

Geographical Concentration of Rural Poverty in Bangladesh

Paper 38

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The present paper titled ***Geographical Concentration of Rural Poverty in Bangladesh*** has been jointly prepared by *Dr Suan Pheng Kam*, GIS Specialist, *Dr Manik Lal Bose*, Project Scientist, *Mr. L Villano*, *Dr Mahabub Hossain*, Head Social Sciences Division, International Rice Research Institute (IRRI), Los Banos, Laguna, Philippines *Ms Tahmina Latif*, GIS Specialist, Local Government Engineering Department (LGED), *Mr. A H Chowdhury*, Senior System Analyst, *Mr. S Ghulam Hussain*, Chief Scientific Officer, *Mr. Mahbub Ahmed*, Director, Computer Unit, *Mr Anwar Iqbal*, Director, Nutrition Unit, Bangladesh Agricultural Research Council (BARC). The paper was presented at the CPD organised dialogue on ***Mapping Poverty for Rural Bangladesh: Implications for Pro-poor Development*** held on May 26, 2004 at CIRDAP Auditorium, Dhaka.

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Geographical Concentration of Rural Poverty in Bangladesh

Introduction

Despite substantial improvements in overall poverty alleviation in Bangladesh over the past few decades, large inequities in living standards exist across geographical space as well as among socio-economic groups. As stated in the Interim Poverty Reduction Strategy Project (IPRSP) report (Ministry of Finance, 2003), a key challenge in poverty reduction is to channel national resources to benefit those who are most needy, with minimum leakage. Mapping where the poor are concentrated would help measure the geographical inequality in well-being of the people. The more detailed the spatial scale for identifying pockets of poverty, the more precise would be the targeting of areas for programs for poverty reduction.

The spatial dimension of poverty is an issue for policy analysis particularly for the rural sector, where livelihoods are dependent on the natural resource base, which in turn are influenced by geographical factors. Researchers from the Social Sciences Division of IRRI, in collaboration with The Bangladesh Agricultural Research Council (BARC), The Local Government Engineering Department (LGED) and The Bangladesh Bureau of Statistics (BBS), implemented a project to identify and map, at detailed spatial scales, where the most disadvantaged among the rural populations in Bangladesh are concentrated, and to analyze factors contributing to the spatial concentration. We hope the findings would help identify target areas and priorities for agricultural R&D interventions and poverty reduction programs.

Methodology

The most direct, economic measure of poverty is based on income or expenditure (a measure of permanent income). Such data are commonly collected through sample surveys, such as the Household Income and Expenditure Surveys conducted by the BBS, or special purpose surveys by scholars. Because of the small sample size, data from these studies may provide only aggregated estimates of income or expenditure at national or rural/urban levels. The small area estimation (SAE) technique of Ghosh and Rao (1994), later popularized by the World Bank (Lanjouw, 2003; Elbers et. al., 2003), provides ways

for improving poverty estimates by combining limited-size survey data with more comprehensive data sets (typically collected in Censuses) that do not include income or expenditure data. The basis of the SAE approach is to develop, using the sample survey, a regression relationship between the direct poverty measure (Y_i) for household i and a number of explanatory variables (X_{1i}, \dots, X_{ki}) available in the survey data set as well as the census data set. The regression parameters are then applied to the larger data set to estimate income (or expenditure) for the households covered by the Census. The predicted income data for the Census households allow estimation of poverty at lower geographical scales due the large sample size.

In this study, we used the SAE approach to combine data from a national level sample survey conducted in 2000-01 with household- and member-level data from the 2001 Population Census. The Bangladesh Bureau of Statistics provided household and member level data from the Census for 5% of the enumeration areas. This sample consists of nearly one million households. However for some upazilas, the number of sample households is not large enough to produce statistically significant estimates of poverty measures. We have therefore excluded these upazilas for this study. Also excluded are the upazilas that are predominantly urban, i.e., those with more than 50% urban households, and those that have standard errors of the poverty indices estimates exceeding twice the respective mean standard errors for all upazilas.

The usual source of poverty indicators in Bangladesh is the HIES of the BBS. We did not however use HIES data for determining the income estimator because data of major income determining variables were not available at the household level. Instead, we used a sample survey conducted by the International Rice Research Institute (IRRI) that followed a nationally representative sample originally drawn by the Bangladesh Institute of Development Studies (BIDS) in 1987 to study the trends in rural poverty (Rahman and Hossain, 1994). The 2000-01 survey was conducted by IRRI to analyze determinants of rural livelihood systems in Bangladesh, for facilitating policy dialogues on agriculture's role in poverty reduction. The sample, drawn following a multi-stage random sampling method (district-upazila-union-village-household levels), comprise 1888 households from 62 villages belonging to 57 districts (details of the sampling methodology are described by Hossain et al, 2002).

Income Predictor Model

As mentioned earlier the first step of the study is to estimate a regression function for predicting the income for the census households. The income earning capacity of the household would obviously depend on the size of land owned, the number of family members in the working age group, and the amount of non-land fixed assets used in production activities. The productivity of land would depend on the access to irrigation infrastructure, which would facilitate the adoption of high-yielding crop varieties and improved farming practices. Labour productivity and opportunities for economic activities depend on the quality of labor, which in turn is enhanced through investment on human resources, particularly education and training. The productivity of labor and capital would also vary depending on the economic activity in which labor and capital are deployed. So, measurement of labor and capital separately for agriculture and non-agricultural activities may give a more precise estimate of the productivity of these factors of production. The location of the village with respect to infrastructure facilities such as roads, railway lines and river ghats, and the access of the household to rural electrification could augment the productivity of the basic factors of production by a) improving the efficiency in the organization of production, and b) facilitating mobility of factors of production to higher productive economic activities.

We estimated the above income determination model with household level data generated by the sample survey. The estimated results are reported in Table 1. The model explains about 78% of the variation in household incomes across the sampled households. The regression coefficients constitute the marginal contributions of the independent factors to total household income. For example, the coefficient for the land variables indicates that one ha of land on the margin contributes US\$ 339¹ per year to household income, while if the land has access to irrigation an additional income of US\$271 would be obtained. An additional agricultural worker for the household would earn only US\$ 60 per year, while an additional non-agricultural worker would earn US\$391. An additional year of schooling increases the income of the household by US\$25. Schooling also contributes to increase in household income by facilitating mobility of the workers from agriculture to non-farm activities, and migration of workers to urban areas and abroad. A rural household with access to paved roads gets on average an additional income of US\$106,

¹ At currency conversion rate of US\$1=Taka52.14

while a household with electricity connection gets an additional income of US\$284. Judging from the t-values for the regression coefficients, the most significant factors influencing household incomes are accumulation of non-agricultural capital, employment of family members in non-farm activities, migration of household members, and endowment of land.

**Table 1. Contribution of different factors to rural incomes:
Estimates from sample survey, 2001**

Factors	Mean	Marginal return	t-value of the coefficient	Contribution to income (%)
Land owned (ha)	0.53	339	9.92	14.6
Irrigated land (%)	44.4	271	4.29	5.2
Agricultural capital (US\$)	151	1.21	9.47	14.5
Non-agricultural capital (US\$)	412	0.31	38.46	10.5
Agricultural worker (person)	0.81	60	2.31	3.9
Non-agricultural worker (person)	0.86	391	15.61	27.1
Average education of worker (years)	4.35	25	4.22	8.8
Household with migrant member (%)	10.3	638	10.92	5.3
Villages with paved roads (%)	34.2	106	2.04	2.9
Households with electricity (%)	31.5	284	4.23	7.3

Predicted income for Census households

The full income determination model as estimated in Table 1 **could not**, however, be used for predicting income of the Census households, because the Population Census did not collect information on many of the predictor variables. Of the predictor variables in Table 1, those for which data are available from the 2001 Population Census are the number of agricultural workers (AGWRKR), the number of non-agricultural workers (NAGWRKR), whether the household owns agricultural land (LNDOWNR), the average years of schooling of the working members (EDCN), whether the household has electricity connection (ELCT). The important missing variables are landholding size, and the amounts of agricultural and non-agricultural capital. It is to be noted from the high t-

values for their respective regression coefficients that these three variables, particularly non-agricultural capital, are important predictors of household income.

Therefore an alternative income predictor model had to be developed, whereby the predictor variables selected must be common to both the sample survey and Census data sets. We substituted landholding size with the qualitative indicator LNDOWNR, i.e. whether the household owns agricultural land. We used the dummy variable TRADE (i.e. whether the household is engaged in business) as a proxy for non-agricultural capital. From the sample survey data we found strong correlations of landholding and capital with the average educational level of working members. So we decided to use the interaction terms of LNDOWNR and TRADE with EDCN; and of LNDOWNR with variables indicating good quality housing PUCCA (brick type) and SEMIPUC (semi-brick type) to capture the effects of the missing variables. Also, since the effect of education would be higher for households with workers attending college than those dropping out at the primary or secondary schools, we also used dummy variables to represent the first, second and third adult members of the household who attended college (CLLG1, CLLG2, CLLG3). We also included the dummy variable RELIGION (with value 1 for non-Muslim households) to capture a relevant social factor for Bangladesh.

The following income predicting model with the above variables was estimated from the sample survey. The t-values are provided in parentheses below their respective regression coefficients.

$$\begin{aligned}
 \text{INCM} = & 235 \text{ AGWRKR} + 297 \text{ NAGWRKR} + 32 \text{ EDCN} + 395 \text{ CLLG1} \\
 & (5.67) \qquad (6.39) \qquad (5.63) \qquad (2.79) \\
 & + 660 \text{ CLLG2} + 447 \text{ CLLG3} - 93 \text{ RELIGION} \\
 & (2.53) \qquad (3.50) \qquad (-0.81) \\
 & + 325 \text{ TRADE} + 50 \text{ TRADE*EDCN} + 3 \text{ ELCT} + 11 \text{ TRADE*ELCT} \\
 & (3.02) \qquad (2.57) \qquad (3.61) \qquad (4.56) \\
 & + 117 \text{ LNDOWNR} + 1539 \text{ LNDOWNR *PUCCA} + 493 \text{ LNDOWNR *SEMIPUC} \\
 & (1.61) \qquad (10.23) \qquad (5.19) \\
 \\
 & R^2 = 0.57, \quad N = 1,888
 \end{aligned}$$

This equation was used to predict the income of the population Census households using the values of the right-hand side variables for that household. The average per capita income estimated from the predicted values is US\$221 for all households within the considered upazilas, while it is US\$206 if only rural households are taken into account. In comparison, the average per capital income for rural households estimated using the 2000 HIES is US\$193.

Estimates of income and poverty

The predicted income for the Census households allowed us to estimate poverty at the upazila level. A conventional way to measure poverty is to establish a poverty line, defined as the threshold level of income needed to satisfy basic minimum food and non-food requirements, and determine the number of households (people) below that line as a percent of the total households (population). This Head Count Index (HCI) is a measure of the **incidence of poverty**. The limitation of the measure is that it is insensitive to changes in the level and distribution of income among the poor. Other measures of poverty commonly used to take into account the distribution issue are (a) the Poverty Gap Index and (b) the Squared Poverty Gap Index (Sen, 1981; Foster et al., 1984; Ravallion and Sen, 1996). The Poverty Gap Index measures the average (of both poor and non-poor households) of the percent of income gap of the poor households from the poverty line, and is regarded as a measure of **intensity of poverty**. It indicates the percent of total income needed to be transferred from the non-poor to poor households to lift the poor above the poverty line. On the other hand, the Squared Poverty Gap Index, a measure of the **severity of poverty**, is more sensitive to income inequalities among the moderate and extreme poor. A high value of the index suggests that higher priority must be given to the improvement in the economic conditions of the extreme poor compared to the moderate poor. For this study we made estimates for all these poverty indices and mapped the Head Count Index for two poverty lines as indicators of incidence of poverty and extreme poverty. These two indicators, i.e. the percentage of poor and extreme poor households, are easily understood by the general public and hence are popular with policy makers and development practitioners.

Setting the poverty line income has been a controversial issue in Bangladesh. It has been the major source of discrepancies in the levels and trends of poverty estimated in various

studies (Ravallion and Sen, 1996). The popular approach used by the poverty studies in Bangladesh is the “cost of basic needs” method (Muqtada, 1986, Hossain and Sen, 1992; Ravallion and Sen, 1996; Sen, 2003). This method takes a normative consumption bundle of food items recommended for the average Bangladeshi population that gives a per capita daily intake of 2112 kilocalories and 58 gm of protein needed to maintain a healthy productive life (Muqtada, 1986). A lower threshold of 1800 kilocalories is used for setting the poverty line for the extreme poor. The corresponding expenditures on food items are estimated by using a set of prices for the specific food items for the reference period of the survey. It is then assumed that an additional 40% income is needed to meet the non-food basic needs. We used this method for estimating two levels of poverty line – one for the poor in general and one for the extreme poor. The prices for the food items were estimated from the 2000 HIES data on the quantity and value of foods consumed by rural households. The two poverty lines were estimated to be US\$136 and US\$78 per capita per annum for the general poor and extreme poor respectively. The Head Count Index was estimated for both the generally poor and extreme poor by applying these two poverty lines. The poverty gap and squared poverty gap indices were calculated using the poverty line for the generally poor. The estimates of different measures of poverty and income equality for rural Bangladesh as a whole are presented in Table 2. The Table also compares these estimates with those estimated by the 2000 HIES survey. The numbers show close correspondence in estimates from the predicted income for the Census households and those estimated by HIES.

