is close to the previously quoted figure of over 80,000 hectares. Furthermore if the previously quoted figure of 80,000 hectares is taken into account, total converted land in the country comes to 720,000 hectares during the nine year period of 1996 to 2005. But the total cultivated area in rural Bangladesh remains almost the same (17.77 million acres) in both the years of 1996 and 2005 with marginal difference of only 46,000 acres. We may, therefore, conclude that the previous figure of land conversion is an over estimate.

¹ Chi-square test shown that there was statistically significant difference in the rate of conversion of land between the urban and peri-urban village.

TABLE VII
**AMOUNT OF LAND CONVERTED DURING THE PERIOD OF 8 YEARS
 FROM 2001 TO 2008 BY RESIDENCE**

Residence	Total Land Owned in 2001 (acres)	Total Land Converted (acres)	Per cent Land Converted in 8 Years	Annual Rate of Conversion (%)	Per cent of Converted Land from	
					Crop Land	Non-crop Land
Metro-village	225.11	12.24(54)	5.44	0.68	85.38	14.62
Urban Village	276.0	16.35(44)	5.92	0.74	90.21	9.79
Peri-urban Village	240.66	4.75(35)	1.97	0.25	85.26	14.74
Rural Village	286.31	12.91(35)	4.51	0.56	95.43	4.57
All Areas	1028.0	46.25	4.50	0.56	89.88	10.12

Source: Field Survey, BUP, 2009.

Note: Figures within parentheses indicate the per cent of households who converted agricultural land to non-agricultural uses in each residence category.

TABLE VIII
**NUMBER OF HOUSEHOLDS CONVERTED LAND AND THE AMOUNT OF LAND
 CONVERTED BY LAND OWNERSHIP SIZE DURING THE
 EIGHT YEAR PERIOD 2001-2008**

Land Ownership Size	No. of Households Converted	Per Cent of Households Converted	Per Cent of all Households' Area Converted in 8 Years	Per Cent Share of Total	
				Crop Land	Non-crop Land
Landless	68	36	22.9 (2.86)	90.8	9.2
Marginal	48	35	4.6 (0.58)	82.9	17.1
Small	69	45	4.6 (0.58)	93.1	6.7
Medium	43	56	4.7 (0.59)	88.9	11.1
Large	23	55	1.6 (0.20)	89.0	11.0
All Households	251	42	4.5 (0.56)	89.9	10.1

Source: Field Survey, BUP, 2009.

Note: Figures in the parentheses indicate annual rate of conversion.

TABLE IX
AMOUNT OF LAND CONVERTED BY POSSESSION STATUS AND RESIDENCE
(Percentage)

Residence	Self-Ownership	Sold	Acquired	Donation	Others Occupation
Metro-village	40.36	56.45	0.65	1.96	0.57
Urban Village	30.46	29.72	38.04	1.77	-
Peri-urban Village	54.95	31.37	9.05	4.63	-
Rural Village	23.55	59.02	15.65	1.78	-
All Areas	33.66	45.15	18.92	2.12	0.15

Source: Field Survey, BUP, 2009.

TABLE X
**AMOUNT OF LAND CONVERTED BY POSSESSION STATUS AND THE
 LAND OWNERSHIP SIZE**

(Percentage)

Land Ownership Size	Self- Ownership	Sold	Acquired	Donation	Others
Landless	16.78	27.14	52.83	2.74	0.51
Marginal	48.83	45.20	2.13	3.84	-
Small	28.94	51.15	17.28	2.55	0.09
Medium	34.83	61.09	2.64	1.44	-
Large	63.30	34.57	2.13	-	-
All Households	33.66	45.15	18.92	2.12	0.15

Source: Field survey, BUP, 2009.

IV. MAIN USES OF CONVERTED LAND AND LOSS OF AGRICULTURAL PRODUCTION

IV.1 Non-agricultural Uses of Converted Land

Information collected indicates that more than half (55 per cent) of the converted local was used in housing predominantly in metro villages (60 per cent), as expected. The next two important uses were in the construction of roads and business establishments covering 10 and 8 per cent respectively (Table XI). Non-reported area of use was also substantial (15 per cent). The share of such land was the largest in rural villages (25 per cent). Among different residential status of the households, the second most important utilisation in peri-urban villages was road construction covering 19 per cent of its converted land. In urban villages, next to housing, other major uses were (a) business establishments, (b) agro-based industries, (c) education and health institutions, and (d) road construction, each clearing five per cent of total converted land.

