SOCIOECONOMIC FACTORS RELATED TO FARM PRODUCTION AND INCOME IN SELECTED VILLAGES IN TANGAIL DISTRICT

Volume I: Summary

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Report Prepared for
THE TANGAIL AGRICULTURAL DEVELOPMENT PROJECT—GTZ/BRDB

July 1985

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I. INTRODUCTION

Background and objectives of the Study

The study is the second in a series of three studies on the generation of bench mark data relating to the ex ante situation of the Tangail Agricultural Development Project. The broad objective of this study is to conduct a detailed socioeconomic survey of selected villages in Tangail district with a view to identifying the various socioeconomic factors related to farm production and income in these areas. The study seeks to provide bench mark data on farmers' production resources, cropping pattern, use of inputs, sources of employment and income and other socioeconomic aspects on the basis of which it would be possible at a later stage to determine and measure changes in these respects, and to provide answers as to which specific socioeconomic factors are responsible for such changes and improvements.

Selection of Villages

Eight villages in Tangail district were selected for the study. The selection of the villages was made on the

basis of the overview report on the socioeconomic characteristics of twelve villages in the district prepared earlier[1] and in consultation with the Agro-Economist of the TADP. Eight of these twelve villages were selected so as to reflect different agro-ecological situation, farming systems, level of development and potential for future development. The following are the selected villages:

Upazila	Village
Madhupur	1. Pirojpur
Ghatail	2. Egaro Kahonia
	3. Bara Medhar
	4. Fulmali Chala
Basail	5. Habla Bilpara
Shakhipur	6. Bara Chowna
	7. Shapia Chala
	8. Inat Kha Chala[2]

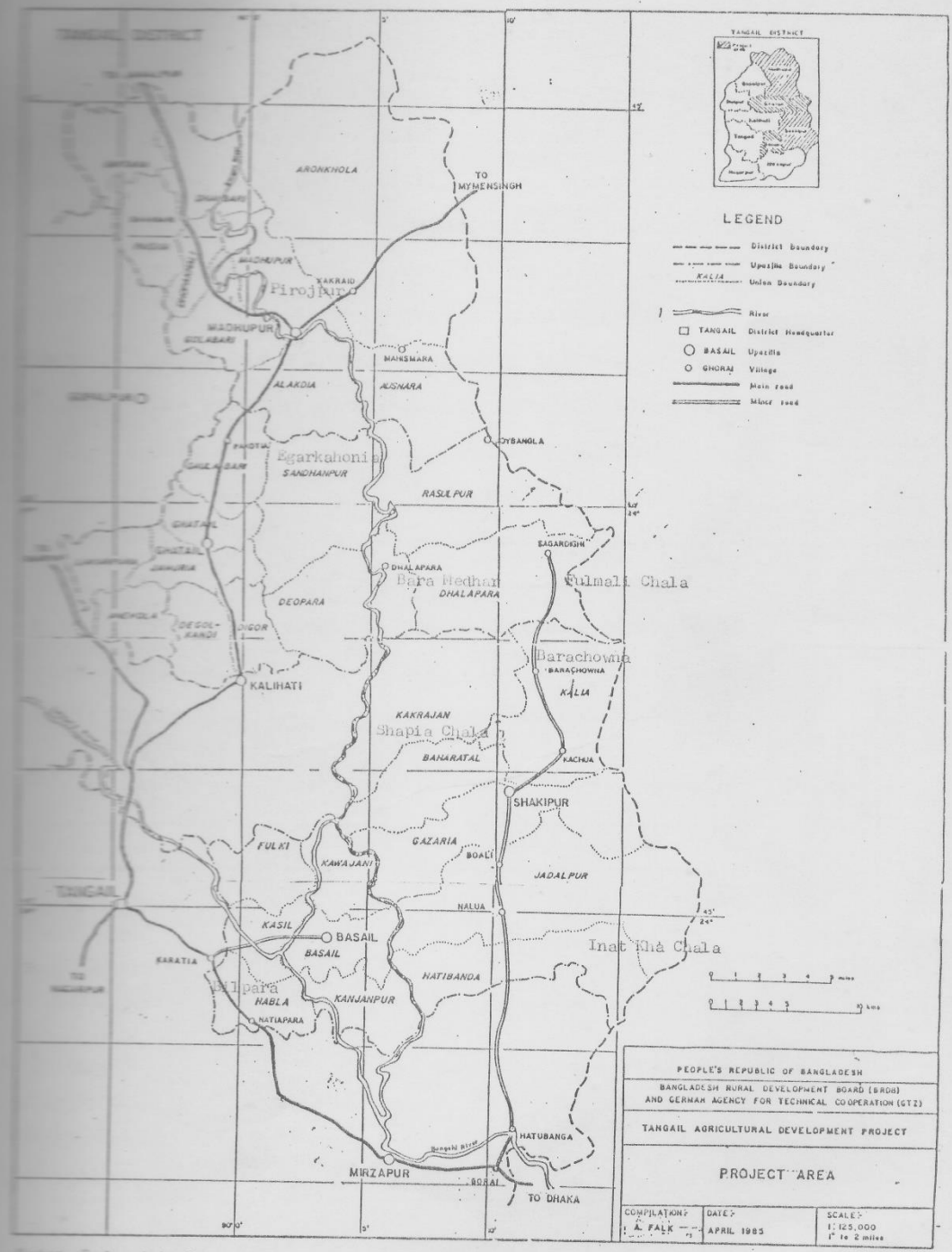
The location of the selected villages are shown in Figure 1.