Table 2. Estimates of income inequality and poverty for rural households, 2001

Mean estimates based on:	5% EA sample of 2001 Pop Census ¹		HIES
	All households	Rural households	Rural households
Annual income per capita, Taka	218	204	193
Gini index for per capita income, %	39.3	41.0	36.5
Head Count Index (general poor), %	42.9	44.6	43.6
Head Count Index (extreme poor), %	17.3	18.0	12.0
Poverty gap index, %	15.9	16.6	13.6
Squared poverty gap index, %	7.8	8.1	6.3

¹ Estimated income using household data of Population Census 2001 based on coefficient of income function from 62-village study, IIRI.

Spatial Variation in Poverty

The spatial variation in the incidence of poverty and extreme poverty are shown in Map 1 and Map 2 respectively (see Appendix 1 for detailed data at the upazila level). Estimates could not be made for most of the upazilas for the Chittagong Hill Tracts region and some upazilas in the coastal Barisal region because of the small sample size, resulting in high standard errors. The metropolitan thanas were also not included in the analysis. The Head Count Index ranged from 16.8% to 81.4% of the households across the 415 upazilas for which these estimates are statistically significant. The colors in the map represent the four quartiles of the upazilas ranked in order of the magnitude of the poverty incidence, with the red showing the top 25% of the upazilas with highest incidence of poverty (greater than 50.5%). The areas with highest incidence of poverty are the depressed basins in Sunamganj, Habiganj and Netrokona districts in the greater Sylhet region; the northwestern districts of Jamalpur, Kurigram, Nilphamari and Nawabganj; and, in the south, Cox's Bazar and coastal islands of Bhola, Hatia and Sandeep. The areas with low levels of poverty are the greater Dhaka and Barisal regions, and Bogra, Pabna, and Jessore regions. This spatial pattern is similar with regard to incidence of extreme poverty.

To determine if poverty has persisted, we compared the list of 100 most depressed upazilas listed in a 1990 study (Anon., 1991) with the results from this study. The 1990 study was undertaken by a special Task Force on Poverty Alleviation, which was one of 29 Task Forces set up to review a variety of development issues for recommending policy interventions to the Government of Bangladesh. The sixth value column of the table in Appendix 1 indicates, with the value 4, eighty-nine of these 100 most depressed upazilas of 1990, among the 415 upazilas considered in this study. In that study, a weighted linear combination of 5 variables – land area per person, proportions of irrigated area and of land under broadcast *aus* and deepwater *aman*, proportion of functionally landless households and of population engaged in non-farm activity – was used as an indicator of the economic position of the upazilas.

Table 3 shows, for each poverty index, the distribution of these 89 upazilas across the four quartiles according to this study's estimates for 2001. The comparisons suggest that roughly one-third of the most depressed upazilas of the 1990s remain in the worst quartile

(rank 4), and roughly two-thirds are still found within the two worst quartiles (ranks 4 and 3). However, this comparison needs to be treated with caution because the basis for determining the most depressed upazilas in the 1990 study is different from the method used in this study.

Table 3. Quartile distribution of the estimated 2001 poverty indices for the 89 most depressed upazilas of 1990.

Quartile	HCI_poor		HCI_xpoor		Poverty gap		Sq poverty gap	
Rank^a	Count	Cum %	Count	Cum %	Count	Cum %	Count	Cum %
4	34	38.2	28	31.5	31	34.8	28	31.5
3	25	66.3	27	61.8	24	61.8	27	61.8
2	19	87.6	20	84.3	23	87.6	21	85.4
1	11	100	14	100	11	100	13	100

^aRank 1 denotes the best quartile (i.e. lowest poverty incidence, intensity and severity), and rank 4 the worst quartile

Factors behind geographical variation in poverty:

Next, we attempted to identify which factors contribute most to people's depressed state of well being in these poverty hot spots. Possible determinants would be other aspects of human well-being and deprivation, including people's assets (human, financial and physical capital); their opportunities (natural resources endowment, accessibility, migration); and their vulnerabilities or susceptibilities to environmental stresses. There may be spatial differences in the influence of these determinant factors on economic poverty, which might indicate the need for different sets of anti-poverty interventions for particular poverty hot spots.

We explored regression relationships between the incidence of poverty and extreme poverty (i.e. the Head Count Index for the general poor and extreme poor) and variables representing a wide range of socio-economic, agricultural, infrastructure and bio-physical factors. The independent (explanatory) variables contributing significantly to the regression relationship are considered major determinant factors (Table 4). The variables explain over 70-80% of the variation in the incidence of poverty across the upazilas. Since education and access to electricity was used as key estimators of income for Census households we ran another multivariate regression excluding these two variables for

assessing the impact of other, mainly, area level variables on the spatial variation in poverty (Table 5). The remaining variables account for 22-33% of the variation in the poverty indices. The relative importance of different variables in influencing poverty can be assessed from the t-values of the regression coefficients.

Implications for policy

Asset redistribution

The results suggest that landownership and tenancy (i.e. entitlement to land) are major determinants of poverty. The 2001 Census estimated that about 43% of the households do not own any cultivated land. The variation in the extent of landlessness across the upazilas can be seen from Map 3. The upazilas with highest occurrence of landlessness are in the greater Sylhet, Chittagong and in the Khulna regions. Table 3 shows the obvious result that the higher the degree of landlessness the higher the incidence of poverty in the upazilas. The incidence of tenancy that varies from 7 to 57 % of cultivated land. The top quartile of the upazilas with high incidence of tenancy are concentrated in the coastal region of Barisal, Noakhali and Chittagong, and also in the Nawabganj and Naogaon districts in the Rajshahi region (Map 4). The regression coefficient of the tenancy variable suggests that getting access to land from the tenancy market would help reduce poverty.

The above findings present difficult policy choices on asset redistribution of land through land reforms. While such reforms are highly desirable, their feasibility is questionable given the already high population density in most areas of Bangladesh. The average size of land owned by rural households has been declining and has already reached 0.53 ha. Very little land would be available for redistribution, if the ceiling on landownership has to be kept at a viable level. However, the government should take a program for redistributing *Khas* land for homestead to those who do not own even homestead land. The 2000-2001 sample household survey noted that many large landowning households are moving to more productive non-farm occupations by renting out land to the landless and near-landless households (Hossain et. al, 2002). Thus, the markets forces are contributing to redistribution of land through the tenancy market.

Table 4. Factors contributing to spatial variation in incidence of poverty and extreme poverty at upazila level: regression estimates (model with education and electricity)

Factor	Mean value	HCI_poor		HCI_ex-poor	
		Coeff	t ¹	Coeff	t ¹
(Constant)		68.729	35.24	10.803	15.35
% landless households	43.35	0.044	2.02	0.053	6.71
% agricultural area under tenancy	19.95	0.094	3.03	0.032	2.84
Number of livestock per household (HH)	8.65	0.302	2.83	0.183	4.74
Average years of schooling of adult HH members	3.28	-8.507	-24.45	-2.091	-16.65
% households with electricity supply	22.35	-0.099	-5.53	-0.019	-2.89
% net cropped area served by modern irrigation facilities	52.89	-0.032	-4.49	-0.012	-4.76
Travel time by road to main service facilities	25.60	0.019	2.26	0.008	2.70
% high land	26.89	0.002	0.25	0.010	3.25
% low and very low land	12.42	0.063	4.99	0.028	6.15
% area with clay and loamy clay soil	41.32	-0.043	-5.98	-0.011	-4.31
	R ²	0.81		0.71	
	F	179.4		103.9	

¹ t values in bold are significant beyond the 0.10 level.

Table 5. Factors contributing to spatial variation in incidence of poverty and extreme poverty at upazila level: regression estimates (model without education and electricity)

Factor	Mean value	HCI_poor		HCI_ex-poor	
		Coeff	t	Coeff	t
(Constant)		37.283	11.54	7.951	4.00
% landless households	43.35	0.135	3.18	0.179	6.83
% agricultural area under tenancy	19.95	-0.111	-1.80	-0.050	-1.31
Number of livestock per household	8.65	0.333	1.55	0.356	2.69
% net cropped area served by modern irrigation facilities	52.89	-0.047	-3.36	-0.040	-4.62
Travel time by road to main service facilities	25.60	0.093	5.54	0.055	5.33
% high land	26.89	0.029	1.60	0.032	2.89
% low and very low land	12.42	0.148	6.23	0.110	7.48
% area with clay and loamy clay soil	41.32	-0.083	-5.80	-0.049	-5.51
	R ²	0.22		0.33	
	F	15.6		25.9	

¹ t values in bold are significant beyond the 0.10 level.

Education and human capital formation

Map 5 shows the spatial distribution of educational attainment of the workers across upazilas. The average years of schooling of the workers at the upazila level vary from 0.1 year to 6.5 years. The upazilas with low levels of education are concentrated in the greater Sylhet, Mymensingh and the Rangpur regions, while those with relatively higher levels of education are concentrated in the greater Barisal, Noakhali and Comilla regions. Table 3 shows close association of high incidence of poverty with low educational attainment of the working age population. This relationship is the strongest among all explanatory variables. The results suggest that improving human capital through providing education and training remain the most fundamental intervention to benefit the poorest of the rural poor in the medium and long term.

The government of Bangladesh has committed to achieving universal primary education and removing gender disparity in education by 2015 as targets for achieving the Millennium Development Goals. It is gratifying to note that the government has taken positive measures to achieve this target. However there is a long way to go. Figure 1 shows the school participation rate for the children by age. It can be noted that many children start going to school at older ages, and the drop out rate after attending primary school is very high. The figure also shows that over 30%

of the children never attend school. The school participation rate is about 65% for the age group 7 to 11, and 56% for the age group 12-17. Figure 2 and Table 6 show that poverty itself is a major factor determining the demand for education. The school participation rate is significantly higher in upazilas with lower incidence of poverty. For the top 25% of the upazilas in the scale of poverty almost 45% of the children never attend schools. Thus the government needs to provide special incentives to poor households to induce them to send the children to schools and to keep them till the secondary level to improve the human capital content. That the incentives work is shown by the higher participation of girls in the secondary school age group than boys, which is a positive impact of the government's policy of providing stipends to girls in the secondary schools (Table 7).

There are still obvious geographical inequalities in school enrollment rates, as shown in Maps 6 and 7. The lowest enrollments are found in the greater Sylhet, Mymensingh and

the Rangpur regions. Considering that these are also the areas with the highest poverty incidence (comparing with Maps 1 and 2), it is imperative that more effort needs to be made to increase school participation at both primary and secondary levels in order to alleviate the poverty situation in the long term.

