

**POVERTY, HOUSEHOLD FOOD SECURITY  
AND TARGETED FOOD PROGRAMMES**

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## CONTENTS

1.	INTRODUCTION	1
2.	AVAILABILITY AND CONSUMPTION OF FOOD AND NUTRIENTS	3
3.	POVERTY IN BANGLADESH	6
	Data	6
	Methodology	7
	Trends in Poverty	12
4.	OTHER DIMENSIONS OF POVERTY	14
	Food Consumption	14
	Seasonal and Regional Variations in Food Intake	15
	Nutrient Intake	16
	Inter-Household Distribution of Nutrient Intake	16
	Intra-Family Distribution of Nutrient Intake	17
	Anthropometric Indicators	18
5.	PUBLIC FOOD DISTRIBUTION SYSTEM AND TARGETED FOOD PROGRAMS	22
	Review of GOB Food Policy	22
	From Emergency Relief to Poverty Alleviation and Development	22
	Public Food Distribution System (PFDS)	23
	Targeted Food Programs	23
6.	LEAKAGE	28
	Leakages in the RD Program	29
	Targeting	30
	Working Hours	31
	Productivity	31
	Wage Payments	32
	Padding Volume of Work Completed	33
	Total Leakage	33
7.	CONCLUDING REMARKS	34
	APPENDIX 5.1: A BRIEF DESCRIPTION OF THE FOOD DISTRIBUTION AND TARGETED INTERVENTION PROGRAMS	35
	REFERENCES	40

## LIST OF TABLE

Table 2.1: Per Capita Consumption and Availability of Food (Rice and Wheat) in Bangladesh	4
Table 2.2: Per Capita Calorie Intake	5
Table 3.1: Head-Count Index of Absolute Poverty for Bangladesh 1973/74-1995/96	7
Table 3.2: Poverty-Gap Index (per cent)	13
Table 3.3: Squared Poverty-Gap Index	13
Table 4.1: Per Capita Food Intake in Rural Areas	15
Table 4.2: Per Capita Nutrient Intake 1962/64 – 1990/91	16
Table 4.3: Percentage Distribution of Rural Households Meeting Different Proportions of Calorie and Protein Requirements	17
Table 4.4: Age-Sex Structure of Malnutrition in Rural Bangladesh 1990/91	18
Table 4.5: Comparing Prevalence of Se vere Malnutrition Among Children Aged 6-71 Months	20
Table 4.6: Comparing Severity of Malnutrition Among Rural Children of Under 5 Year Age Group by Percentage Deviation	21
Table 5.1: Average Consumption by Household Expenditure Groups: A Comparison Between FFW Beneficiaries and Rural Distribution	26
Table 5.2: Average Consumption by Household Expenditure Groups: A Comparison Between VGD Beneficiaries and Rural Distribution	26
Table 5.3: Distribution of Foodgrain through Non-monetized Channels 83/84 – 95/96	27
Table 5.4: Cost-Effectiveness of Alternative Targeted Food interventions in Bangladesh	29

# 1. INTRODUCTION

Bangladesh with a per capita income of around USD 280 in 1998 is one of the poorest countries of the World. Low average income coupled with unequal distribution has resulted in a high incidence of poverty. Poor in Bangladesh do not even meet the minimum nutritional requirement to maintain a healthy body. Hence, poverty in Bangladesh is synonymous with hunger and malnutrition. Hunger, as we know, is not simply an economic problem in the narrow sense, but more importantly it has social and political dimensions as well. "It does not, of course, really matter whether political, social and cultural influences on economic matters are counted inside or outside the discipline of economics, but it can be tremendously important not to lose sight of these influences in analyzing many of profoundly economic problems. This is particularly the case with the problem of hunger" (Sen, A. ad Jean Dreze, 1991).

It follows from the above discussion that ensuring food security for all citizens of the country would naturally be a primary objective of the development program of a country such as Bangladesh suffering from widespread poverty. Food security, in its turn, may be defined as secured access by all people at all times to sufficient food to meet their dietary requirements for a healthy and productive life. In recent years it has gone beyond the notions of food supply to include elements of access, sufficiency, vulnerability and sustainability. Furthermore, the problem is increasingly being used in terms of seasonal, local or individual levels.