Selection of Samples

One hundred and sixty households were selected for the socioeconomic bench mark survey taking 20 households

1/ A. M. M. Husain, M. A. Jabbar, M. A. S. Mandal, and W. M. H. Jaim. Socioeconomic Profile of Twelve Villages in Tangail District, BSERT, March 1985 (Report submitted to TADP).

2/ A part of the village falls under Mirzapur Upazila.



Note: Reduced to 71 percent of the original scale.

Fig. 1 Location of Selected Villages.

from each village. Selection of samples was made on a purposive basis so as to represent three categories of farmers - large, medium and small. Farms owning upto 2 acres were defined as small, those from 2.01 to 4.00 acres as medium, and those owning over 4.00 acres as large. However, selection of farmers from each size group was made on a random basis out of household lists from each category. The proportion of samples from the three size groups was determined roughly to make it representative of the relative size of each group in a particular village but with a little bias towards the small size group. The report, however, is based on 158 samples since two samples had to be excluded during the processing and analysis of data due to inconsistency in data. The distribution of samples in the 8 villages is shown in Table 1.

TABLE 1 Distribution of sample farms by village and farm size

Village	Number of farms by size			
	Large	Medium	Small	Total
Kaut Kha Chala	3	8	8	19
Pulmali Chala	5	6	9	20
Kguro Kahonia	4	8	8	20
Kabla Bilpara	5	7	8	20
Kura Chowna	4	8	8	20
Pirojpur	3	6	11	20
Kura Medhar	5	8	6	19
Khapia Chala	6	6	8	20
All villages	35	57	66	158

Selection of Bench Mark Indicators

As mentioned earlier, the purpose of this study is to provide bench mark data on some socioeconomic indicators of development on the basis of which it would be possible at a later stage to determine and measure changes in the farmers' situation. Accordingly the following criteria have been studied:

1. Per capita income and its sources
2. Per capita room space and type of housing
3. Per capita ownership of status goods
4. Degree of self-sufficiency in foodgrain production
5. Land ownership pattern
6. Extent and nature of family labour employment
7. Ownership of capital and extent of credit
8. Cropping intensity
9. Proportion of rice acreage under HYV
10. Rate of fertilizer application
11. Yield of major crops, particularly HYVs of paddy and wheat
12. Family size and composition

Per capita income may not be a sufficient indicator of increased economic condition of the farming population but all economic activities are directed toward increasing income and the effect of any development project is

most likely to be reflected in increased income. As a result of development activities, people's occupation may diversify and this will be reflected in the change in the relative importance of various sources of income and also changes in the nature of employment of farm family labour. For example, better communication and market development may induce more people to undertake business as a profession, increased income may permit more members of the family to be educated who may take up non-farm occupation in or outside the village, increased irrigation facilities within the village may increase productive employment opportunities and reduce out migration etc.

With increased real income, one of the first things people want to do is to improve their housing condition. People want to make more room space and/or better quality house, e. g., change from straw to tin roof. With increased income, people also want certain goods such as radio, bicycle, watch, chair, table, motor cycle and television. Ownership of these things are indicators of higher income as well as higher status, so these goods have been termed 'status goods' in this study.