It is interesting to look at the pattern of non-agricultural uses of the converted land by their possession or ownership status. Converted land under self-ownership was used predominantly in housing to the extent of 78 per cent for all villages taken together but it was as high as 89 per cent in rural villages. The next important uses were in business establishment (13 per cent) and brick fields (3 per cent), as shown in Annexure Table IV. The principal non-agricultural use of sold out land was also in housing (30 per cent) but over half of such land (56 per cent) remained unreported, as the owners did not stay there and the respondents were not aware of their current uses. Next to housing the land was occupied by mills and factories (7 per cent), concentrated in metro-villages (13 per cent). The land sold in urban

villages was largely used for office buildings and other public utilities (11 per cent), next to housing (44 per cent). Converted land in others' possessions e.g. acquired, donations, etc. had the substantial use in the construction of road to the extent of 57 per cent of such category land (Annexure Table IV). The next important use was by health and educational organisations, especially in metro villages. In peri-urban villages, public welfare institutions had also significant share of converted land.

There were wide regional variations in the non-agricultural use of converted land. For example, housing in Barisal covered as high as 77%; while it was only 41% in Sylhet where the requirement for new houses seemed lower. In Sylhet, the second most important use was the construction of roads occupying 29 per cent of land. In Dhaka, non-reported area was of claimed the largest share (31 per cent) of land, either used or not. In Barisal, public welfare establishments covered 12 per cent, the highest among six divisions.

Non-agricultural uses are also found different when examined by the land ownership size of households although the housing claimed the maximum share in all the categories. Small land owners had the highest proportion (62 per cent) in housing while the medium owners had the lowest (42 per cent) still occupying the maximum proportion. In the large ownership size, next to housing, the next largest share (19 per cent) claimed by the business establishment but it had the least more among the small land owners (Table XII). Road construction claimed 16 per cent of the medium owners' converted land. In the landless group, the second highest proportional share (8.9 per cent) was occupied by health business enterprises as well as education and health organisations.

IV.2 Previous Uses of Converted Land

As mentioned earlier, of total converted agricultural land, 90 per cent was crop land where different crops and vegetables were grown. Collected data show that 92 per cent of crop land was under paddy and about 6 per cent was used for vegetables. The area under vegetables was higher (27 per cent) in peri-urban villages. Among different land ownership groups, the proportional shares of paddy land varied little, the highest being among the large land owners (97 per cent). In the case of vegetables, marginal land owners had the highest share (12 per cent). Before conversion, non-crop land which was kept almost unutilised amounted to 78 per cent, ranging between 81 and 97 per cent in metropolitan and peri-urban villages respectively. One-tenth of the land was occupied by bamboo bushes and trees,

mostly in urban areas (23 per cent). There were some scattered plots where vegetables were grown, accounting for only 6.0 per cent of land. The pattern of land use as practised before conversion indicates that the conversion of land to non-agricultural uses has adversely affected agricultural production, which is estimated below.

IV.3 National Production Loss Based on Current Field Survey

According to the present field survey, production of different crops and vegetables is lost due to conversion of farm land to non-agriculture. The main crops lost were HYV paddy, local paddy and vegetables; and total annual loss of production was reported to be Tk.22,774 per acre (Table XIII). On the basis of annual production losses of Tk.22,774 per acre, the country's total loss from converted land of 40,452 hectares of 99,512 acre i.e. @ 0.56% as estimated earlier, stands at Tk. 228 crore per year.