It may be noted that food security at the national level, i.e., self-sufficiency in food does not necessarily mean food security at the individual level. For example, Bangladesh, for all practical purposes, achieved self-sufficiency in food during 1991/92 to 1993/94 (Abdullah et al 1995, pp. 135). Yet, according to the nationwide Household Expenditure Survey(HES) carried out by BBS, based on actual consumption of foodgrains, about 50 per cent of the population of Bangladesh were suffering from absolute poverty in 1991/92 (Ravallion and Sen, 1994) defined in terms of food deprivation (nutritional norm). Ahmed, et al (1994) rightly point out that availability of an aggregate food supply is one element of food security. The other (perhaps more important) essential element of food security is access.

Thus overall production or availability of food may be a bad indicator of what the vulnerable groups in the population can actually acquire. Food may rank highest among basic human needs, but it will not be reflected in the market as long as it is not adequately backed up by purchasing power (effective demand). For "the market is an institution of alienation both in the simple sense of being a medium of transfer of ownership, and in the more complex – and more important – sense of being governed, in its transferring role, by any direct consideration for the well-being or needs of the people involved – only by their respective ability to pay and thus by relative wealth. ... As an alienated institution, the market is neither hostile nor friendly, but is simply detached and cold. It could feed the process of a famine but it could also assist the prevention of one. Since the market does not care which of the two it does somebody else has to care (Sen, A.K. 1996)." In other words, the government will have to play the caring role if the objective of ensuring food security of the citizens is to be achieved in a country such as Bangladesh where the incidence of absolute poverty

and unemployment is so high. In other words, access to food by the people who lack the necessary purchasing power will have to be ensured by the government.

However, food alone is not sufficient to guarantee health and nutrition. Nutritional well-being, is ultimately concerned with the ability to achieve certain functioning and depends on a variety of factors (including personal characteristics, activity levels, epidemiological environment, access to healthcare etc) of which nutrient intake is only one. Protein-Energy-Malnutrition (PEM) describes a spectrum of clinical disorders and is the most important public health problem in the developing countries of today. However, investigation further suggests that when commonly consumed cereal diets meet energy needs, they meet protein requirements as well (Sukhatme 1973, Gopalan, 1968, Chowdhury, 1993 etc). Indeed, many vitamins and mineral deficiencies would also be eliminated if sufficient calories were consumed (Greer and Thorbecke, 1968). Yet there is evidence of the incidence of various nutrition related diseases among the people of Bangladesh who otherwise have enough calories and cannot be categorized as poor. Therefore, a balanced diet is a problem that is not directly related to poverty in Bangladesh. One has to look towards preferences and knowledge about nutrition to address this problem. Hence, a more comprehensive view of nutritional well-being would suggest an analysis which goes much beyond food intake only.

Thus the food problem of Bangladesh is not simply an economic problem. At the same time, solving the food problem does not necessarily guarantee the welfare of the people defined in the northwest sense of ensuring their nutritional well-being. Thus, on the one hand, a multi-disciplinary approach is needed to understand the food problem and, on the other hand, a more comprehensive analysis is required to address the problem of malnutrition in the country.

It follows from the above discussion that the scope of the present study is very wide. However, at this preliminary stage we mainly focus on the nature of poverty and the characteristics of the poor in Bangladesh along with a review of the salient features of some of the major targeted food programs based primarily on a critical review of the existing studies. In Chapter 2 we compare the intertemporal change in per capita consumption of foodgrains (rice and wheat) based on macro (food balance sheet) and micro (food consumption) level data. Chapters 3 and 4 describes the implications of unequal distribution of food among households in terms of trends in poverty with a critical review of the concept, data, and methodology employed by different authors in the relevant studies. Chapter 5 traces the changes in the nutritional status of individuals both in terms of input (food and nutrient intake) and outcome (anthropometric) based measures that bring out, among other things, the problems of unequal distribution of food and nutritional well-being between and within a household. Chapter 6 reviews some of the salient features of the existing anti-poverty programs in Bangladesh. Finally, concluding remarks based on the analysis carried out on various aspects of poverty are contained in Chapter 7.