Self-sufficiency in the production of foodgrain is a national objective. Farmers in general, particularly poor farmers, also give priority to achieve self-sufficiency in foodgrain production. The impact of a project involv-

ing provision of agricultural infrastructure may be understood by looking at the extent to which self-sufficiency in production has been achieved by different categories of farms.

Of all the resources which provide the basis for increased production and income, land is the most important for agricultural production. The other two important resources are labour and capital. Implementation of a development project may contribute to transfer of land and changes in the land ownership pattern, to changes in the form and extent of capital investment, and to the degree of indebtedness of the farming households.

As a result of irrigation, communication and market development, production and cropping patterns may change. For example, HYVs may be introduced and more fertilizers may be applied contributing to higher yields. Better transport may bring higher price for commodities particularly perishable commodities thus increase income. Production of horticultural crops may increase. Intensity of cropping may also increase though relationship between increased income and increased intensity of cropping may not always be direct. Technology remaining unchanged, increased intensity may increase income. With improved technology, income may increase without any increase in intensity of cropping.

Reduced family size will give higher per capita income even when increase in total income may be meagre. Simultaneous increase in income and decrease in family size make things better. Family size and composition may change only over a long period. With increased income more members may be educated and some of them may move to non-farm occupation thus help reduce family size. Better income, education and external connection may induce adoption of family planning measures, thus family size and composition may change. Such changes may not be directly attributed to any single project but implementation of a development project may indirectly contribute to reduce family size.

Collection of Data.

A questionnaire was prepared for the survey containing questions on farm family characteristics; livestock and poultry inventory; equipment; housing and other amenities; ownership pattern of land; tenure arrangements and terms; cropping pattern, acreage and yield of crops; use of different inputs including labour supply and employment, capital and credit; foodgrain availability of different sizes of farms; sources and amount of farm income and other related socioeconomic aspects of these farm households.

After necessary pre-test and revision the questionnaire was administered through single visit to each of the farm households by trained investigators who were graduates from the Bangladesh Agricultural University. The collection of data was supervised by the BSERT team members who also collected data from a small number of farms. The data were collected during April 1985.

II. SUMMARY OF FINDINGS

Per Capita Income

Per capita annual income of the sample farms in the selected villages varies from Taka 2003 in Inat Kha Chala to Taka 4435 in Shapia Chala (Table 2). Out of the eight villages studied, incomes in the four lower income villages are closer to one another while incomes in the four higher income villages are quite different from one another.

Taking the ratio of small and large farms' per capita income as an indicator of income inequality[1/], it appears that the degree of inequality in income is higher in the higher income villages. In fact, the levels of income of the small farms in three out of four higher income villages are lower than the levels of income of the small farms in the lower income villages. These results reconfirm widely held contentions that three decades of development activity in the country has been accompanied by an increased inequality in income. The findings also reconfirm the contention that a general rise in income may not benefit all sections of the community.

It will be shown later that neither poverty nor degree of income inequality is uniformly related to advances in

1/ Throughout this summary, the same approach has been adopted to measure inequality with respect to any criteria.

technology. Habla Bilpara, Bara Medhar, and Egaro Kahonia are technologically the most advanced villages in the group; yet their income levels and degree of inequality

TABLE 2 Average annual per capita income of the sample farms in the selected villages

Village	Per capita income by size of farm (Tk)				
	All farms	Large	Medium	Small	Small/ large
Lust Kha Chala	2003	3138	1478	1578	.50
Pulmali Chala	2260	3357	1994	1410	.42
Egaro Kahonia	2323	3195	2260	1546	.48
Habla Bilpara	2343	3039	2432	1588	.52
Bara Chowna	2566	6864	3135	959	.14
Firojpur	2890	5345	3417	1470	.27
Bara Medhar	3088	6609	2206	1200	.18
Shapia Chala	4435	7302	3076	2017	.27

are quite different. However, these situations should be given adequate consideration in the formulation and implementation of development projects in these villages so that the already bad situation is not worsened.

Sources of Income

The level of income and sources of income in the selected villages are not very closely related rather the relative importance of different sources indicate circumstances and facilities existing in the villages (Table 3).