IV.4 Estimated National Loss of Rice Production

It may be relevant to estimate the amount of losses of rice production due to conversion of agricultural land in Bangladesh. Annual loss of rice production has been assessed on the basis of 5.12 acres of crop land as determined earlier. If the converted land is double cropped by Boro (HYV) and half by Aman (HYV) and half by local Aman considering all areas under cultivation of paddy, total amount of annual loss of paddy from the converted land (5.12 acres) roughly amounts to 465 maunds @ 90 maunds per acre or 0.028 ton per household. Total land-owning households in Bangladesh being 16.01 million, total loss of paddy production in the country amounts to 0.448 million or 4.5 lakh ton, which is equivalent to 3.02 lakh tons of rice and thus, with respect to country's total production of 27 million metric tons, it stands at about 1.16 per cent. Another estimate based on the proportion of agricultural land converted amounting to 5,0995 million acres and per acre annual loss of rice (2.24 ton/acre) reported above stands at 0.223 million tons i.e. 0.86 per cent of the country's annual production of rice. It would thus appear that due to conversion of agricultural land to non-agriculture, annual loss of rice production amounts to between 0.86 and 1.16 per cent of the country's total rice production, which is not a negligible amount.

TABLE XI
NON-AGRICULTURAL USES OF CONVERTED
AGRICULTURAL LAND BY RESIDENCE⁴

(Percentage)

Current Use	Metropolititan	Urban	Peri-urban	Rural	Total
Shop/Business Enterprise	10.53	5.26	9.52	7.5	8.47
Agro-based Industries	-	5.26	-	-	1.13
Education & Health Organisation	3.51	5.26	2.38	-	2.82
Construction of Road	5.26	5.26	19.05	10.00	9.60
Construction of House	59.65	55.26	52.38	50.00	54.80
Mills/Factories	5.26	-	-	2.5	2.67
Unutilised	1.75	-	-	-	0.56
Public Offices & Utilities	1.75	7.89	-	5.00	2.82
Brick Fields	1.75	2.63	2.38	-	1.69
Non Reported	10.53	13.16	14.29	25.00	15.25
All Uses	100.0	100.0	100.0	100.0	100.0

Source: Field Survey, BUP, 2009.

TABLE XII
NON-AGRICULTURAL USES OF CONVERTED AGRICULTURAL
LAND BY LAND OWNERSHIP SIZE

(Percentage)

Current Use	Landless	Marginal	Small	Medium	Large	Total
Shop/Business Enterprise	8.89	6.45	2.13	13.16	18.75	8.47
Agro-based Industries	-	-	2.13	-	6.25	1.13
Education & Health Organisation	8.89	3.23	-	-	-	2.82
Construction Road	2.22	9.68	10.64	15.79	12.50	9.60
Construction of House	55.56	58.06	61.70	42.11	56.25	54.80
Mills/Factories	-	-	2.13	5.26	6.25	2.26
Unutilised	2.22	-	-	-	-	0.56
Public Offices & Utilities	2.22	6.46	6.36	-	-	2.82
Brick Fields	2.22	3.23	-	2.63	-	1.69
Non Reported	17.78	12.90	14.89	21.05	-	15.25
All Uses	100.0	100.0	100.0	100.0	100.0	100.0

Source: Field Survey, BUP, 2009.

TABLE XIII
ANNUAL PRODUCTION LOSS DUE TO CONVERSION OF
CROP LAND BY TYPE OF CROPS GROW

Crops Grown	Total Area (acre)	Total Loss of Crops and others (Tk)	Per Acre Loss (Tk)
HYV Paddy	28.88	644,137	22,304
Local Paddy	9.28	194,650	20,975
Vegetables	2.32	86,800	37,414
Bamboo Bushes, Nursery & others	0.94	17,700	18,830
All Crops and Others	41.42	94,287	22,774

Source: Field Survey, BUP, 2009.

Note: Total loss of crops were estimated on the base of per acre yield of different crops on the prevailing market prices at the time of field survey.

V. BENEFITS TO LAND CONVERTERS

Conversion of agricultural land to non-agriculture is expected to benefit the converter households in terms of higher income and improved level of food security despite losses in agricultural production. Such improvement is, however, dependent on the type of non-agricultural uses of land and their efficiency of uses. This aspect has been examined by comparing the present situations between the converter (42 per cent) and the non-converters (58 per cent) of the interviewed households.

V.1 Food Security of the Household Level

Respondents' opinions indicate that 43 per cent of the converter households have impressed improvement in food secure compared to 32 per cent among the non-converters and such difference in improvement has been observed in all land ownership groups, more so in the medium land owner group. Some households, however, experienced reduction in food security in both the converter and the non-converter groups though it is lower among the converters (14.3 per cent against 22.6 per cent among non-converters) as shown in Table XIV. Food security status remains almost unchanged to the extent of 42 and 46 per cent in both these groups.