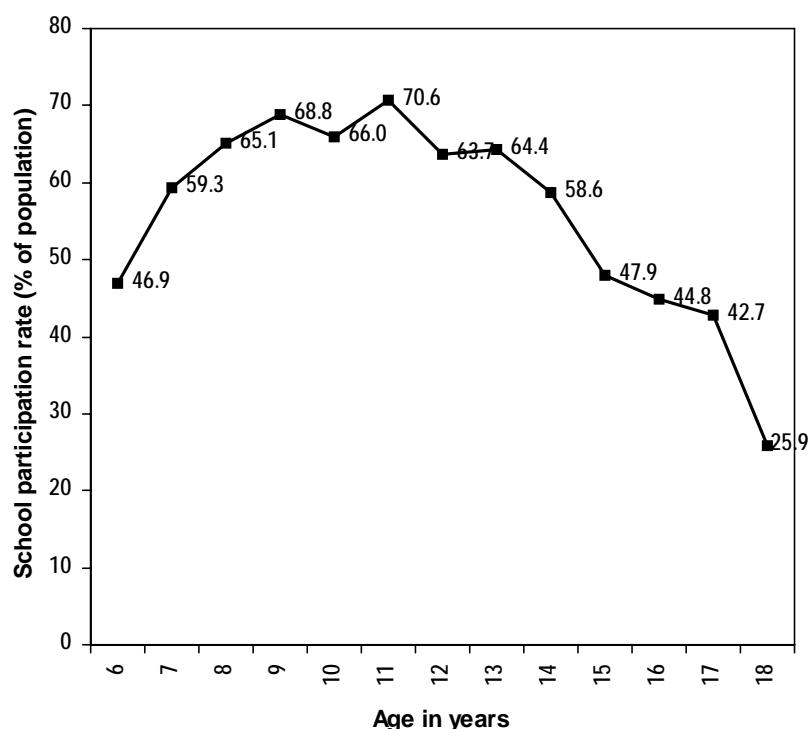


Figure 1. Association of school participation rate with incidence of poverty by age group

Table 6. Primary and secondary school participation rate (%) for all households in 425 Upazilas

HCI poverty quartile	HCI poverty incidence (%)	Primary school participation rate	Secondary school participation rate
1st quartile: Very low poverty incidence	31.03	73.49	62.88
2nd quartile: Low poverty incidence	38.19	68.37	58.99
3rd quartile: Moderate poverty incidence	42.71	64.26	55.29
4th quartile: High poverty incidence	50.88	54.89	43.81
All households	40.73	64.59	55.93

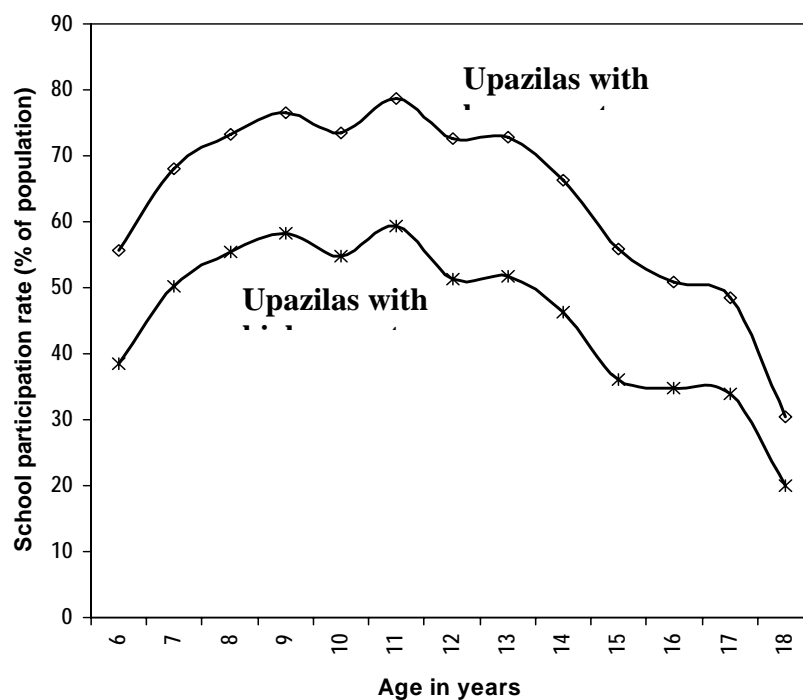


Figure 2. Association of school participation rate with high and low incidence of poverty by age group

Table 7. Secondary school participation rate (%) by sex (age 11-17 years) for all households in 425 Upazilas

HCI poverty quartile	Male student participation rate	Female student participation rate	All student participation rate
1st quartile: Very low poverty incidence	62.48	67.41	64.76
2nd quartile: Low poverty incidence	58.19	64.00	60.81
3rd quartile: Moderate poverty incidence	54.02	60.81	57.09
4th quartile: High poverty incidence	43.82	47.84	45.63
All households	55.22	60.66	55.93

Development of infrastructure

The positive impact of infrastructure on reduction of poverty is indicated by the highly statistically significant association of poverty with the coverage of irrigation, access to electricity and the accessibility of the villages to other infrastructure (upazila headquarters, educational institutions, health facilities etc). The government has a major role to play in providing these infrastructure facilities. The extents of coverage of these infrastructures are still at a low level in Bangladesh.

During the 1990s Bangladesh has made great progress in developing rural roads due to the impressive work of the Local Government Engineering Department (LGED). The average travel time to access the main service facilities by road is estimated at 25 minutes. But for some upazilas the time is more than four hours. Map 8 shows the spatial variation in the accessibility index. The upazilas with low levels of accessibility are in the Chittagong Hill tracts, Sunamganj and Netrokona and Kurigram districts in the north, and Patuakhali, Gopalganj and Bagerhat districts in the southwest. These areas should get priority in future transport infrastructure development projects.

According to the 1991 Population Census, only 23% of the rural households now have electricity connection. Obviously there is a long way to go to for the government to provide people universal access to this infrastructure that increases the profitability of private sector investment in agriculture and various non-farm activities, and changes the attitude of the people towards modernization. At the upazila level the coverage of electricity varies from 0.3% to 82% of the households. For 50% of the upazila the coverage of electricity is less than 15%. The spatial variation in the electricity coverage can be seen from Map 9. The areas with very low coverage of electricity are Nilphamari, Kurigram districts, the greater Mymensingh and Sylhet region, the Chittagong Hill Tracts region, and Khulna region and the coastal islands.

Bangladesh has also made good progress in extending irrigation facilities since the early 1980s through private sector investment in shallow tubewells and power pumps. The area covered by tubewells and power pumps reached 4.1 million ha in 2002, which is about 52% of the cultivated land. The spatial distribution of the coverage of modern irrigation

facilities can be seen from Map 10. The coverage has expanded mostly to Central and the Northwestern and Southwestern parts of the country. The coverage is still low in coastal areas, in the depressed basins in the Sylhet and Faridpur belt, and in the Chittagong Hill Tracts regions. For expansion of irrigation in these areas surface water development projects will be required.

Agricultural development and technological needs

Few of the bio-physical variables have been found to be statistically significant in linear regression with the poverty indices, except for the prevalence of low-lying land and soil texture. The negative correlation of poverty incidence with prevalence of clay and loamy clay soils could be associated with the widespread use of these soils for rice cultivation and the importance of rice for food security of poor households.

However the dominant negative effect of depression areas and flood-related risks on poverty suggests that the extreme poor in these areas need to engage in non-farm income-generating activities and/or seeking alternative land uses that turn the constraints into opportunities, such as fisheries. For example, one major pocket of high poverty incidence occurs in the *haur* (deeply-flooded) areas in north-eastern districts of Mymensingh and Sylhet. Farmers in some of these areas have shifted to planting high yielding boro rice by abandoning the low-yielding deepwater aman rice traditionally grown in the area. Despite this, and the high migration of rural labor out of agriculture (particularly from Sylhet), the upazila here largely remain among the poorest in Bangladesh. Agricultural interventions are still important, not only for increasing productivity of rice as the dominant crop, but also for diversifying production systems appropriate to the natural ecology of the area. The abundance of water and deep flooding provides opportunities for developing technologies for agriculture-aquaculture systems appropriate for poor rural communities, with accompanying policy, infrastructural and micro-credit support.

The significance of climatic factors and associated constraints (particularly drought) in explaining poverty over geographical space seems to be masked by other factors, particularly irrigation. Pockets of high poverty incidence do occur in the northwestern part of Bangladesh. While drought contributes to depressed crop productivity in these areas, other factors such as poor accessibility and high labor participation in agriculture

tend to dominate the statistical relationship with poverty incidence. This, however, does not diminish the importance of developing drought-coping strategies for improving agricultural productivity in the drought-affected areas. The elevated land and soil types are conducive for upland crops and diversification, making the role of irrigation in these areas particularly important.

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Appendix 1: Quartile ranking* of upazila, based on selected indicators of poverty and determinant factors

No.	Upazila	District	Income poverty & inequality					1990 rating	Education			Land & Labor		Infrastructure	
			HCI_p	HCI_xp	Intensity	Severity	Gini		AdltEdu	1°Enrl	2°Enrl	Lndless	AgWage	Electric	Trv2Fac
1	Maheskhali	Cox Bazar	4	4	4	4	4	4	4	4	4	4	1	4	4
2	Nikli	Kishoreganj	4	4	4	4	2	4	4	4	4	4	1	4	4
3	Ramgati	Lakshmipur	4	4	4	4	4	4	4	4	4	4	3	4	4
4	Lama	Bandarban	4	4	4	4	2	4	4	4	4	3	1	4	4
5	Kutubdia	Cox Bazar	4	4	4	4	3	4	4	3	4	4	1	4	4
6	Teknaf	Cox Bazar	4	4	4	4	3	4	4	4	4	4	1	3	4
7	Dewanganj	Jamalpur	4	4	4	4	1	4	4	4	4	4	3	4	4
8	Hatiya	Noakhali	4	4	4	4	4	4	3	4	4	4	1	4	4
9	Dowarabazar	Sunamganj	4	4	4	4	1	4	4	4	4	3	1	4	4
10	Jamalganj	Sunamganj	4	4	4	4	1	4	4	4	4	3	2	4	4
11	Tahirpur	Sunamganj	4	4	4	4	1	4	4	4	4	3	2	4	4
12	Gowainghat	Sylhet	4	4	4	4	2	4	4	4	4	3	1	4	4
13	Ajmiriganj	Habiganj	4	4	4	4	2	4	3	4	4	4	4	4	4
14	Baghichhari	Rangamati	4	4	4	4	4	4	4	4	4	2	3	4	4
15	Chhatak	Sunamganj	4	4	4	4	4	4	4	3	4	4	2	3	4
16	Sunamganj	Sunamganj	4	4	4	4	3	4	4	4	4	4	3	3	3
17	Companiganj	Sylhet	4	4	4	4	1	4	4	4	4	3	2	4	3
18	Charfasson	Bhola	4	4	4	4	2	4	3	4	4	4	2	3	4
20	Tazumuddin	Bhola	4	4	4	4	2	4	4	4	4	2	3	4	3
21	Sundarganj	Gaibandha	4	4	4	4	2	4	4	4	3	3	4	4	4
22	Panchhari	Khagrachhari	4	4	4	4	2	4	3	3	3	4	2	4	4
23	Rajnagar	Maulvibazar	4	4	4	4	4	4	4	4	4	4	1	4	1
24	Durgapur	Netrokona	4	4	4	4	3	4	4	4	4	3	3	3	4
25	Kalmakanda	Netrokona	4	4	4	4	2	4	4	4	4	3	2	3	4
26	Mohanganj	Netrokona	4	4	4	4	4	4	4	4	4	3	2	3	4
27	Langadu	Rangamati	4	4	4	4	1	4	4	4	4	1	1	4	4
28	Bishwambarpur	Sunamganj	4	4	4	4	1	4	4	4	4	3	2	4	2
29	Derai	Sunamganj	4	4	4	4	2	4	3	4	4	4	2	3	4
30	Dharampasha	Sunamganj	4	4	4	4	2	4	4	4	4	3	3	4	4
31	Kanaighat	Sylhet	4	4	4	4	3	4	4	2	4	4	3	1	4
32	Lalmohan	Bhola	4	4	4	4	2	4	4	4	4	3	3	4	2
33	Banshkhali	Chittagong	4	4	4	4	4	4	4	4	4	4	1	3	1
34	Chakaria	Cox Bazar	4	4	4	4	4	4	3	3	4	4	1	3	4
35	Fulchhari	Gaibandha	4	4	4	4	2	4	4	4	3	2	4	4	4
36	Nageswari	Kurigram	4	4	4	4	2	4	4	4	4	2	4	4	4
37	Dhubarua	Netrokona	4	4	4	4	1	4	4	4	4	2	3	4	3
38	Atpara	Netrokona	4	4	4	4	1	4	4	4	4	2	3	4	4
39	Barhatta	Netrokona	4	4	4	4	2	4	4	4	4	3	3	3	4
40	Madan	Netrokona	4	4	4	4	1	4	4	4	4	2	1	3	4
41	Hizla	Barisal	4	4	4	4	3	4	3	4	4	4	2	3	4
42	Shariakandi	Bogra	4	4	4	4	1	4	4	4	3	3	4	4	4
43	Nasirnagar	Brahmanbaria	4	4	4	4	2	4	4	4	4	2	3	3	4
44	Ramu	Cox Bazar	4	4	4	4	3	4	4	4	4	4	1	3	1
45	Baniachang	Habiganj	4	4	4	4	3	4	4	4	4	2	4	3	4
46	Chunarughat	Habiganj	4	4	4	4	1	4	4	4	4	4	4	2	1
47	Itna	Kishoreganj	4	4	4	4	3	4	4	4	4	2	3	4	4
48	Rowmari	Kurigram	4	4	4	4	1	4	4	4	3	3	4	4	2
49	Khaliaghuri	Netrokona	4	4	4	4	2	4	3	4	4	4	2	1	3
50	Kendua	Netrokona	4	4	4	4	2	4	4	4	4	2	3	3	4
51	Purbadhala	Netrokona	4	4	4	4	2	4	4	4	4	1	3	4	4
52	Jaldhaka	Nilphamari	4	4	4	4	2	4	4	4	4	1	4	4	3
53	Sulla	Sunamganj	4	4	4	4	3	4	3	4	4	4	1	4	4
54	Bancharampur	Brahmanbaria	4	4	4	4	4	4	4	4	3	3	2	2	3
55	Ukhia	Cox Bazar	4	4	4	4	4	4	4	4	4	4	1	2	1
57	Bahubal	Habiganj	4	4	4	4	2	4	4	3	4	4	3	3	1
58	Tarail	Kishoreganj	4	4	4	4	2	4	4	4	4	4	3	1	4