TABLE 5 Relative importance of different sources of income of the sample farms in the selected villages

Village	Proportion of income by sources					
	Crop production	Garden crops & livestock	Rent	Salary/ wages	Business	Gift/ remittances, etc.
Imat Kha Chala	52.2	9.8	0.5	22.1	12.8	2.6
Pulmali Chala	77.0	1.7	0.8	4.6	14.6	1.3
Agaro Kahonia	77.5	3.1	1.3	3.2	8.0	6.9
Kahla Bilpara	60.3	8.0	7.0	12.7	11.0	1.0
Bara Chowna	71.3	0.4	6.8	6.0	15.5	-
Firojpur	80.4	3.1	1.0	7.4	8.2	-
Bara Medhar	50.4	2.3	7.3	6.4	32.3	1.3
Shapia Chala	58.4	23.6	8.8	2.8	6.1	0.3

Imat Kha Chala which is mostly a single cropped area, has the lowest cropping intensity. So it provides little opportunity for employment within the village and its small farmers migrate out for seasonal employment. That is why wage is an important source of income in this village. Garden crop is an important source in Shapia Chala because of the existence of jack fruit gardens. Business is an important source of income in a number of villages, the highest being in Bara Medhar, because important markets are located near these villages. Implementation of development projects is likely to alter these conditions, particularly in those villages which are remote, badly connected with markets and located too far away from markets.

Housing and Status Goods

Per capita room space and type of house are indicators of housing condition in a village. Table 4 shows that per capita room space is generally smaller in the lower income villages and higher in all the higher income villages except Bara Medhar. In general, degree of inequality in per capita room space increases as the amount of per capita room space also increases. This follows the same pattern as that for per capita income.

Per capita room space in Bara Medhar, a high income village, and Habla Bilpara, a low income village, are the lowest but the type of houses in both these villages are better. In Shapia Chala, room space is more and houses are also better. There are more tin roof houses in these villages than in the other villages, though tin roof houses are owned by large and some medium farmers. Ceiling of tin roof houses may be converted into platform where light weight type household goods may be stored. That is why a tin roof house may contain more effective space compared to a similar size straw roof house.

The villagers own very few status goods like table, chair, watch, bicycle, radio and television (Table 4). However, farmers in higher income villages own slightly more of these goods than those in the lower income villages. With the exception of two lower income villages

TABLE 4 Per capita room space and value of status goods for the sample farms in the selected villages

Village	Per capita room space by size of farm (sq.ft)					Value of status goods per capita (Tk)	Small/ large
	All farms	Large	Medium	Small	Small/ large		
Inat Kha Chala	56	71	55	36	0.51	43	0
Fulmali Chala	52	78	66	45	0.58	269	0
Egaro Kahonia	53	71	44	54	0.76	52	0.71
Habla Bilpara	49	52	51	46	0.88	119	0.96
Bara Chowma	65	104	67	45	0.43	549	0.05
Pirojpur	63	104	59	51	0.49	121	0.06
Bara Medhar	50	62	38	36	0.58	677	0.01
Shapia Chala	73	100	63	45	0.45	268	0.08

small farmers own virtually none or very few of these goods. This is a reflection of the fact that small farmers are still unable to meet basic necessities of life. Therefore, a substantial part of any possible increase in their income will most likely to be spent on food, clothing and housing before anything will be spent on status goods.

Self-sufficiency in Foodgrain Production

Gross annual foodgrain availability per farm has been estimated by adjusting rent paid and/or received to own production. Degree of self-sufficiency has been calculated assuming per capita daily requirement of 14 ounces (398 grammes) of grain which is the minimum amount assumed in the calculation of national level self-sufficiency in foodgrain.

The findings of the study show that per capita daily availability of foodgrain from farm production is generally higher for all sizes of farms in the higher income villages and the degree of self-sufficiency is also higher in the higher income villages (Table 5). Like per capita income and room space, per capita foodgrain availability and degree of self-sufficiency in foodgrain are also more unequal between size groups in the higher income villages.