## **2. AVAILABILITY AND CONSUMPTION OF FOOD AND NUTRIENTS**

Trends in food consumption can be studied either following a supply oriented approach or using demand oriented alternatives. The traditional supply oriented approach is embodied in the national food balance sheets wherein after deducting a certain percentage for seed, feed and wastage, the balance is added to net import and changes in government stock. An alternative way of estimating availability, particularly for foodgrains that are publicly procured and distributed in Bangladesh is to deduct internal procurement and then add ratio off-take to net domestic production. This is generally referred to as availability, which gives an idea of “apparent” consumption of different food items over time. The Bangladesh Bureau of Statistics (BBS) provides such information on a yearly basis. The Household Expenditure Surveys (HES) conducted by the Bangladesh Bureau of Statistics (BBS), on the other hand, provide information on actual food consumption by households separately for rural and urban areas of Bangladesh.

The BBS conducts surveys on income, expenditure and consumption of various food and non-food items at the household level by interview methods. Table 2.1 reports per capita food (rice and wheat) intake according to the HES and compares them with per capita food (rice and wheat) availability for domestic consumption according to food balance sheet. It reveals that per capita food (rice and wheat) consumption in Bangladesh increased continuously between 1973/74 and 1991/92 according to micro (HES) level data and fluctuated according to the macro (food balance sheet) data. The table shows that the index of per capita food consumption fell to the lowest level of 96.7 in 1985/86 and reached the peak of 103.1 in 1991/92 according to macro level data where 1973/74 was the base period. Further, the micro (HES) level data were lower than the macro level data up to 1983/84 and higher since then as can be noted from the table.

Differences<sup>1</sup> in the sources of data, the methodology of collecting the data and estimation procedures are some of the primary reasons for variations in the estimates. Calculations based on food balance sheet suffer from lack of information on changes in stock, reliability of allowance for deduction of a certain percentage for seed, feed and wastage etc. while the methodology of collecting data<sup>2</sup> for HES has gone through a substantial change since 1983/84. Hence, not only are the findings derived from the food balance sheet and those from the HES not comparable, even the HES data for different periods are also incomparable. A recent study by Chowdhury (1993) based on a review of literature on domestic food production, food availability and consumption in Bangladesh argues that there were substantial yearly fluctuations in food production and consumption at the per capita level in Bangladesh but in general they stagnated between the mid sixties to mid-eighties. Indeed, the same arguments suggest that food consumption in general at per capita level remained similar in the early nineties compared to their earlier periods.

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<sup>1</sup> See Chowdhury and Quazi Sh ahabuddin (1992) for details.

<sup>2</sup> Described in detail later.

**Table 2.1: Per Capita Consumption and Availability of Food (Rice and Wheat) in Bangladesh**

(gm/person/day)

Year	HES	Macro	HES is a Percentage of Macro
(1)	(2)	(3)	(4)
1973/74	439 (100.0)	481.1 (100.0)	91.2
1981/82	456.8 (104.1)	478.6 (99.5)	95.5
1983/84	475.7 (108.4)	491.0 (102.1)	96.9
1985/86	495.6 (112.9)	465.2 (96.7)	106.5
1988/89	499.9 (113.9)	485.2 (100.9)	103.0
1991/92	509 (116.0)	496.2 (103.1)	102.6
1995/96	498 (113.4)	n.a.	n.a.

Sources: HES estimates for 1973/74 from Osmani (1990) pp 78 Table II and the rest from BBS (1988) and (1997) respectively. Macro estimates (defined as net availability = net production – govt. procurement + govt. distribution) are based on data supplied by the Statistical Yearbook of Various years.

- Notes: 1. Figures in parentheses are indices where 1973/74 is the base year.
2. Per capita domestic food (rice and wheat) consumption in statistical yearbooks is reported in terms of lbs. per annum and oz per day up to 1979/80 and in terms of kg per annum since then. Further, in arriving at net production from gross production, deduction for food, seed, wastage etc. has been revised and calculated at 2.43% of total production of rice and 3.01% of total production of wheat from that of 10% of total production in recent years. Information on per capita food consumption according to this revised estimates are available since 1974/75 whereas the earlier estimates are made on the basis of deduction due to seed, wastages etc. at 10% of total production. Hence, we have made the necessary adjustments to report domestic per capita food consumption in terms of gms per day where deduction for seed, wastage etc. are calculated at 2.43% of total production of rice and 3.01% of total production of wheat to make these estimates comparable over time and that with the HES as reported in the table.