*Note

1: Best quartile; 4: Worst quartile

Appendix 1: Quartile ranking* of upazila, based on selected indicators of poverty and determinant factors

No.	Upazila	District	Income poverty & inequality					1990 rating	Education			Land & Labor		Infrastructure	
			HCI_p	HCI_xp	Intensity	Severity	Gini		AdltEdu	1°Enrl	2°Enrl	Lndless	AgWage	Electric	Trv2Fac
60	Kishoreganj	Nilphamari	4	4	4	4	2	4	4	4	4	2	4	4	2
61	Haimchar	Chandpur	4	4	4	4	2		3	2	2	4	2	3	3
62	Astogram	Kishoreganj	4	4	4	4	3	4	4	4	4	1	2	2	4
63	Mithamoin	Kishoreganj	4	4	4	4	1		4	2	4	1	1	3	4
64	Porsha	Naogaon	4	4	4	4	2	4	4	2	4	4	3	3	2
65	Bholahat	Nawabganj	4	4	4	4	4	4	4	4	4	4	3	3	1
66	Razibpur	Kurigram	4	4	4	4	1		4	1	3	2	4	4	3
67	Niamatpur	Naogaon	4	4	4	4	2		3	1	3	4	3	3	4
68	Shapahar	Naogaon	4	4	4	4	2		3	2	2	4	4	3	4
69	Taraganj	Rangpur	4	4	4	4	3	4	4	3	4	2	4	4	2
70	Burhanuddin	Bhola	4	4	4	4	2		3	2	3	3	3	4	1
71	Sarail	Brahmanbaria	4	4	4	4	4		4	4	4	2	3	1	3
72	Boalmari	Faridpur	4	4	4	4	2		3	3	3	1	2	4	2
73	Nandail	Mymensingh	4	4	4	4	2	4	4	4	4	1	4	2	2
74	Debiganj	Panchagarh	4	4	4	4	2	4	3	2	2	2	4	4	3
75	Goshairhat	Shariatpur	4	4	4	4	2	4	4	2	3	2	4	4	1
76	Ranisonkail	Thakurgaon	4	4	4	4	3		4	2	3	2	4	4	2
77	Haripur	Thakurgaon	4	4	4	4	3		4	1	2	2	4	4	2
78	Damudya	Shariatpur	4	4	4	4	4		3	2	2	1	4	2	1
79	Kasba	Brahmanbaria	4	4	4	4	3		2	3	1	2	2	1	3
80	Madarganj	Jamalpur	4	4	4	3	1		4	4	3	2	1	4	4
82	Chilmari	Kurigram	4	4	4	3	2	4	4	1	2	4	4	4	4
85	Daulatpur	Manikganj	4	4	4	3	4	4	4	3	3	1	1	3	4
87	Bhangura	Pabna	4	3	4	4	1		4	3	3	3	3	3	4
96	Sadarpur	Faridpur	4	4	4	3	4		4	3	3	1	2	3	2
19	Khansama	Dinajpur	4	3	4	4	4	4	3	1	2	3	4	4	4
56	Gangachara	Rangpur	4	3	4	4	3	4	4	3	4	2	4	3	1
59	Cox's Bazar	Cox Bazar	3	4	4	4	4		3	4	4	4	1	1	4
81	Matiranga	Khagrachhari	3	4	4	4	4		3	2	3	4	1	3	4
83	Bhola	Bhola	3	4	4	4	4		2	4	4	4	3	2	3
84	Nabiganj	Habiganj	3	4	4	4	4		3	4	4	4		2	2
86	Kamalganj	Maulvibazar	3	4	4	4	4		3	4	4	4	2	2	1
88	Fatikchhari	Chittagong	3	4	4	4	4		2	3	3	4	1	1	4
90	Barlekha	Maulvibazar	3	4	4	4	4		3	1	4	4	1	4	1
91	Muradnagar	Comilla	3	4	4	4	4		3	4	4	2	2	1	3
92	Srimangal	Maulvibazar	3	4	4	4	4		2	4	4	4	2	1	1
93	Madhabpur	Habiganj	3	4	4	4	3		3	2	4	3		2	2
94	Manikchhari	Khagrachhari	3	4	4	4	4		2	1	1	4	1	3	4
95	Gomastapur	Nawabganj	3	4	4	4	4	4	4	1	2	4	4	3	2
97	Noakhali	Noakhali	3	4	4	4	4		2	2	2	3	1	3	2
98	Nilphamari	Nilphamari	3	4	4	4	2		3	3	2	3	3	3	2
99	Biral	Dinajpur	3	4	4	4	3		3	1	2	4	3	3	2
100	Kaharol	Dinajpur	3	4	4	4	3		2	1	1	3	4	4	3
101	Islampur	Jamalpur	4	3	4	3	2		4	4	4	3	3	4	4
102	Melandaha	Jamalpur	4	3	4	3	1	4	4	4	4	3	2	4	4
103	Bhurungamari	Kurigram	4	3	4	3	1	4	4	4	3	3	4	4	3
104	Shibchar	Madaripur	4	4	3	3	3		4	3	4	1	2	3	2
89	Phulpur	Mymensingh	4	3	4	3	1	4	4	3	4	2	3	4	3
105	Hatibandha	Lalmonirhat	4	3	4	3	3		3	2	2	1		4	3
106	Nawabganj	Nawabganj	3	4	3	4	4	4	3	3	3	4	4	2	4
107	Birganj	Dinajpur	3	4	3	4	3		2	2	2	4	4	3	3
108	Dighinala	Khagrachhari	3	4	3	4	2		2	1	1	3	1	3	1
109	Saidpur	Nilphamari	3	4	3	4	4		2	2	3	4	3	1	1
110	Mollahat	Bagerhat	3	4	3	4	4	4	2	2	1	2	2	1	1
111	Charbhadrasan	Faridpur	4	3	3	3	2		4	3	3	3	1	3	4
112	Ulipur	Kurigram	4	3	3	3	1		4	4	3	3	4	4	4

*Note

1: Best quartile; 4: Worst quartile

Appendix 1: Quartile ranking* of upazila, based on selected indicators of poverty and determinant factors

No.	Upazila	District	Income poverty & inequality					1990 rating	Education			Land & Labor		Infrastructure	
			HCI_p	HCI_xp	Intensity	Severity	Gini		AdltEdu	1°Enrl	2°Enrl	Lndless	AgWage	Electric	Trv2Fac
113	Dashmina	Patuakhali	4	3	3	3	1		3	3	4	1	2	4	4
114	Sribardi	Sherpur	4	3	3	3	1	4	4	4	4	3	2	4	1
115	Phulbari	Mymensingh	4	3	3	3	2		4	3	3	2	2	3	3
116	Gouripur	Mymensingh	4	3	3	3	1		4	3	3	2	2	4	4
117	Jhenaigati	Sherpur	4	3	3	3	1		4	4	3	2	3	4	1
118	Muktagacha	Mymensingh	4	3	3	3	2		4	3	3	3	2	3	2
119	Tetulia	Panchagarh	4	3	3	3	1		3	2	3	3	4	4	1
120	Lakhai	Habiganj	4	3	3	3	2		4	4	4	2		3	1
121	Nagarkanda	Faridpur	4	3	3	3	1	4	3	4	3	1	2	3	2
123	Tarash	Sirajganj	4	3	3	3	3		4	3	4	2	4	2	1
124	Patgram	Lalmonirhat	4	3	3	3	1	4	3	1	2	1	4	4	2
126	Aditmari	Lalmonirhat	4	3	3	3	2		3	1	1	1	3	4	2
127	Fenchuganj	Sylhet	3	4	3	3	2		3	4	4	4	1	2	2
133	Biswanath	Sylhet	3	3	3	4	4		4	3	4	4	1	1	2
186	Godagari	Rajshahi	3	3	3	4	4		2	2	3	4	4	3	4
122	Brahmanbaria	Brahmanbaria	3	4	3	3	4		2	3	3	2	1	1	4
125	Nabinagar	Brahmanbaria	3	3	3	4	2		3	2	2	2	3	2	3
128	Nachol	Nawabganj	3	3	3	4	3		2	1	2	4	4	2	1
129	Dhunat	Bogra	4	2	3	3	1	4	4	3	3	2	4	4	1
130	Jaintapur	Sylhet	3	3	3	3	4		4	4	4	4	1	3	4
131	Bera	Pabna	3	3	3	3	3		4	4	4	4	1	2	4
132	Baksiganj	Jamalpur	3	3	3	3	3		4	4	4	4	1	4	4
134	Shyamnagar	Satkhira	3	3	3	3	2		3	3	4	3	4	4	3
135	Chowhali	Sirajganj	3	3	3	3	1	4	4	4	3	1	4	4	4
136	Mehendiganj	Barisal	3	3	3	3	3		2	3	3	3	2	4	4
137	Koyra	Khulna	3	3	3	3	1		3	3	3	3	4	4	2
138	Karimganj	Kishoreganj	3	3	3	3	1	4	4	3	4	3	2	4	1
139	Kulaura	Maulvibazar	3	3	3	3	4		2	3	4	4	2	3	2
140	Haluaghat	Mymensingh	3	3	3	3	2		4	3	4	3	3	4	2
142	Janjira	Shariatpur	3	3	3	3	1		4	4	4	1	4	3	2
143	Sandwip	Chittagong	3	3	3	3	3	4	2	3	3	4	1	4	1
144	Sadullapur	Gaibandha	3	3	3	3	3	4	4	3	3	3	4	3	3
145	Sughatta	Gaibandha	3	3	3	3	3	4	4	3	3	2	4	4	4
147	Bajitpur	Kishoreganj	3	3	3	3	3		4	4	4	3	2	1	3
148	Khoksa	Kushtia	3	3	3	3	3		3	3	3	4	3	2	3
149	Bhedarganj	Shariatpur	3	3	3	3	4		2	4	4	2	4	4	1
150	Daulatkhan	Bhola	3	3	3	3	3		3	1	3	4	2	3	2
151	Palasbari	Gaibandha	3	3	3	3	4	4	3	3	2	2	4	4	4
152	Katiadi	Kishoreganj	3	3	3	3	2	4	3	2	3	3	1	3	3
153	Harirampur	Manikganj	3	3	3	3	4		3	4	3	3	2	2	1
154	Trisal	Mymensingh	3	3	3	3	1		3	4	3	2	1	4	1
155	Raipur	Narsingdi	3	3	3	3	4		4	4	3	2	2	1	4
156	Dimla	Nilphamari	3	3	3	3	1		3	3	2	4	4	4	2
157	Goalanda	Rajbari	3	3	3	3	1		3	2	3	4	1	3	1
158	Kurigram	Kurigram	3	3	3	3	4		3	3	3	3	4	3	2
159	Singair	Manikganj	3	3	3	3	3	4	4	3	2	4	1	2	1
160	Iswarganj	Mymensingh	3	3	3	3	2		3	4	4	1	3	3	2
162	Kaunia	Rangpur	3	3	3	3	2	4	3	4	2	4	4	2	3
163	Sherpur	Sherpur	3	3	3	3	2		4	4	4	3	2	2	1
164	Phulbari	Kurigram	3	3	3	3	1	4	4	2	2	2	4	4	2
165	Raipur	Lakshmipur	3	3	3	3	3		2	2	3	4	2	2	1
166	Baliadangi	Thakurgaon	3	3	3	3	2		2	3	2	1	4	4	4
167	Homna	Comilla	3	3	3	3	3		4	4	3	1	2	1	1
168	Bhanga	Faridpur	3	3	3	3	3		3	3	3	3		2	1
170	Santhia	Pabna	3	3	3	3	3		3	3	3	3	2	1	1
171	Boda	Panchagarh	3	3	3	3	2	4	2	1	1	2	4	4	3

*Note

1: Best quartile; 4: Worst quartile

Appendix 1: Quartile ranking* of upazila, based on selected indicators of poverty and determinant factors