It is may be mentioned here that the food security levels increased by more than 10 per cent over time in the case of 20 per cent of the converter households compared to only 10% among the non-converters. Proportion of households who experienced reduction in the food security levels of above 10 per cent accounts for

10 per cent among the converter households compared to 15 per cent in the case of non-converter households.²

Improvement in the food security levels of the converter households over the non-converters as reported above is not, however, reflected in the amount of consumption of at least three food items e.g. rice, flour and pulses. Rough estimates indicate equal levels of consumption in both these groups either in aggregate or by land ownership size. It may be mentioned that daily per capita consumption of cereals and pulses in the present study was estimated to be 450 gms and 20 gms respectively by the converter households which is marginally higher than the national average of 409 gms and 14.2 gms recorded in 2005 (BBS 2007).

V.2 Income of the Households

It is interesting to note that income of the converter households was observed to be higher by about 50 per cent over that of the non-converters household. Such higher income was recorded in all size ownership groups, but more so among the marginal and the large land owners. The converters have also higher share of income from trade and businesses (42 per cent against 36 per cent) and different services (24 per cent against 22 per cent).

It may be pointed out that the improved level of food security among the converter households may not be due to land conversion alone. It could be the combined outcome of several factors such as land ownership size of the households, their levels of education, occupational status, etc. It may, however, be mentioned that the average size of land owned by a converter household is substantially higher () over the non-converters' owned area and (prominently observed among the land rich). They had also higher land ownership size in 2001 (2.22 acres). The converter households might also be more favourably located in terms of the infrastructure development of the area. This, however, needs further investigation. Furthermore, the average value of household assets is found to be almost equal among both the converter and the non-converter households. Substantial differences are, however, noticed in the case of non-housing assets i.e. in terms of agricultural equipment, livestock, plantations, etc. It is found to be double for converter households. The average value of such productive assets of these households is estimated to be Tk.92,458.

² These figures are based on perception of the respondents in the field survey.

V.3 Reasons for Changes in Food Security Levels: Respondents' Views

Respondents among the converter households, whose food security levels improved, opined that the increase in non-agricultural income was the principal determinant of such improvement. This has been possible due to expansion in their business. The other important factors were increased crop production and more working members in a family. Among the non-converters, three major facilitating factors as identified by them were the same as is above while the fourth one was increased remittances from abroad.

The deterioration in the food security levels is caused by a variety of factors. They are almost the same for both these groups—converter and non-converter households. According to the converter households, the decline in food security was caused by (i) the decrease in agricultural land and consequently, lower production of crops, (ii) increase in food prices, (iii) decline in working members in a family and (iv) increase in the number of members in a family. In the case of non-converters, all the above mentioned causes are applicable but to them the predominant factor was the increased food price. Overall, we may conclude that the conversion of agricultural land by a household leads to increased non-agricultural income and consequently higher level of food security. However, the national concern is the attainment of minimum level of food security and also to arrest the rate of land conversion for sustained agricultural development in the country.

TABLE XIV
**CHANGES IN THE LEVELS OF FOOD SECURITY BY LAND OWNERSHIP
 SIZE AND CONVERSION STATUS OF HOUSEHOLDS**

(Percentage)

Land Ownership Size	Reduced		Unchanged		Increased	
	Converter	Non- Converter	Converter	Non- Converter	Converter	Non- Converter
Landless	17.6	30.3	45.6	40.2	36.7	29.5
Marginal	16.7	27.8	45.8	47.8	37.5	24.4
Small	17.4	12.9	44.9	52.9	37.7	34.1
Medium	4.6	9.1	32.6	48.5	62.8	42.4
Large	8.7	15.8	34.8	31.6	56.5	52.6
All Households	14.3	22.6	42.2	45.5	43.5	31.8

Source: Field Survey, BUP, 2009.