Rice and wheat are not the only source of energy for the people of Bangladesh. In general, cereals contribute around 80 per cent of energy intake. Therefore, non-cereal food items also contribute to the total energy requirement of an individual. Table 2.2 reports energy intake when total food consumption is converted into an energy equivalent as reported in the relevant HESs. The table shows that the per capita energy intake in rural and urban area of Bangladesh increased (except in urban areas when it fell from 2047.5 kcal in 1981/82 to 2020.2 kcal in 1983/84) continuously between 1973/74 and 1991/92 and decreased slightly in 1995/96. In other words, average energy intake in per capita terms in Bangladesh increased during the period.

**Table 2.2: Per Capita Calorie Intake***(kcal/person/day)*

<b>Year</b>	<b>Rural</b>	<b>Urban</b>	<b>national</b>
(1)	(2)	(3)	(4)
1973/74	1885 (100.0)	1945 (100.0)	-
1981/82	1905.3 (101.1)	2047.5 (105.3)	1925.2
1983/84	2112.6 (112.1)	2020.2 (103.9)	2109.9
1985/86	2203.4 (116.9)	2107 (108.3)	2192.2
1988/89	2216.8 (117.6)	2183.2 (112.3)	2215.3
1991/92	2266.8 (120.3)	2258.1 (116.1)	2265.6
1995/96	2251 (119.4)	2209 (113.6)	2244

Sources: For 1973/74 from the 1975 Statistical Yearbook of Bangladesh, for 1981/82 from BBS (1986) pp. 26, Table 5 and the rest from BBS (1985) pp. 24 Table 5.2 HES 1995/96 Table 25 p. 18.

Notes: Figures in parentheses refer to respective indices with 1973/74 as the base year.

### **3. POVERTY IN BANGLADESH**

Poverty is said to exist when one or more persons fall short of a level of economic welfare deemed to constitute a reasonable minimum, either in some absolute sense or by the standards of a specific society (Lipton and Ravallion, 1993, pp. 1). Average food consumption in Bangladesh has over the years increased, but slowly, to around 2200 kilo calories per capita per day by the early nineties. Such a low average food intake coupled with unequal distribution of it, according to one estimate, has resulted in almost half of the huge population of Bangladesh being categorized as suffering from absolute poverty in recent years. But such estimates of poverty are not universally accepted. There are controversies regarding the level of poverty, its intertemporal changes in direction and intersectoral ranking depending primarily on the concept, definition, methodology and data source used for such measures.

Measuring poverty essentially involves two steps (Sen 1976) viz, (i) identification and (ii) aggregation. The first involves setting a poverty line and the second calculating a summary statistic. Three measures, all of which belong to the class of measures proposed by Foster, Greer and Thorbecke (1984), have been widely used to focus on three different aspects of poverty. The second, called the poverty-gap index (PG), measures the depth of poverty. The third one, known as the squared poverty gap index (SPG), measures the severity of poverty. The head-count index is the most widely used measure of poverty in Bangladesh. It calculates the percentage of population who lives in households with a per capita income (expenditure) less than the poverty line.

Table 3.1 reports estimates of head-count index of poverty according to major studies on Bangladesh since its independence in 1971. Household expenditure surveys (HES) carried out by the Bangladesh Bureau of Statistics (BBS) are the only source of information for all the studies reported in the table. It shows that none of the studies, other than those by the BBS, covers the entire period from 1973/74 to 1995/96. Yet, for the period for which these studies overlap, the estimates of the level of absolute poverty vary widely between the studies. In fact, even the changes in the direction of poverty over time as well as the intersectoral ranking differ.

#### **Data**

It may be noted that there has been a major change in the HES data collection between 1981/82 and 1983/84. The primary difference being the switch from a single interview reporting seven-day recall of food consumption to the use of daily interviews reporting food consumption in 24 hours, spread over 14 days.<sup>3</sup> The checklist of food items used since 1983/84 has been more comprehensive than the ones used before. In fact, it was found that the number of items consumed has increased substantially and particularly the items in the self-consumption category, a category that is more important for poor households compared to average households, since 1983/84. Thus this change in the methodology of data collection will underestimate poverty compared with the earlier one. Furthermore, both the number

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<sup>3</sup> See, among others, Khan (1990), Ravallion and Sen (1994), Ahmed et al (1991).