No.	Upazila	District	Income poverty & inequality					1990 rating	Education			Land & Labor		Infrastructure	
			HCI_p	HCI_xp	Intensity	Severity	Gini		AdltEdu	1°Enrl	2°Enrl	Lndless	AgWage	Electric	Trv2Fac
172	Pirganj	Thakurgaon	3	3	3	3	3	4	2	2	2	2	4	4	3
173	Nandigram	Bogra	3	3	3	3	2		3	3	3	1	4	2	3
174	Kuliarchar	Kishoreganj	3	3	3	3	2	4	3	2	3	2	2	3	1
175	Rajarhat	Kurigram	3	3	3	3	2		3	2	2	3	4	4	1
176	Domar	Nilphamari	3	3	3	3	1	4	2	1	2	3	4	4	2
177	Chatmohar	Pabna	3	3	3	3	2	4	3	3	2	2	3	2	2
178	Kachua	Chandpur	3	3	3	3	1		2	2	1	2	3	3	2
180	Bhairab	Kishoreganj	3	3	3	3	3		3	1	3	4	2	1	1
181	Panchagarh	Panchagarh	3	3	3	3	2		1	1	1	3	4	3	2
182	Baliakandi	Rajbari	3	3	3	3	3		3	2	2	1	3	4	1
183	Rajoir	Madaripur	3	3	3	3	4	4	3	2	2	1	3	1	2
184	Belabo	Narsingdi	3	3	3	3	1		4	2	2	1	2	2	1
185	Chandina	Comilla	3	3	3	3	3		2	3	1	1	2	1	3
187	Kaliganj	Lalmonirhat	3	3	3	3	1	4	3	1	1	2	4	4	1
189	Barura	Comilla	3	3	3	3	3		2	3	1	1	3	1	2
190	Brahmanpara	Comilla	3	3	3	3	3		2	1	1	1	1	2	1
191	Gurudaspur	Natore	3	2	3	3	2	4	4	3	4	4	3	2	3
198	Nagarpur	Tangail	3	2	3	3	1		4	4	2	1	3	4	4
205	Badarganj	Rangpur	3	2	3	3	3		3	3	3	3	4	3	3
141	Shibalaya	Manikganj	3	2	3	3	2		3	3	2	3	2	2	1
146	Laksam	Comilla	3	3	2	3	2		1	4	3	2	2	1	4
161	Madhukhali	Faridpur	3	2	3	3	4		2	2	1	3	2	3	1
169	Kotchandpur	Jhenaidaha	3	2	3	3	3		3	1	2	3	4	1	3
179	Kalkini	Madaripur	3	3	3	2	3		2	2	2	1	4	1	4
188	Jagannathpur	Sunamganj	2	3	3	3	4		2	3	4	4	2	2	3
192	Shibganj	Nawabganj	2	3	3	3	4		4	3	3	3	4	2	3
193	Balaganj	Sylhet	2	3	3	3	4		2	2	4	4	3	1	3
194	Chirirbandar	Dinajpur	2	3	3	3	3		2	2	2	4	4	3	4
195	Gaibandha	Gaibandha	2	3	3	3	3		2	3	3	3	4	3	3
196	Alfadanga	Faridpur	2	3	3	3	3		2	3	1	3	3	4	2
197	Nangolkot	Comilla	2	3	3	3	3		2	3	2	2	1	2	3
199	Netrokona	Netrokona	2	3	3	3	4		1	3	3	2	2	2	4
200	Dohar	Dhaka	2	3	3	3	3		2	2	3	4	1	1	1
201	Sreepur	Magura	2	3	3	3	4		2	1	1	2	2	3	3
202	Anwara	Chittagong	2	3	3	3	4		1	1	2	4	1	1	2
203	Nalitabari	Sherpur	3	2	3	2	1		3	4	4	3	2	4	3
204	Singra	Natore	3	2	3	2	2		3	3	4	2	2	2	4
206	Naria	Shariatpur	3	3	2	2	2		3	2	3	3	4	3	2
207	Pirganj	Rangpur	3	2	3	2	4		3	3	2	2	4	3	3
208	Madhupur	Tangail	3	2	3	2	1		4	3	3	2	2	3	2
209	Pirgachha	Rangpur	3	2	3	2	1		3	3	1	4	4	3	2
210	Dhamoirhat	Naogaon	3	2	2	3	1		2	2	1	3	4	4	3
211	Shariatpur	Shariatpur	3	2	3	2	1		2	3	3	1	4	3	1
212	Satkania	Chittagong	2	3	2	3	4		2	1	1	4	1	1	2
213	Lohagara	Chittagong	2	3	2	3	4		1	2	2	1	1	1	1
214	Akhaura	Brahmanbaria	2	3	2	3	3		1	1	1	2	1	1	3
215	Galachipa	Patuakhali	3	2	2	2	2		3	3	4	2		4	4
216	Hossainpur	Kishoreganj	3	2	2	2	1	4	3	4	4	2	2	4	2
217	Shakhipur	Tangail	3	2	2	2	1		4	3	2	1	2	3	4
218	Baraigram	Natore	3	2	2	2	3	4	3	2	2	3	4	3	3
219	Raiganj	Sirajganj	3	2	2	2	3		3	3	3	2	4	2	1
220	Kamarkanda	Sirajganj	3	2	2	2	1		2	1	1	3	4	3	1
221	Tungipara	Gopalganj	3	2	2	2	2	4	1	1	1	2	3	2	1
222	Tanor	Rajshahi	3	2	2	2	1	4	1	1	1	3	4	2	2
232	Araihazar	Narayanganj	2	3	2	2	4		3	4	4	4	1	1	1
236	Kalia	Narail	2	3	2	2	2	4	2	3	3	2	1	3	2

*Note

1: Best quartile; 4: Worst quartile

Appendix 1: Quartile ranking* of upazila, based on selected indicators of poverty and determinant factors

No.	Upazila	District	Income poverty & inequality					1990 rating	Education			Land & Labor		Infrastructure	
			HCI_p	HCI_xp	Intensity	Severity	Gini		AdltEdu	1°Enrl	2°Enrl	Lndless	AgWage	Electric	Trv2Fac
254	Zakiganj	Sylhet	2	3	2	2	4		2	3	4	2	2	2	2
270	Terokhada	Khulna	2	2	2	3	4		2	3	3	2	3	2	2
271	Bheramara	Kushtia	2	3	2	2	3		2	3	2	4	2	2	1
273	Sujanagar	Pabna	2	3	2	2	4	4	3	2	2	3	2	1	2
275	Phulbari	Dinajpur	2	2	2	3	2		1	2	1	4	4	3	2
286	Companiganj	Noakhali	2	3	2	2	4		1	2	2	2	1	1	2
223	Daudkandi	Comilla	2	3	2	2	3		2	3	2	1		1	1
224	Bochaganj	Dinajpur	2	3	2	2	2		1	1	1	2	4	3	1
226	Assasuni	Satkhira	2	2	2	2	4		3	3	3	3	2	4	3
227	Mithapukur	Rangpur	2	2	2	2	4		3	4	3	3	4	3	4
228	Dacope	Khulna	2	2	2	2	1		1	3	3	2	2	4	4
229	Gobindaganj	Gaibandha	2	2	2	2	2	4	3	4	2	2	4	3	4
230	Muksudpur	Gopalganj	2	2	2	2	2		2	3	3	1	2	4	3
231	Moulavibazar	Moulavibazar	2	2	2	2	3		2	3	4	4	2	1	1
233	Munshiganj	Munshiganj	2	2	2	2	4		2	2	3	4	1	1	3
234	Chuadanga	Chuadanga	2	2	2	2	4		3	3	3	4	3	1	3
235	Jamalpur	Jamalpur	2	2	2	2	2		2	3	3	3	3	2	4
237	Lalpur	Natore	2	2	2	2	3	4	3	3	2	3	4	2	2
239	Sirajganj	Sirajganj	2	2	2	2	2		2	4	3	4	3	2	1
240	Bhuanpur	Tangail	2	2	2	2	2	4	3	3	3	2	3	3	1
241	Kasiani	Gopalganj	2	2	2	2	1		1	2	3	2	4	4	2
242	Daulatpur	Kushtia	2	2	2	2	4	4	3	2	2	3	4	2	3
243	Kumarkhali	Kushtia	2	2	2	2	3		3	2	1	3	3	1	4
244	Serajdikhan	Munshiganj	2	2	2	2	2		2	1	2	4	1	2	2
245	Pangsa	Rajbari	2	2	2	2	2	4	2	3	2	2	2	3	3
246	Shahjadpur	Sirajganj	2	2	2	2	2	4	3	4	3	3	4	1	1
247	Nakla	Sherpur	2	2	2	2	1		3	4	2	2	3	4	1
248	Mirsharai	Chittagong	2	2	2	2	4		1	1	2	4	1	2	2
249	Parbatipur	Dinajpur	2	2	2	2	3	4	2	2	2	4	4	2	3
250	Ullapara	Sirajganj	2	2	2	2	4		2	4	3	3	4	2	1
251	Ghatail	Tangail	2	2	2	2	1		3	3	2	1	3	2	3
252	Faridpur	Faridpur	2	2	2	2	3		1	2	2	3	2	1	3
253	Kotalipara	Gopalganj	2	2	2	2	1		1	1	2	1	4	4	3
255	Sarishabari	Jamalpur	2	2	2	2	3	4	2	3	1	2	3	2	4
256	Sarsha	Jessore	2	2	2	2	4	4	3	2	2	3	4	1	3
257	Lakshmipur	Lakshmipur	2	2	2	2	3		1	3	3	2	3	2	1
258	Madaripur	Madaripur	2	2	2	2	3		2	3	2	1	3	1	3
259	Mohadebpur	Naogaon	2	2	2	2	2	4	2	2	2	3	4	2	3
260	Patnitala	Naogaon	2	2	2	2	1		1	2	2	2	4	3	3
261	Thakurgaon	Thakurgaon	2	2	2	2	3		1	2	2	2	4	2	4
262	Dhamrai	Dhaka	2	2	2	2	1	4	3	3	2	2	1	1	2
264	Birampur	Dinajpur	2	2	2	2	3		2	2	1	2	2	3	3
265	Ghoraghat	Dinajpur	2	2	2	2	4		3	2	2	4	4	1	1
266	Sonagazi	Feni	2	2	2	2	3		1	1	2	3	1	2	1
268	Chougachha	Jessore	2	2	2	2	4		3	1	2	1	3	2	3
269	Lalmonirhat	Lalmonirhat	2	2	2	2	2		2	2	1	3	4	3	2
272	Sonatola	Bogra	2	2	2	2	2		2	2	1	1	4	4	2
274	Hajiganj	Chandpur	2	2	2	2	3		1	3	2	1	2	1	3
276	Jibannagar	Chuadanga	2	2	2	2	4	4	2	2	2	3	4	2	1
277	Chauddagram	Comilla	2	2	2	2	4		1	2	1	2	2	1	3
278	Harinakundu	Jhenaidaha	2	2	2	2	3		3	2	1	1	3	3	1
279	Moheshpur	Jhenaidaha	2	2	2	2	4	4	2	1	2	2	4	2	3
280	Magura	Magura	2	2	2	2	3		2	2	2	2	2	2	1
281	Mohammadpur	Magura	2	2	2	2	3	4	2	1	1	1	3	3	2
282	Atwari	Panchagarh	2	2	2	2	1		1	1	1	1	4	3	3
283	Rajbari	Rajbari	2	2	2	2	2		2	1	2	3	2	3	1

*Note

1: Best quartile; 4: Worst quartile

Appendix 1: Quartile ranking* of upazila, based on selected indicators of poverty and determinant factors