VI. DETERMINANTS OF LAND CONVERSION

VI.1 Determinants of Land Conversion: Regression Results

Conversion of agricultural land to non-agriculture is dependent on a variety of factors such as number of members in a family, income earning possibilities from agriculture and non-agriculture uses of land besides state acquisition for construction of roads and institutional building, etc. Regressions analyses in this regard can provide better explanation by identifying the factors that determine the amount of land area to be converted to non-agriculture by the households. To this end, linear regression model is fitted taking into account several explanatory variables for the year 2001.* The independent variables used in the model are:

- i) Total land owned by household :T-LAND (decimals);
- ii) Homestead land owned by a household : HOME (decimals);
- iii) Proportion of non-crop land to total land owned : PNC (%)
- iv) Primary occupation of the household head : P-OCCUP (agriculture=0 & non-agriculture=1)
- v) Years of schooling of the household head : (number);
- vi) Per capita annual income : PCI (Tk);
- vii) Household assets other than housing : Asset (Tk);
- viii) Disaster losses : DISASTER (Tk);
- ix) Study Area Dummy (Rural = 0);
- x) Dummy for Peri-urban (PERI-UR=1);
- xi) Dummy for Urban (URBAN=2);
- xii) Dummy for Metro (METRO=3).

The linear regression exercise hypothesises that the area of agricultural land converted by a household rises with the increase in its land ownership size, homestead area and proportional share of non-crop land to total land owned. Household heads with non-agricultural occupations and their years of schooling are also expected to encourage land conversion as they are more exposed to non-agricultural activities. Per capita annual income and value of non-housing assets i.e. agricultural equipment, livestock's, etc. are considered to have negative impact on land conversion as they can use their land better for higher agricultural production and more income. About the dummy variable rural village is taken to be '0' i.e. with

* Similar exercise has also been carried out for the data of 2008 and the results are found to be quite similar.

respect. ‘0’ rural village, shift of study area to peri-urban, urban and metro city there is increasing possibility for land conversion due to urbanisation and different other commercial activities.

The results of linear regression exercise show that both the total land owned by a household and the area under homestead have highly significant impact on the rate of land conversion (Table XV). The first variable has a positive effect and in case of 10 per cent increase in total area, there would be an increase in land conversion by 3.5 per cent. An increase in homestead land by 10 per cent, would result in a decline of land conversion by 1.4 per cent, which is contrary to our expectation. May be their homestead area is small and therefore, little scope exists for enterprise expansion other than housing. Positive effect of primary occupation of the household head is also noticed at 10 per cent level of significance, suggesting that non-agricultural occupation of the household head has positive impact on land conversion. Disaster loss, on the other hand, has significant negative impact at 10 per cent level, indicating that the household become more conscious of retaining crop land for food security reason due to damages occurred due to natural calamities.

TABLE XV
DETERMINANTS OF LAND CONVERSION: RESULTS LINEAR REGRESSION

Sl. No.	Dependent Variable; is Total Land Converted (Decimals)		
	Independent Variables	Beta	Sig.
i.	T-LAND	0.356	0.000
ii.	HOME	(-) 0.139	0.003
iii.	P-OCCUP	0.105	0.016
iv.	Years of Schooling (No)	(-) 0.006	0.894
v.	PCI	0.059	0.194
vi.	PNC	(-) 0.077	0.087
vii.	ASSET	0.012	0.775
viii.	DISASTER	(-) 0.079	0.056
ix.	METRO	(-) 0.029	0.561
x.	URBAN	0.019	0.686
xi.	PERI-UR	(-) 0.085	0.077
Adjusted R Square		0.119	-

Source: Author’s estimate.

VI.2 Arresting Land Conversion: Respondents' Opinions

It is widely recognised that conversion of land should be discouraged in Bangladesh for ensuring food security in the country. The respondents have put forward some suggestions for arresting the current rate of land conversion. Their recommendations include the following (Table XVI):

- (i) agriculture should be made more profitable and attractive (49 per cent);
- (ii) special tax should be imposed on conversion of land (30 per cent);
- (iii) area-wise ceiling may be fixed for non-agricultural uses of land (11 per cent);
- (iv) tax exemption may be offered for commercial farms and the agro-based industries (10 per cent).

While asking the respondents' views towards increasing profitability of agriculture, they emphasise for raising of crop prices in the harvest seasons, ensured timely supplies of agricultural inputs at reasonable prices, and productivity increase of land through adoption of modern technologies and effective agricultural extension services. These suggestions are almost equally applicable to all land ownership groups and the residential status of the households. Also, little differences are observed in their views when compared between land converters and non-converters.