**Table 3.1: Head-Count Index of Absolute Poverty for Bangladesh 1973/74-1995/96**

Year	Sector	BBS Graph Fitting Method	Ahmed et al (1991)	Ravallion and Sen (1994)	Rehman and Haque (1988)	Hossain and Sen (1992)	Sen and Islam (1993)	Muqtada (1986)	Hossain and Sen (1998)
1973/74	Rural	82.9	-	-	65.3	71.3	n.a.	55.9	-
	Urban	81.4 (5.6)			62.5	n.a.	63.2	37.8	
1981/82	Rural	73.8	71.8	-	79.1	65.3	n.a.	-	-
	Urban	66.0	65.3		50.7	n.a.	48.4		
1983/84	Rural	57.0	n.a.	53.8	49.8	50.0			53.8
	Urban	66.0	n.a.	40.9	39.5	n.a.	42.6		40.9
1985/86	Rural	51.0	51.6	45.9	47.1	41.3	n.a.		45.9
	Urban	56.0	66.8	30.8	29.1	n.a.	30.6		30.8
1988/89	Rural	48.0	-	49.7	-	43.8	n.a.		49.7
	Urban	44.0	-	35.9		n.a.	33.4		35.9
1991/92	Rural	50.0	-	52.9	-	-	-	-	52.9
	Urban	46.8	-	33.6					33.6
1995/96	Rural	-	-	-	-	-	-	-	51.1
	Urban								26.3

**Source:** BBS up to 1988/89 from BBS, 1991 Table 6.2 pp. 33 and for 1991/92 BBS, 1995 Table 5.4A pp. 31.

of sampling areas and sample size were reduced by about two-thirds, thereby sharply increasing the sampling error of the estimates. Hence, it is clear that the changes in the methodology of collecting information has reduced the HES data collected since 1983/84 incomparable with the ones collected prior to it. But differences in the incidence of poverty for a sector in a year, intertemporal changes in its direction as well as sectoral ranking varied between studies even within the sub-periods, before 1983/84 and since then. For example, rural poverty varied widely from around 56 per cent (Muqtada, 1986) to around 83 per cent (BBS) in 1973/74 according to alternative studies. It declined between 1973/74 and 1981/82 according to BBS and Hossain and Sen (1992) but increased according to Rehman and Haque (1988). Furthermore, incidence of poverty in rural areas in 1985/86 was lower according to BBS but higher according to Ravallion and Sen (1994). Hence, it is clear that the variations in the level of poverty, its intertemporal changes and sectoral ranking according to different studies cannot be explained in terms of changes in the survey design alone. Differences in the methodology for estimating poverty played a major role in such variations.

### **Methodology**

Poverty is defined to mean the inability to command enough income (expenditure) to satisfy “basic consumption needs” and the poverty line to be the cost of those needs. Food is considered to be the most important component of the basic

needs bundle and the cost of a food bundle that meets the minimum calorie requirement is used for the construction of food poverty line. Then the non-food component of the poverty line is usually constructed by adding a mark-up on the food poverty line to construct the overall poverty line called the (i) food share method. Estimating the overall poverty line by finding the consumption expenditure of income level at which a person's typical food energy is just sufficient to meet the pre-determined food energy requirement is called the (ii) food energy method.

Most of the studies on poverty in Bangladesh are based on (except BBS and Ahmed et al (1991), in Table 3.1) the food share method. It involves selecting a "normative food consumption bundle" that satisfies the minimum calorie requirement of an average individual. It may be noted that there is little difference among the studies regarding "the minimum calorie requirement used in defining basic food needs" which varied little around 2122 kilo calories per capita per day.