No.	Upazila	District	Income poverty & inequality					1990 rating	Education			Land & Labor		Infrastructure	
			HCI_p	HCI_xp	Intensity	Severity	Gini		AdltEdu	1°Enrl	2°Enrl	Lndless	AgWage	Electric	Trv2Fac
284	Delduar	Tangail	2	2	2	2	2		2	3	2	3	2	1	1
285	Kalaroa	Satkhira	2	2	2	2	4		2	1	1	3	4	3	1
287	Gopalpur	Tangail	2	2	2	2	1		2	2	1	1	3	3	2
288	Debidwar	Comilla	2	2	2	2	4		1	2	1	1	2	1	3
289	Gopalganj	Gopalganj	2	2	2	2	2		1	1	1	2	3	2	1
290	Shalikha	Magura	2	2	2	2	3		2	1	1	1	4	3	2
291	Senbag	Noakhali	2	2	2	2	2		1	1	1	1	1	1	1
295	Sherpur	Bogra	2	1	2	2	2		3	4	3	3	4	2	2
303	Nawabganj	Dinajpur	2	1	2	2	4		2	3	3	1	4	2	4
304	Gafargaon	Mymensingh	2	2	2	1	2		2	1	2	1	2	3	3
311	Meherpur	Meherpur	2	1	2	2	4		3	1	2	3	4	1	2
225	Manda	Naogaon	2	1	2	2	3		3	1	1	2	4	2	3
238	Paikgachha	Khulna	1	2	2	2	3		2	4	3	4	3	4	3
263	Narsingdi	Narsingdi	1	2	2	2	4		2	4	4	4	1	1	3
267	Belkuchi	Sirajganj	1	2	2	2	3		1	3	3	4		1	4
292	Golapganj	Sylhet	1	2	2	2	4		2	1	4	4	1	1	3
293	Habiganj	Habiganj	1	2	2	2	2		1	3	4	3		1	2
294	Mymensingh	Mymensingh	1	2	2	2	3		1	3	3	4	3	1	3
296	Satkhira	Satkhira	1	2	2	2	4		1	2	3	4	3	1	3
297	Rangunia	Chittagong	1	2	2	2	4		1	1	1	4	1	1	2
298	Burichang	Comilla	1	2	2	2	4		1	2	1	1	1	1	3
299	Shibganj	Bogra	2	1	2	1	1	4		3	4	4	2	2	3
300	Bhaluka	Mymensingh	2	1	2	1	1		3	3	3	1	2	4	2
301	Kalihati	Tangail	2	1	2	1	1		3	4	3	2	3	3	1
302	Charghat	Rajshahi	2	1	2	1	3		3	2	1	4	3	2	1
305	Matlab	Chandpur	2	2	1	1	4		1	2	1	1	1	2	3
306	Basail	Tangail	2	2	1	1	1		3	2	1	2	1	1	3
307	Saturia	Manikganj	2	1	2	1	1	4		3	1	1	1	1	1
308	Durgapur	Rajshahi	2	1	2	1	1		3	1	1	1	4	1	1
309	Parshuram	Feni	2	2	1	1	2		1	1	1	1	2	1	1
310	Kaliganj	Satkhira	1	2	1	2	4		1	2	3	4	3	3	1
312	Gangni	Meherpur	1	1	2	2	4	4		4	2	2	3	2	3
314	Atrai	Naogaon	1	1	2	2	3		3	2	3	2	4	2	4
315	Dumuria	Khulna	1	2	1	2	3		1	2	2	2	2	3	2
316	Rangpur	Rangpur	1	2	1	2	3		1	3	3	4	4	1	3
318	Beanibazar	Sylhet	1	2	1	2	4		1	1	3	3	1	1	3
321	Alamdanga	Chuadanga	1	1	2	2	4		3	2	3	2	4	2	2
322	Srinagor	Munshiganj	1	2	1	2	4		1	1	1	4	1	1	2
323	Tungibari	Munshiganj	1	2	1	2	3		2	1	1	3	1	1	2
324	Dagonbhuiyan	Feni	1	2	1	2	4		1	1	1	1	1	1	1
325	Raninagar	Naogaon	1	1	2	2	3		2	1	1	1	4	2	2
326	Amtali	Barguna	2	1	1	1	1		2	2	3	1	3	3	4
327	Muladi	Barisal	2	1	1	1	1		1	4	2	1	2	2	4
328	Gabtali	Bogra	2	1	1	1	1		3	2	3	3	3	3	2
329	Bauphal	Patuakhali	2	1	1	1	1		2	3	2	1	2	3	2
330	Lohagara	Narail	2	1	1	1	3		1	2	1	2	3	3	3
331	Khetlal	Joypurhat	2	1	1	1	1		3	2	1	1	3	2	4
349	Atghoria	Pabna	2	1	1	1	1	4		2	1	1	2	3	3
357	Kalai	Joypurhat	2	1	1	1	1		2	1	1	1	4	2	4
389	Bagmara	Rajshahi	2	1	1	1	1		3	1	1	1		2	3
399	Faridganj	Chandpur	2	1	1	1	1		1	2	1	1	1	2	2
313	Sonargaon	Narayanganj	1	2	1	1	4		2	2	3	4	2	1	2
317	Pabna	Pabna	1	2	1	1	3		1	3	3	4	2	1	1
319	Chandanaish	Chittagong	1	2	1	1	4		1	1	1	4	1	1	2
320	Feni	Feni	1	2	1	1	2		1	2	1	3	1	1	1
332	Batiaghata	Khulna	1	1	1	1	1		1	3	4	4	1	4	4

*Note

1: Best quartile; 4: Worst quartile

Appendix 1: Quartile ranking* of upazila, based on selected indicators of poverty and determinant factors

No.	Upazila	District	Income poverty & inequality					1990 rating	Education			Land & Labor		Infrastructure	
			HCI_p	HCI_xp	Intensity	Severity	Gini		AdltEdu	1°Enrl	2°Enrl	Lndless	AgWage	Electric	Trv2Fac
333	Kazipur	Sirajganj	1	1	1	1	1		2	4	2	1	4	4	4
334	Tangail	Tangail	1	1	1	1	2		2	4	3	3	1	1	4
335	Morrelganj	Bagerhat	1	1	1	1	1		1	1	2	2	3	4	4
336	Kalapara	Patuakhali	1	1	1	1	1		1	1	3	1	1	4	4
337	Nazirpur	Pirojpur	1	1	1	1	1		1	2	3	1	2	3	4
338	Rampal	Bagerhat	1	1	1	1	1		1	1	2	3	1	3	3
339	Kishoreganj	Kishoreganj	1	1	1	1	1		1	2	3	4	1	2	2
340	Mirpur	Kushtia	1	1	1	1	3		2	3	3	3	3	2	3
341	Rupganj	Narayanganj	1	1	1	1	4		1	2	3	4	1	1	2
342	Natore	Natore	1	1	1	1	2		2	3	2	4	2	2	3
343	Pirojpur	Pirojpur	1	1	1	1	1		1	1	1	4	2	2	4
344	Nawabganj	Dhaka	1	1	1	1	3	4	1	3	2	4	1	1	2
345	Bagha	Rajshahi	1	1	1	1	2		3	2	2	2	3	2	2
346	Bagerhat	Bagerhat	1	1	1	1	3		1	1	1	4	2	1	3
347	Chitalmari	Bagerhat	1	1	1	1	2		1	3	2	1	3	3	2
348	Borguna	Barguna	1	1	1	1	1		1	1	3	1	1	2	3
350	Comilla	Comilla	1	1	1	1	4		1	3	2	3	1	1	1
351	Jhalakati	Jhalakati	1	1	1	1	2		1	2	1	3	1	2	2
352	Shaikupa	Jhenaidaha	1	1	1	1	4		2	3	1	1	2	2	3
353	Kushtia	Kushtia	1	1	1	1	3		1	2	2	4	2	1	3
354	Puthia	Rajshahi	1	1	1	1	4	4	2	3	2	3	3	2	2
355	Tala	Satkhira	1	1	1	1	4	4	2	1	2	1	3	2	4
356	Betagi	Barguna	1	1	1	1	4		1	2	2	1	1	3	1
358	Bakerganj	Barisal	1	1	1	1	1		1	1	1	1	2	2	4
359	Chandpur	Chandpur	1	1	1	1	3		1	2	2	4	1	1	1
360	Damurhuda	Chuadanga	1	1	1	1	4		2	2	3	2	4	2	2
361	Sreepur	Gazipur	1	1	1	1	1	4	2	1	2	1	2	2	3
362	Akkelpur	Joypurhat	1	1	1	1	1		1	2	2	3	3	3	2
363	Panchbibi	Joypurhat	1	1	1	1	2	4	2	1	1	3	4	3	3
364	Lohajang	Munshiganj	1	1	1	1	3		1	1	2	4	1	1	1
365	Badalgachhi	Naogaon	1	1	1	1	2	4	2	1	1	2	4	4	2
366	Banaripara	Pirojpur	1	1	1	1	1		1	1	1	1	2	2	4
367	Kapasias	Gazipur	1	1	1	1	1	4	1	1	1	1	1	3	3
368	Joypurhat	Joypurhat	1	1	1	1	3		1	3	2	2	3	2	2
369	Jessore	Jessore	1	1	1	1	4		1	1	1	4	2	1	3
370	Nalchity	Jhalakati	1	1	1	1	1		1	2	1	1	1	3	1
371	Ramganj	Lakshmipur	1	1	1	1	2		1	3	2	2	1	2	1
372	Naogaon	Naogaon	1	1	1	1	2		2	2	2	3	3	2	1
373	Monohardi	Narsingdi	1	1	1	1	2	4	2	2	1	1	2	3	2
374	Faridpur	Pabna	1	1	1	1	1		1	3	1	1	3	1	3
375	Iswardi	Pabna	1	1	1	1	2		1	1	1	4	3	1	2
376	Patuakhali	Patuakhali	1	1	1	1	4		1	2	2	1	1	2	1
377	Mathbaria	Pirojpur	1	1	1	1	1	4	1	1	1	1	3	3	2
378	Agailjhara	Barisal	1	1	1	1	3		1	1	1	1	4	2	4
379	Bogra	Bogra	1	1	1	1	3		1	2	2	4	3	1	1
380	Hakimpur	Dinajpur	1	1	1	1	3		1	1	2	3	3	2	2
381	Abhaynagar	Jessore	1	1	1	1	4		1	1	2	2	2	1	3
382	Jhenaidah	Jhenaidaha	1	1	1	1	2		1	2	2	1	4	1	3
383	Kaliganj	Jhenaidaha	1	1	1	1	3		2	1	2	1	4	2	3
384	Ghior	Manikganj	1	1	1	1	4	4	2	2	1	2		1	1
385	Bhandaria	Pirojpur	1	1	1	1	1		1	1	2	1	1	1	2
386	Debhata	Satkhira	1	1	1	1	4		1	1	1	3	4	2	1
387	Mirzapur	Tangail	1	1	1	1	3		2	2	1	1	2	1	3
388	Kahalu	Bogra	1	1	1	1	1		2	2	3	1	3	1	1
390	Rauzan	Chittagong	1	1	1	1	4		1	1	1	4	1	1	1
391	Dinajpur	Dinajpur	1	1	1	1	2		1	1	1	4	4	1	2

*Note

1: Best quartile; 4: Worst quartile

Appendix 1: Quartile ranking* of upazila, based on selected indicators of poverty and determinant factors

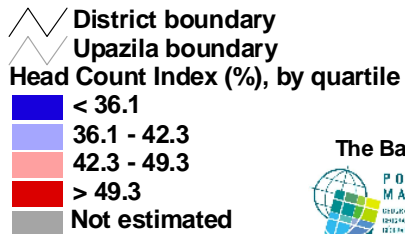
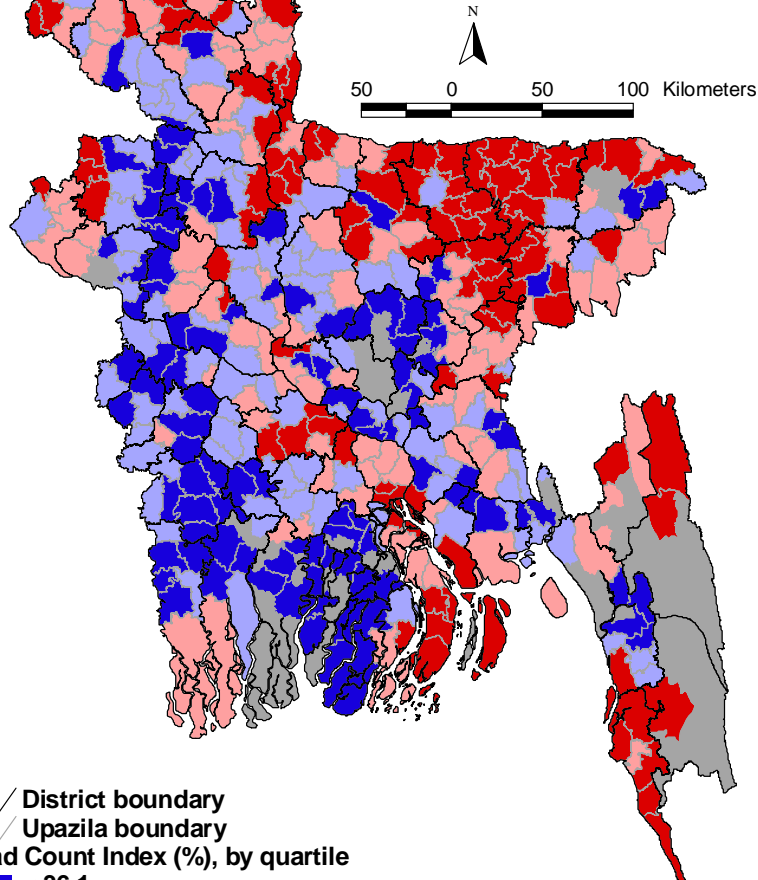
No.	Upazila	District	Income poverty & inequality					1990 rating	Education			Land & Labor		Infrastructure	
			HCI_p	HCI_xp	Intensity	Severity	Gini		AdltEdu	1°Enrl	2°Enrl	Lndless	AgWage	Electric	Trv2Fac
392	Kaliakair	Gazipur	1	1	1	1	1		1	2	1	1	2	1	3
393	Jhikargacha	Jessore	1	1	1	1	3		1	1	2	2	3	1	3
394	Keshabpur	Jessore	1	1	1	1	3		2	1	1	1	3	2	3
395	Pakundia	Kishoreganj	1	1	1	1	1		2	1	1	1	3	3	1
396	Bagatipara	Natore	1	1	1	1	3		1	1	1	3	4	1	1
397	Begumganj	Noakhali	1	1	1	1	2		1	1	1	2	1	1	2
398	Mirzaganj	Patuakhali	1	1	1	1	1		1	1	1	1	2	2	1
400	Gournadi	Barisal	1	1	1	1	3		1	1	1	1	3	1	2
401	Adamdighi	Bogra	1	1	1	1	1		1	2	1	3	3	1	1
402	Dubchachia	Bogra	1	1	1	1	3		1	2	1	1	3	1	3
403	Patiya	Chittagong	1	1	1	1	4		1	1	1	4	1	1	1
404	Bagherpara	Jessore	1	1	1	1	1		1	1	1	1	3	2	3
405	Manikganj	Manikganj	1	1	1	1	2		1	1	1	2	2	1	2
406	Gazaria	Munshiganj	1	1	1	1	2		1	1	1	1	1	1	2
407	Narail	Narail	1	1	1	1	1		1	1	1	1	3	2	1
408	Shibpur	Narsingdi	1	1	1	1	3		2	2	1	1	1	1	1
409	Mohanpur	Rajshahi	1	1	1	1	1		2	1	1	2		2	1
410	Babuganj	Barisal	1	1	1	1	1		1	1	1	1	2	1	3
411	Shaharasti	Chandpur	1	1	1	1	1		1	1	1	1	1	2	1
412	Kaliganj	Gazipur	1	1	1	1	3		1	1	1	1	4	1	2
413	Manirampur	Jessore	1	1	1	1	4		1	1	1	1	3	1	2
414	Chatkhil	Noakhali	1	1	1	1	1		1	1	1	2	1	1	2
415	Wazirpur	Barisal	1	1	1	1	2		1	1	1	1	2	1	1
	Mean value		42.9	17.3	15.9	7.8	39.3		3.3	64.9	55.0	43.3	80.3	22.3	25.6
	Minimum value		18.4	3.4	4.8	1.8	31.5		1.1	28.3	21.6	14.9	38.9	0.3	8.5
	25th percentile		36.1	12.7	12.5	5.8	37.3		2.7	58.4	50.0	36.2	63.1	10.9	15.2
	Median value		42.3	16.5	15.7	7.5	39.1		3.2	66.6	57.0	43.2	78.0	19.5	18.7
	75th percentile		49.3	21.0	18.9	9.4	40.8		3.8	72.9	62.5	49.8	97.0	31.7	23.5
	Maximum value		69.6	39.5	31.6	19.2	51.7		5.6	89.5	75.8	77.7	144.0	81.7	247.0