Open discussions with the respondents in this regard also reveal that there should be immediate control for non-agricultural use, population growth and introduction of special tax on converted land; and area specific ceiling may also be imposed to restrict indiscriminate conversion of farm land. The above mentioned suggestions lead us to conclude that to arrest the present rate of land conversion two things are essential. These are (a) strict population control to restrict faster expansion of housing and road construction, and (b) making agriculture more profitable and attractive.

The government of Bangladesh is, however, aware of the existing problems and accordingly, it is formulating strategies towards "Compact Townships" for rural people (Planning Commission 2009). It has also emphasised the implementation of National Land Use Policy 2001, towards restriction of unplanned housing and road construction. In this context, proper policy formulation and adequate institutional mechanism assume special significance.

TABLE XVI
**SUGGESTIONS FOR ARRESTING CONVERSION OF
 LAND BY RESIDENTIAL STATUS**

(Percentage)

Residential Status of Households	Special Tax to be Imposed	Area-wise Ceiling for Non-agril. Uses	Tax Exemption for Agro-based Industries	Agriculture should be made Profitable	All Responses (No)
Metropolitan	31	9	7	52	26 (280)
Urban	31	10	10	49	24 (250)
Peri-urban	28	12	12	48	25 (264)
Rural	28	12	12	48	25 (264)
All Areas	30	11	10	49	100 (1058)

Source: Field Survey, BUP, 2009.

VII. SUMMARY AND CONCLUSIONS

The study finds that during the eight year period of 2001 to 2008 annual conversion of agricultural land amounts to 0.56 per cent against the earlier reported figure of about one per cent. Highest rate of conversion was noted in Dhaka division (1.45 per cent) and the least in Khulna (0.26 per cent). In such conversion, 42 per cent of land owner households were involved. Among the different land ownership groups maximum rate of conversion was recorded among the functionally landless households (2.86 per cent per year) and the least was in the large land owners group, (0.20 per cent).

The main non-agricultural uses of converted land were identified to be housing, road construction, business establishment and educational and health organisations occupying 55,10,8 and 3 per cent of the converted land respectively, with little variations among the five land ownership groups. Converted land under self-ownership was predominantly used in housing to the extent of 78 per cent but it was as high as 89 per cent in urban villages. The coverage by housing in the case of sold out land was lower (30 per cent).

Based on the current estimated rate of conversion (0.56 per cent per year), annual loss of rice production in Bangladesh amounts to 0.23 million tons or 0.86 per cent of the country's annual rice production. Similar exercise using loss of paddy (0.8 maund) per land owner household, total amount of loss of rice comes to 0.302 million tons or about 1.16 per cent.

Information available indicate that the conversion of land benefits the converter households in terms of both higher household income and improved level of food

security. But the estimate of actual consumption of rice, flour and pulses was found to be almost equal. Improvement in the food security among the converter households was reportedly due to higher non-agricultural income, facilitated by expansion of business.

The regression exercise carried out identifies the following factors that have significant effects on the rate of conversion of agricultural land are:

- (i) total land area owned by a household;
- (ii) homestead area owned;
- (iii) primary occupation of the households head; and
- (iv) disaster losses incurred during the study period.

The regression coefficient shows that 10 per cent increase in total area owned by a household leads to rise in the conversion of land by 3.5 per cent; while the increase in homestead area by 10% reduces land conversion by 1.4 per cent. Perhaps, the area under homestead is small and has little scope for expansion. Non-agricultural occupation of the household heads also encourages land conversion.

The main policy suggestions to arrest the magnitude of land conversion are: agricultural occupations need to be made more profitable and attractive compared to non-agriculture and at the same time special tax may be imposed on the conversion of crop land. Area specific ceiling for different non-agricultural uses may be determined and imposed in industrialisation and urbanisation. Open discussions with the respondents in this regard suggest strict control on population growth, creation of more employment opportunities in rural non-farm sector and increase of land productivity through adoption of modern technologies, to be facilitated by the use of hybrid and high yielding seeds, uninterrupted supply of electricity to the irrigation equipment and adequate agricultural credit at subsidised rates of interest. In the adoption of new technologies, improved farm management practices are required.