The generic items included in the "normative food consumption bundle" for Bangladesh are also similar as they closely followed the FAO recommended standard or a close approximate of it. But the actual commodities representing the generic items varied between the studies. The items to be included in the "normative food consumption bundle" were primarily determined by the availability of price information. Urban retail prices available from the BBS for the relevant commodities were generally used for estimating the urban food poverty line. The urban prices were then deflated by using an arbitrary discount rate to get rural prices.<sup>4</sup> Obviously a movement in urban prices out of line with rural prices may generate unpredictable fluctuations in the poverty line, which may result in conflicting trends in rural poverty. Moreover, prices used from different sources will not reflect consumer choice. Indeed, it was found that (Hossain and Sen 1992) the commodities for which retail prices for the urban areas were available turned out to be the expensive ones among the generic items included in the "normative food consumption bundle". Thus the discrepancies in identifying the specific commodities and using prices from different sources for estimating urban food poverty line and employing arbitrary discount rates – which also varied between studies – to arrive at rural price levels lead to variations in estimates of food poverty line between the studies. But recently Hossain and Sen (1992), Sen and Islam (1993) and Ravallion and Sen (1994) have used the implicit prices of the commodities actually consumed by the poor in each sector using HES information on quantities of relevant food items and expenditures incurred on them to calculate sectoral food poverty lines. Hence, the food poverty lines so calculated reflected preferences of the poor.

Estimating the cost of non-food basic needs to calculate the total consumption poverty line has added problems. Implicit prices of the non-food components of the overall basic needs consumption bundle cannot be estimated since the HES provides data only on expenditures incurred on these items. Thus arbitrary mark-ups on food poverty lines have been used to calculate the non-food expenditures. These allowances for non-food items varied substantially between studies.<sup>5</sup> It may be noted

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<sup>4</sup> For example, Muqtada (1986) used prices for rural low-income groups without mentioning as to how these were derived; Rahman and Haque (1988) deflated the urban retail prices by 10 per cent to arrive at rural prices.

<sup>5</sup> Hossain and Sen (1992) set the allowance for non-food goods at 30% of that for food for the rural areas, while Sen and Islam (1993) set it at 40% for the urban series. Rahman and Haque (1988) used a constant mark-up of 25% across the sectors. Ravallion and Sen (1994), on the other hand, set the non-

that consumer preferences have little role to play in such estimations of the consumption poverty line by the food-share method.

Rural poverty according to Rahman and Haque (RH, 1988) increased between 1973/74 and 1981/82 but declined during the same period according to Hossain and Sen (HS, 1992). RH, took a “fixed consumption bundle” as the norm, valued it at current years prices (in fact, urban retail prices of the respective items were used by discounting them by 10 per cent) to arrive at the rural food poverty line. Finally, a certain mark-up (25%) was added to the food poverty line to arrive at a poverty line income. HS, on the other hand, identified the food bundle that was actually consumed by rural people deemed to be poor and used to implicit prices calculated from the HES of the relevant years. They also added a certain mark-up (30%) to the food poverty line so calculated to arrive at poverty line income. In other words, both the studies essentially employed the food-share method. Yet their estimates vary both in terms of the level of poverty as well as in the direction of intertemporal change! Other things remaining the same, differences in the factors by which the expenditures on food is increased to allow for non-food expenditures to be included in the poverty line income will affect only the estimates of the level of poverty but not the changes in its direction. But the implications of using different sets of commodities and therefore different relative prices for generic groups are more complicated.

Suppose the cheap source of calories became cheaper and the costly sources costlier between years compared. Even ignoring the possibilities of substitution of costlier sources by the cheaper ones it is clear that it will not be possible to obtain the same amount of calories as before by the consumers who were already living on cheaper foodstuffs with a lower level of income. HS, as pointed out earlier, reported that the specific commodities that were actually consumed by the people deemed to be poor according to the HES, were cheaper than the commodities of the relevant generic items for which urban retail prices were available. Following the HES method, it would thus be possible with a lower level of income to meet the calorie requirement than what would be required to buy the consumption bundle determined according to RH. Consequently, the HS method will give a lower estimate of poverty for the terminal year compared to RH. In fact, cheap sources of calories indeed became cheaper during the 1973/74 – 1981/82 period (World Bank, 1987, pp. 134). As would be expected, there was large-scale substitution of expensive sources of calories by the cheaper ones. The rural population as a whole increased the consumption of potato (a cheaper source of calorie) by 138 per cent, and the rural poor has done by 162 per cent. The rural poor drastically reduced the consumption of more expensive sources of calories such as pulses, milk and meat by 47, 62 and 45 per cent respectively. The method of using implicit prices (average expenditure on a specific commodity group divided by the quantity) employed by HS accommodates such substitution possibilities as well. Hence, it is no wonder that, other things remaining the same, the “fixed consumption bundle” approach used by RH will lead to estimates showing the incidence of poverty increasing during the seventies as we have observed in contrast to a reduction according to HS. The essential difference between these two methodologies is that the HS method is guided by consumer preferences in estimating the food poverty line where identification of specific