Indicator	Description
HCI_p	Head Count Index (%): percentage of poor households [IRRI, 2004]
HCI_xp	Head Count Index (%): percentage of extremely poor households [IRRI, 2004]
Intensity	Poverty gap ratio (%) [IRRI, 2004]
Severity	Squared poverty gap ratio (%) [IRRI, 2004]
Gini	Gini coefficient (%), based on per capita income [IRRI, 2004]
1990 rating	4: Identified among the 100 most depressed upazilas by the Task Force (Poverty Alleviation) on Bangladesh Development Strategies for the 1990s
AdltEdu	Average years of schooling of adult household members [Data source: 2001 Population Census, BBS]
1°Enrl	Enrollment in primary school (%) [Data source: 2001 Population Census, BBS]
2°Enrl	Enrollment in secondary school (%) [Data source: 2001 Population Census, BBS]
Lndless	% of landless households [Data source: 2001 Population Census, BBS]
AgWage	Agricultural wage rate (without food), Taka/day [Data source: 2001 Population Census, BBS]
Electric	% households having electricity supply [Data source: 2001 Population Census, BBS]
Trv2Fac	Average travel time (min) to district and upazila HQ, nearest growth centre, local market and health clinic [IRRI-LGED, 2004]

*Note

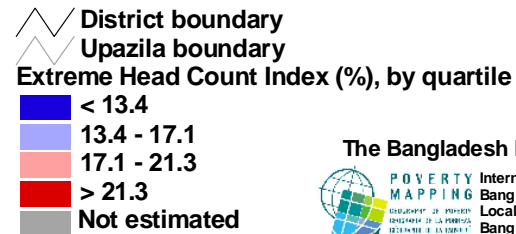
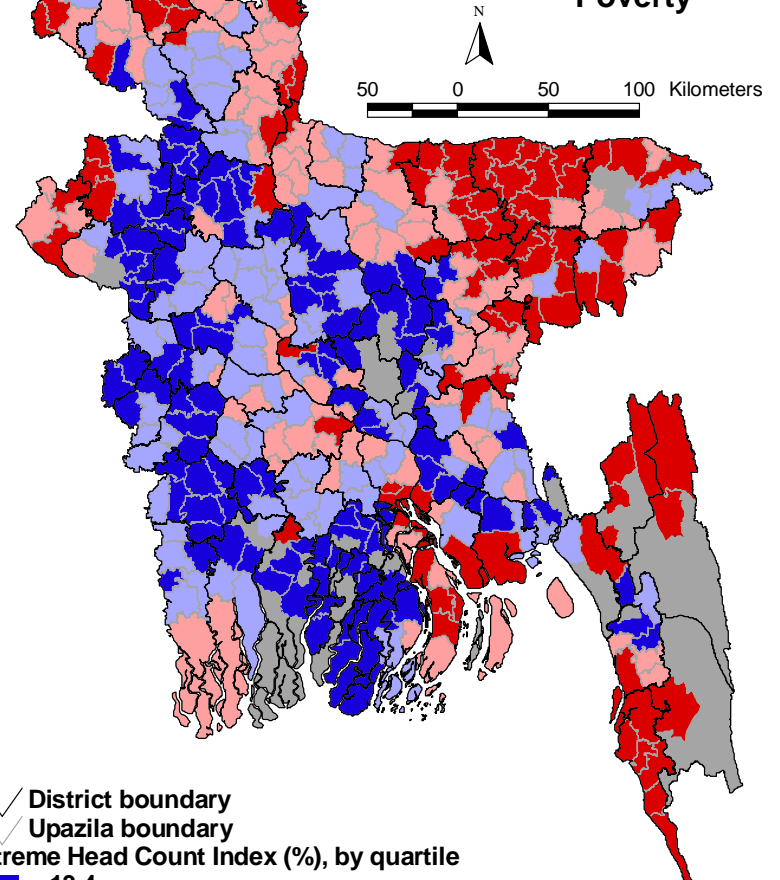
1: Best quartile; 4: Worst quartile

Map 1. Incidence of Poverty



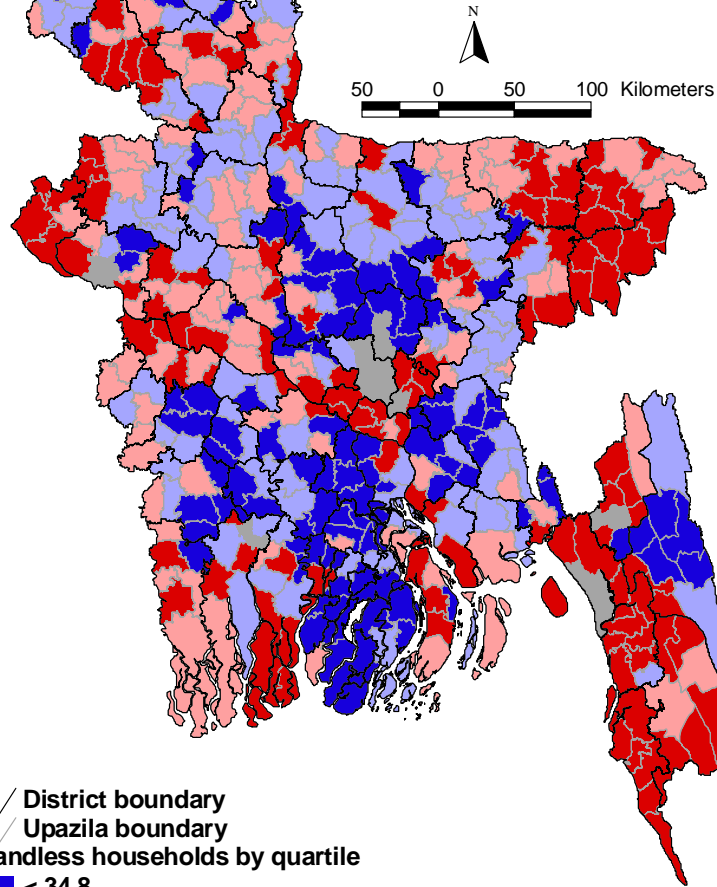
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Map 2. Incidence of extreme Poverty



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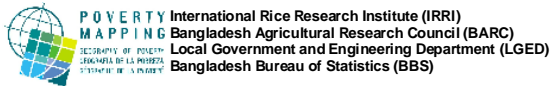
Map 3. Landlessness



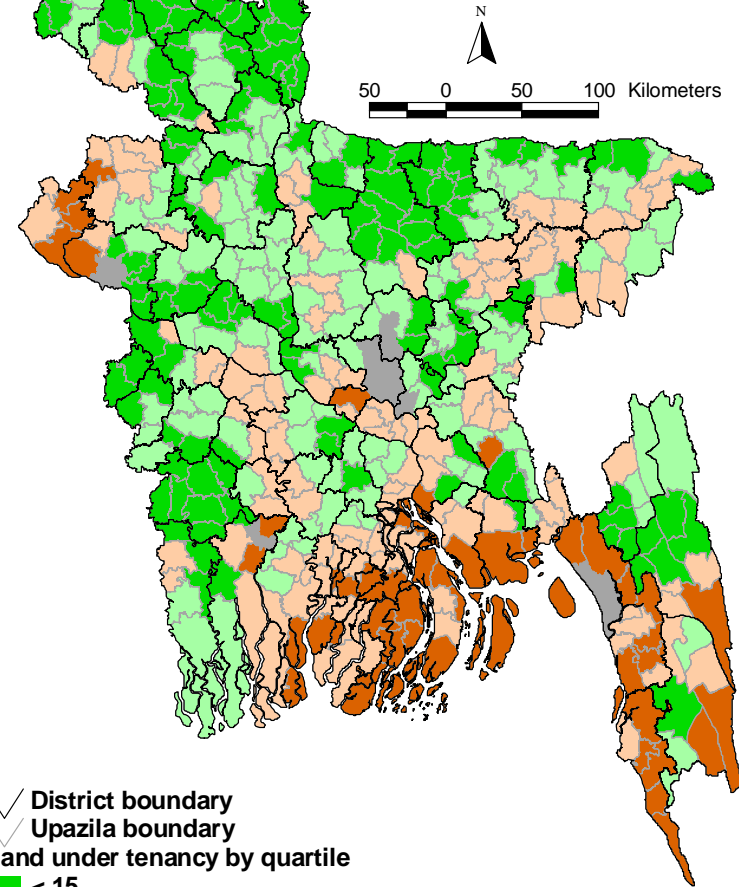
— District boundary
— Upazila boundary
% landless households by quartile

- < 34.8
- 34.8 - 41
- 41 - 47.6
- > 47.6
- Not estimated

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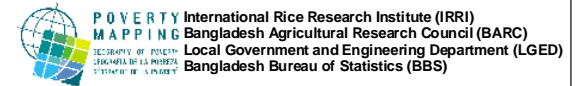
Map 4. Tenancy of land



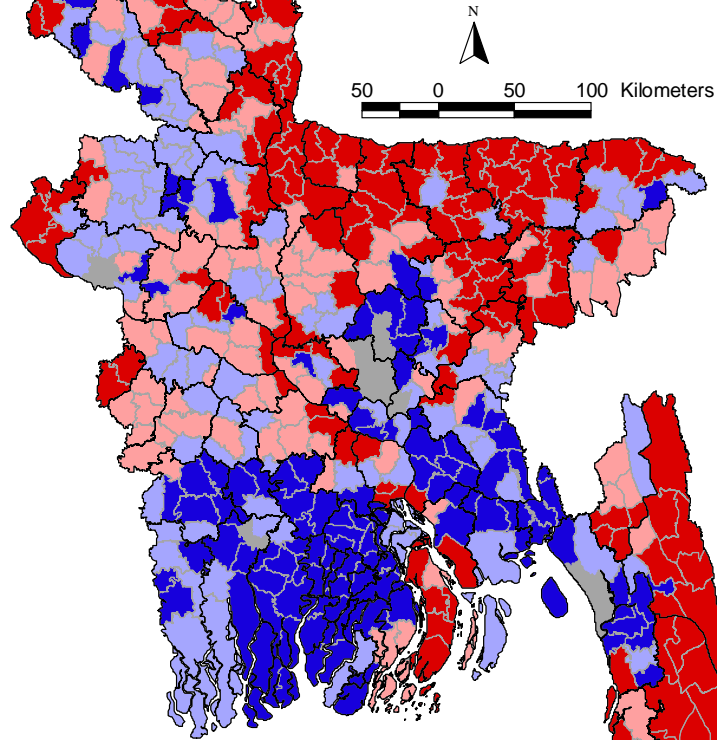
— District boundary
— Upazila boundary
% land under tenancy by quartile