TABLE 5 Per capita foodgrain availability from own farm of the sample households in the selected villages

Village	Per capita per day availability by size of farms (Kg)				Degree of self sufficiency (%)		
	Large	Medium	Small	Small/ large	Large	Medium	Small
Inat Kha Chala	0.8	0.3	0.1	0.13	193	64	29
Fulmali Chala	0.9	0.5	0.2	0.22	214	114	43
Egaro Kahonia	1.1	0.8	0.4	0.36	271	207	93
Habla Bilpara	0.4	0.4	0.2	0.50	100	107	64
Bara Chowna	1.9	0.9	0.3	0.16	471	221	79
Pirojpur	1.3	0.6	0.2	0.15	321	157	50
Bara Medhar	2.3	0.6	0.3	0.13	593	164	86
Shapia Chala	1.4	0.6	0.3	0.20	214	143	71

It is expected that technological improvement will lead to increased production but the increased production may benefit only few surplus producers unless measures are taken to make technology easily accessible to smaller farms whose economic condition need to be improved more urgently than those who may already have enough.

Employment of Family Labour

Family labourers in the lower income villages worked for a much longer duration than labourers in the higher income villages (Table 6). In the lower income villages, small farm labourers worked for a longer duration than large farm labourers but in the higher income villages, small and large farm labourers worked for more or less the same duration. Thus it appears that family labourers, particularly small farm labourers, in the lower income villages are doing a lot of work which are low productive or unproductive. This conclusion can also be substantiated by the fact that work duration appear to be longer in those villages (Egaro Kahonia, Inat Kha Chala, Pirojpur, and Fulmali Chala) which are located far from major markets so that people of these villages have to spend a lot of time travelling to buy and sell goods. Bara Medhar farmers worked for the lowest duration and there is a big market (Dhalapara) on the border of the

village so that virtually no travelling time is lost. Bara Chowna, Habla Bilpara and Shapia Chala also have nearly similar advantages.

TABLE 6 Average annual employment of male family labour of the sample farms in the selected villages

Village	Man-days employment per man-unit by farm size				
	All farms	Large	Medium	Small	Small/ large
Inat Kha Chala	265	292	223	297	1.02
Fulmali Chala	255	193	275	286	1.48
Egaro Kahonia	308	283	287	341	1.20
Habla Bilpara	237	219	227	285	1.30
Bara Chowna	193	208	172	206	0.99
Pirojpur	261	259	275	250	0.97
Bara Medhar	179	175	178	193	1.10
Shapia Chala	219	215	253	199	0.93

There are two other aspects of employment which have implications for framing and implementing development projects. Family labourers of Inat Kha Chala, Pirojpur and Fulmali Chala respectively hired out 40, 25 and 19 percent of their total working days. These villages are technologically backward, have less employment opportunities within the village, so there is seasonal out-migration of labour. This situation may change as a result of irrigation development as in the other villages where

selling out of labour is not important for farmers as a source of income.

Employment pattern is not yet very diversified in the selected villages. As mentioned earlier, business is marginally important in some villages located near major markets. In general, some lower income villages reported higher amount of non-farm employment compared to higher income villages but these are mostly road construction works under food for works programme. These information should be taken into consideration in framing development projects so that more and diversified work opportunities may be created.

Land Ownership Pattern

Land ownership per farm and per capita is generally higher in the higher income villages (Table 7). Inequality in per capita ownership of cropland is also higher in the higher income villages. Bara Medhar which has the highest land ownership per farm and per capita, also has the highest inequality in per capita ownership of cropland. Again, all categories of farms in this village, on balance, lost more land than they acquired. It is to be noted that landless households were not considered in this study. Their inclusion might produce a clearer pattern of land transfer because it would pro-

TABLE 7 Land ownership pattern of the sample farms in the selected villages

Village	Acres per farm: Homestead and garden	Acres per farm: Cropland	Cropland per capita, acres	Small/large farms' per capita cropland	Net transfer of cropland per farm since 1971, acre
[illegible] Chala	0.85	1.96	0.36	0.17	0.01
[illegible] Chala	0.41	3.60	0.55	0.16	0.70
[illegible] Kahunia	0.37	2.13	0.38	0.32	0.12
[illegible] Bilpara	0.27	2.11	0.22	0.80	0.26
[illegible] Chouna	0.29	2.93	0.47	0.20	0.12
[illegible]pur	0.31	2.33	0.41	0.15	0.24
[illegible] Medhar	1.15	5.26	0.81	0.09	-0.19
[illegible] Chala	1.26	4.80	0.59	0.15	0.72

hally appear that some landless households owned land at some stage during the last 15 years.