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food allowance at 35% of the food poverty line in 1983/84, and updated the non-food component for 1983/84 over time using the non-food component consumer price index calculated by employing base year weights.

commodities within each generic item is flexible to accommodate consumer choices to changing relative prices while the RH. method has no such flexibility.

The food energy method, on the other hand, is based on a calorie income relationship. BBS and Ahmed et al (1991) adopt this methodology for calculating the consumption poverty line. BBS estimates the poverty line by fitting a graph that relates the per capita calorie intake to the per capita expenditure. The poverty line expenditure is identified by the level of expenditure required to meet the pre-determined calorie requirement by tracing the calorie-expenditure graph. Ahmed et al (1991) employ a regression technique to calculate the poverty line by finding the expenditure level at which the pre-determined calorie requirement is met. Hence, the food energy method requires information only on the food intake and expenditure (income) of the relevant individuals to estimate the overall consumption (income) poverty line.

Estimates on the incidence of poverty by the BBS are available for the entire period since the independence of the country to the most recent period for which the HES reports are available covering 1973/74 to 1991/92 as reported in Table 3.1. Ahmed et al (1991) calculate incidences of poverty only for 1981/82 and 1985/86. These estimates are based on information which are not comparable, as argued earlier, since the methodology of collecting HES data changed substantially in 1983/84. In other words, intertemporal comparisons of poverty, according to Ahmed et al (1991), cannot be carried out. But an analysis based on intersectoral ranking for the relevant periods reveals that rural poverty was higher compared to urban poverty in 1981/82 and lower in 1985/86. BBS also concurs with this finding. In other words, both the studies based on food energy methodology indicate that there has been a switch in the intersectoral ranking of poverty in Bangladesh between the early and mid eighties and that rural poverty was lower in 1985/86 compared to urban poverty. But RS, based on the food share method, on the contrary, shows that rural poverty in 1985/86 in Bangladesh was higher than in the urban sector. In fact, RS estimates on poverty for both the rural and urban sectors are available since the improved methodology for data collection for HES was introduced in 1983/84 to the most recent period in 1991/92. A comparison between BBS and RS for the relevant period reveals that while rural poverty was lower than urban poverty in the early eighties (1983/84 and 1985/86) according to BBS, it was higher according to RS. In fact, rural poverty was higher according to RS for the entire period 1983/84 to 1991/92 while the BBS shows that it was so only in the late eighties and early nineties (1988/89 and 1991/92). Further, both rural and urban poverty declined throughout the eighties (1983/84 to 1988/89), according to the BBS, to rise again in both the sectors only in 1991/92. The RS estimates, on the other hand, indicate that rural poverty declined between 1983/84 and 1985/86 and then increased continuously during the rest of the period while urban poverty declined initially (between 1983/84 and 1985/86), increased thereafter (in 1988/89) to fall again in 1991/92. Thus it is clear that the studies based on food share method not only vary widely amongst them but also with those based on food energy methodology regarding the level of incidence of poverty in any sector and/or intersectoral ranking at a point in time, as well as with intertemporal changes in the direction of poverty in a sector.

It follows from the above discussion that the construction of a consumption poverty line at which the basic needs could be met by the food share method primarily involves identifying a normative food bundle that will satisfy the calorie

requirement, collecting prices to be used to turn the physical quantities into monetary values, and employing a factor by which the food poverty line will have to be increased to allow for the non-food component to be added. Arbitrary value judgments are involved at each stage for constructing such a poverty line. In fact, ad hoc subjective value judgments and/or consumer preferences have been used as the guiding principle at various stages of constructing the consumption poverty line. As a result the estimates of the incidence of poverty according to alternative studies differed widely (not only in terms of levels of incidence of poverty but also changes in its direction over time) depending on the value judgments of the evaluators and weight given to consumer preferences.