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ANNEXURE TABLE I
**AMOUNT OF LAND CONVERTED DURING THE PERIOD OF 8 YEARS
 FROM 2000 TO 2008 BY DIVISION OF THE COUNTRY**

Division	Total Land Owned in 2001 (acres)	Total Land Converted (acres)	Per Cent of Land Converted in 8 Years	Annual Rate of Conversion (%)	Per Cent of Converted Land from	
					Crop Land	Non-crop Land
Barisal	87.17	3.28 (43)	3.76	0.47	78.35	21.65
Khulna	190.19	3.88 (42)	2.04	0.26	82.47	17.53
Rajshahi	242.13	7.42 (44)	3.06	0.38	89.76	10.24
Dhaka	172.88	20.05 (52)	11.60	1.45	95.16	4.84
Sylhet	194.11	6.49 (27)	3.34	0.42	86.13	13.87
Chittagong	141.54	5.13 (43)	3.62	0.45	87.13	12.87
All Areas	1028.01	46.25 (251)	4.50	0.56	89.88	10.12

Source: Field Survey, BUP, 2009.

Note: Figures within parentheses indicate the number of the converter households.

ANNEXURE TABLE II
AVERAGE PRICE OF LAND BY TYPE OF RESIDENCE IN 2008

Residence	Homestead Land	Farm Land (Flood Free High Land)
Metro-village	1,84,265	1,36,535
Urban Village	53,240	36,545
Peri-urban Village	30,690	17,402
Rural Village	15,339	10,109
All Areas	71,165	48,852

Source: Field Survey, BUP, 2009.

ANNEXURE TABLE III
AVERAGE AREA CONVERTED BY THE CONVERTED HOUSEHOLDS (DECIMALS)

Division	Metropolitan Village	Urban Village	Peri-urban Village	Rural Village	All Locations
Barisal	4.2 (15)	15.4 (12)	3.0 (10)	8.3 (6)	7.6 (43)
Khulna	2.5 (14)	13.2 (9)	9.5 (10)	15.4 (9)	9.2 (42)
Rajshahi	5.1 (16)	17.2 (11)	19.9 (8)	34.8 (9)	16.8 (44)
Dhaka	41.5 (18)	73.0 (12)	11.5 (12)	24.4 (10)	38.5 (52)
Sylhet	13.7 (6)	8.5 (9)	5.5 (8)	58.5 (8)	24.0 (27)
Chittagong	18.0 (12)	14.5 (13)	3.9 (10)	7.7 (10)	11.9 (43)
All Areas	15.1 (81)	24.8 (66)	9.1 (52)	24.8 (52)	18.4 (251)

Source: Field Survey, BUP, 2009.

Note: Figures within parentheses indicate the number of the converter households.

ANNEXURE TABLE IV
THREE MAJOR NON-AGRICULTURAL USES OF CROP LAND BY POSSESSION/OWNERSHIP STATUS AND THE RESIDENCE OF HOUSEHOLDS

Residence	Self-ownership			Sold			Acquired, Donation & Others		
	1 st	2 nd	3 rd	1 st	2 nd	3 rd	1 st	2 nd	3 rd
Metro Village	Housing (87)	Business (14)	Education & Health/ Factories/ Brick Fields (3)	Housing (33)	Factories (13)	Business (77)	Road Construction (50)	Housing/ Education & Health Institutions (17)	-
Urban Village	Housing (67)	Business/ Agr. Industries (10)	Brick Fields (5)	Housing (44)	Public Utilities (11)	-	Housing/ Road Constn. (25)	-	-
Peri-urban Village	Housing (81)	Business (15)	Brick Fields (4)	Housing (14)	-	-	Road Constn. (89)	Edujcation & Health Institution (11)	-
Rural Village	Housing (89)	Business (11)	Brick Fields (3)	Housing (27)	Factories (7)	-	Road Constn. (57)	-	Business (14)
All Villages	Housing (78)	Business (13)	Brick Fields (3)	Housing (30)	Factories (7)	Business (2)	Road Constn. (57)	Education & Health Institution (13)	Business (14)

Source: Field Survey, BUP, 2009.

Note: Non-reported areas excluded self-owned land amount to 1.98% of 12.28 acres, sold area accounts for 58% of 19.98 acres; and acquired/donated shares 3% of 9.31 acres. Figures in parentheses indicate percentage shares to uses.