Since land is the primary basis for increased agricultural income, pattern of ownership and transfer of cropland will determine how benefits of any agricultural development project will be distributed.

Capital and Credit

Value of capital per farm is generally higher in the higher income villages except in Pirojpur where lower capital value has resulted from lower investment in equip-

[illegible] Nearly one-third of the cropland in [illegible] is irrigated by artesian wells for which virtually no capital is required while other irrigated villages had to invest a lot in irrigation equipment. In fact irrigation machinery is the only valuable investment which distinguishes one village from the other in terms of equipment value.

Inequality in capital ownership between large and small farms is generally high in all the villages but, as in the case of land, inequality is the highest in Bara Kalwar. The main source of inequality is the ownership of irrigation machinery and draft animal. Only large farms own irrigation machinery and they also own more and better quality draft animals.

Credit has been received from institutional sources mainly for purchasing inputs, e. g., fertilizer and draft animals, and from non-institutional sources mainly for family maintenance. On a per farm basis, small farms received disproportionately less credit than large farms except in Pirojpur where small farms had access to Krishi Bank's special credit programme for disadvantaged group. Detailed analysis has shown that some part of institutional credit has been spent for family maintenance and other unspecified purposes in nearly all the villages.

TABLE 8 Amount of capital and credit per farm for the sample farms in the selected villages

Village	Value of capital per farm, Tk			Small/ large farm's total capital	Out-standing credit per farm, Tk	Small/ large farm credit
	Live-stock	Equip-ment	Total			
Inat Kha Chala	6583	647	7230	0.11	1116	0.02
Fulmali Chala	4664	1485	6149	0.15	1445	0.09
Egaro Kahonia	3930	2604	6534	0.12	1905	0.20
Habla Bilpara	7078	883	7961	0.25	3439	0.23
Bara Chowna	6999	1863	8862	0.20	1320	a/
Pirojpur	3639	675	4314	0.15	1686	0.85
Bara Medhar	5210	12685	17895	0.07	2803	0.19
Shapia Chala	10326	3893	14219	0.15	2823	0.21

a/ Undefined because large farmers did not borrow at all.

Production Technology and Crop Yield

Intensity of cropping, proportion of rice acreage under HYV, rate of fertilizer application and yield rate of HYVs of rice and wheat do not appear to show any consistent pattern with income level of the villages (Table 9). Kusha Bilpara, Egaro Kahonia and Bara Medhar are the technologically most advanced villages in the group but they

TABLE 9 Cropping intensity, extent of HYV acreage, and fertilizer application, and yield of HYV paddy and wheat for the sample farms in the selected villages

Village	Intensity of cropping, %	% rice acreage under HYV	Fertilizer per cropped acre, kg	Yield per acre (kg)		
				HYV Boro	HYV Aman	HYV Wheat
Kusa Kha Chala	105	16	47	769	683	-
Kalmali Chala	139	3	27	-	-	-
Egaro Kahonia	166	43	84	1403	1161	504
Kusha Bilpara	162	40	208	2094	-	851
Bara Chouna	150	4	62	1430	-	-
Pirojpur	121	31	44	1385	1691	765
Bara Medhar	162	38	57	1389	-	-
Shapla Chala	161	9	66	1284	-	-

- Not produced at all or very few farms produced.

belong to different income categories. Pirojpur is not as advanced technologically yet it belongs to the higher

[illegible] category. This does not mean that technology did not play its part. From about the same amount of land, Habla Bilpara produced 73 percent more output than Egaro Kahonia, but larger family size in Habla Bilpara reduced the per capita income to the level of Egaro Kahonia (Table 10).

[illegible] Family size and per capita income of the sample farms in the selected villages

Village	Family size	Gross income (Tk)	
		Per farm	Per capita
[illegible] Chala	5.5	11016	2003
[illegible] Chala	6.6	14917	2260
Egaro Kahonia	5.6	13008	2323
Habla Bilpara	9.6	22494	2343
[illegible] Chuara	6.3	16165	2566
Rangpur	5.7	16472	2890
[illegible] Nadhar	6.5	20073	3088
Bhogda Chala	8.2	36368	4435

Similar other comparisons may be made. In the long run, increasing income and reducing family size should be simultaneously emphasized if any substantial improvement in living standard is to be achieved.