- < 15
- 15 - 20
- 20 - 30
- > 30
- Not estimated

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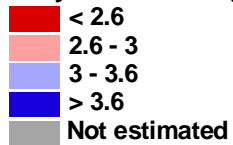


Map 5. Educational attainment



 District boundary
 Upazila boundary

Ave yrs of schooling of adult HH members (%), by quartile

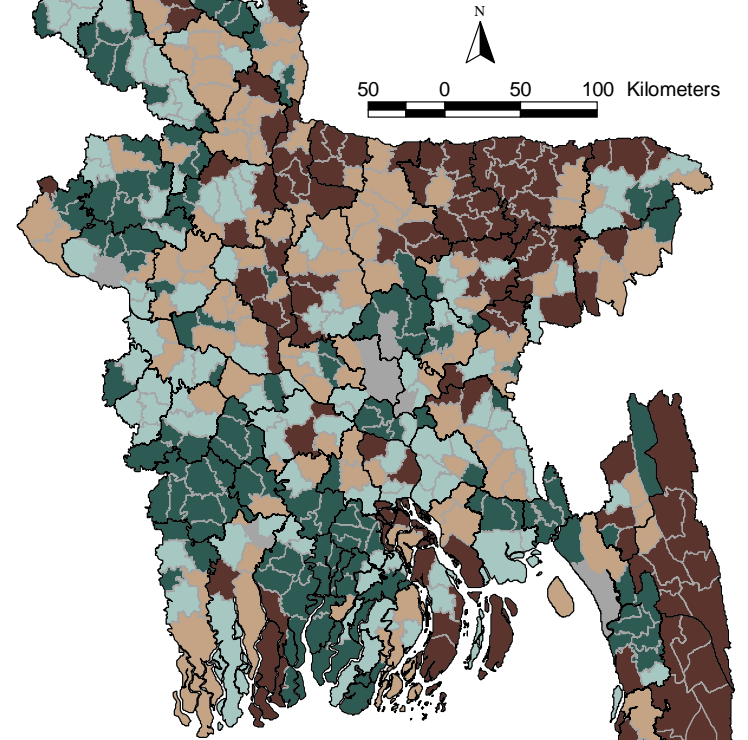


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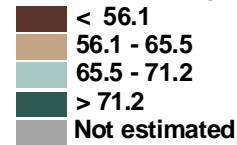
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Map 6. Primary school enrollment



 District boundary
 Upazila boundary

% enrollment in primary school by quartile

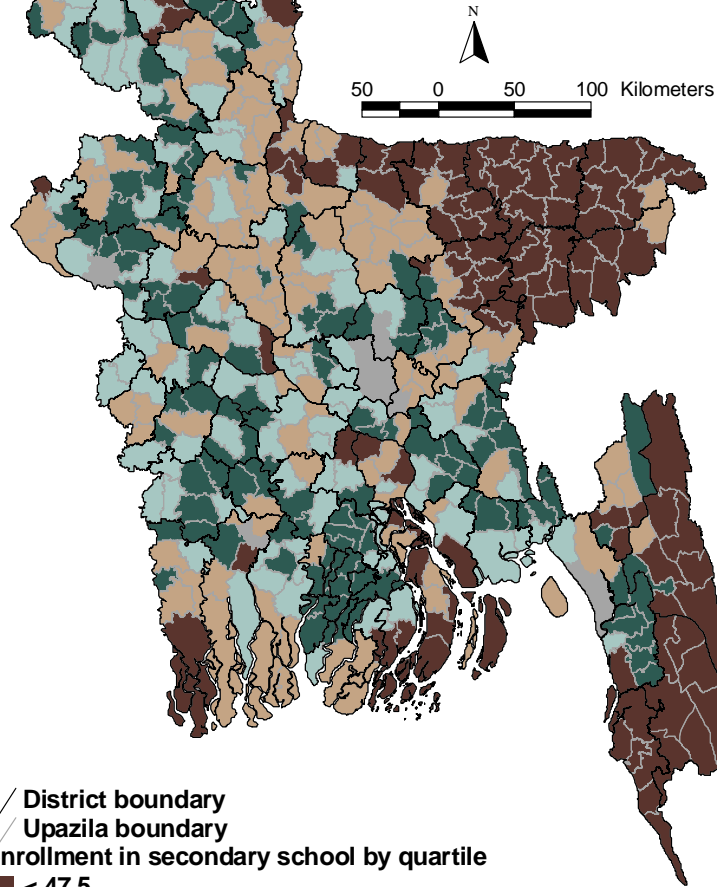




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


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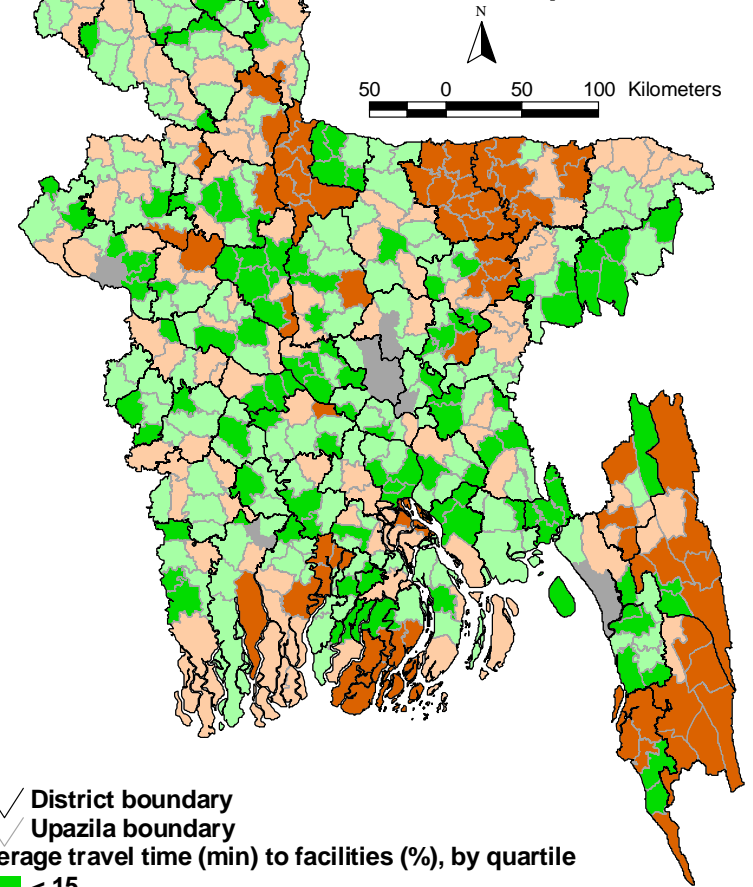
Map 7. Secondary school enrollment



 District boundary
 Upazila boundary
% enrollment in secondary school by quartile
 < 47.5
 47.5 - 55.6
 55.6 - 61.5
 > 61.5
 Not estimated

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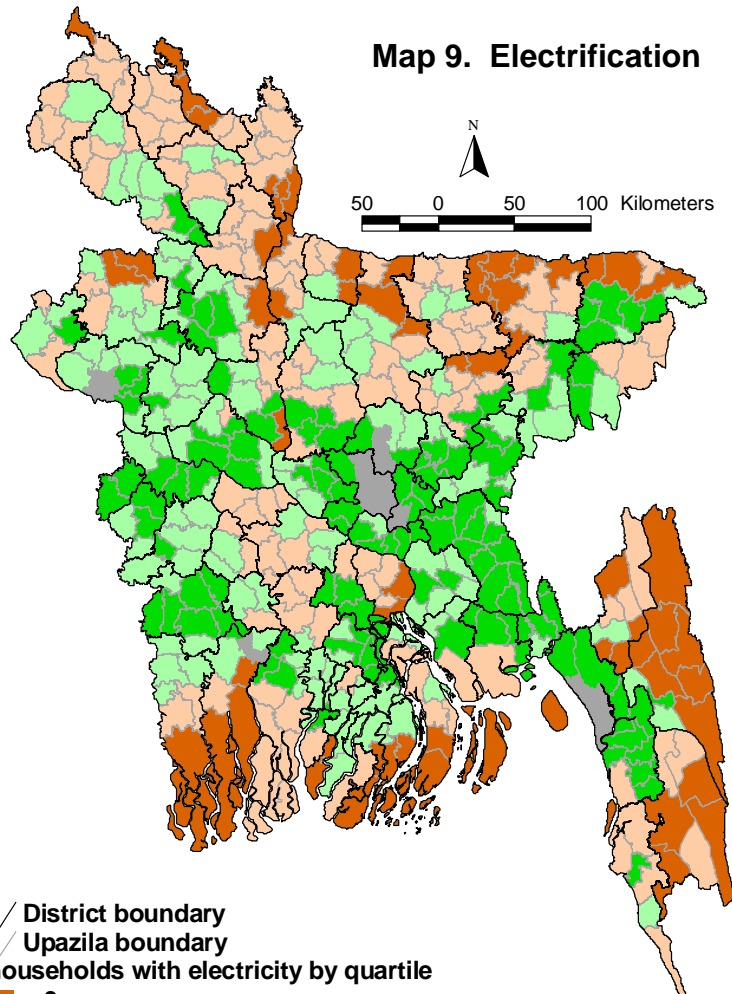
Map 8. Accessibility by road to public facilities









 District boundary
 Upazila boundary
Average travel time (min) to facilities (%), by quartile
 < 15
 15 - 20
 20 - 30
 > 30
 Not estimated

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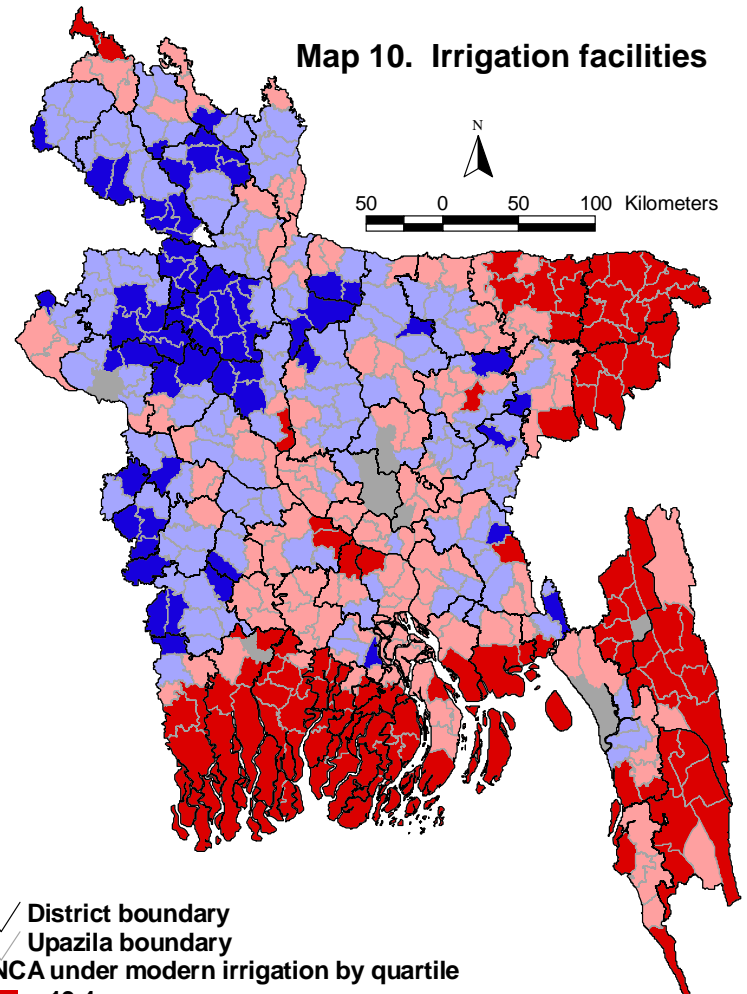
Map 9. Electrification






 District boundary
 Upazila boundary
 % households with electricity by quartile
 < 3
 4 - 13
 14 - 25
 > 26
 Not estimated

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Map 10. Irrigation facilities



 District boundary
 Upazila boundary
 % NCA under modern irrigation by quartile
 < 19.4
 19.4 - 55.8
 55.8 - 85.8
 > 85.8
 Not estimated

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 Bangladesh Bureau of Statistics (BBS)