A least cost combination of food bundle for assessing the incidence of poverty has long been abandoned, as it has no relevance to consumer preference. None of the major studies on poverty in Bangladesh employed this methodology. A “fixed food consumption bundle” was found wanting in not giving enough weight to consumer preferences and as such leading to perverse results even regarding the intertemporal changes in poverty. Recently the food poverty line is being estimated by using implicit prices for the generic items that accommodate substitution possibilities between commodities within a generic item to changes in relative prices according to consumer preferences. In other words, the food poverty line according to the food share method is progressively being estimated in a manner that increasingly reflects consumer preferences. But the non-food component of the overall consumption poverty line is still taken into account by raising the food poverty line arbitrarily by a factor. On the other hand, the overall consumption poverty line estimated by the food energy method, as described earlier, involves little value judgments on the part of the evaluators. But the poverty line so calculated takes full cognizance of the preferences of the consumers. In so doing it requires information only on food intake and the level of expenditure (income) of the relevant individuals. As a result, the food share method is based on more objective criteria and requires less information than that of the food energy method. Furthermore, it is alleged that both the income and expenditure data of HES suffer from certain deficiencies; these deficiencies affect the income data more than the expenditure data (Khan and Hossain, 1988). The estimation of quantities consumed is more reliable than either the estimation of consumption expenditure or income, as prices do not enter into the calculation of quantities consumed. Prices of commodities implied in the HES data are quite substantially different from those recorded by the BBS, through market surveys (Rahman and Haque, 1988, pp. 12). Further, it is well known that information on income, particularly for the developing countries is notoriously weak, whereas data on consumption are more reliable. In the case of Bangladesh also there is a closer correspondence between consumption data at the macro level and micro level compared with that on income. Now, in a situation where the consumption figures are reasonably accurate but the income estimate is biased downward (upward) the BBS or Ahmed et al. 1991 method based on the relationship between calorie and income will necessarily yielded a downward (upward) biased estimate of poverty line. Like the food share method the food energy method also used a downward (upward) biased income distribution, but unlike the food share method, the food energy method uses a poverty line that is also biased downward (upward). Thus the two biases will tend to neutralize each other (Osmani, 1990, pp. 79) in case of the food energy method but not so in the case of the food share method.

It follows from the above discussion that the food energy method is entirely based on consumer preferences and as such requires much less information to construct the poverty line compared with that of the food share method. Its estimate will not be vitiated by biased information on income as long as the data on consumption is reliable. Since it involves little value judgment the problem of estimates based on the food energy method varying widely between evaluators is less likely compared to the authors using the food share method as was the case between that of RH and HS described earlier. Thus both from theoretical and empirical points of view the food energy method is more acceptable than the food share method.

### **Trends in Poverty**

Head count index of poverty reported by BBS is based on the food energy method. Table 3.1 shows that the BBS estimate covers the entire period 1973/74 to 1995/96 of which the data collected since 1983/84 are comparable and more comprehensive. The table reveals that the incidence of poverty in rural areas (57%) was less than that in urban areas (66%) in 1983/84. Poverty in both the sectors declined during the eighties (1983/84 – 1988/89); the rate of decline was faster in urban areas compared to that in rural areas resulting in the switch of intersectoral ranking in 1988/89. After 1988/89, there has been a reversal of the trend in poverty. It increased in both the sectors in 1991/92 compared to that in 1988/89. But the level of poverty in both the sectors in 1991/92 was much less than that in 1983/84. It may further be argued that the very high incidence of poverty in both the rural and urban sectors in 1973/74 compared to that in 1991/92 suggests — in spite of the incomparability of data between these two points in time — that the incidence of poverty in both the sectors declined during the period covering the early seventies to early nineties. It also shows that rural poverty in 1973/74 was higher than urban poverty in 1973/74 and so was the case in 1991/92.

The head-count index, as was pointed out earlier, measures only the percentage of poor but provides no insight about the depth of poverty or the severity of it. The depth of poverty is measured by the poverty gap index defined as the mean distance below the poverty line as a proportion of that line (where the mean is calculated over the entire population counting the non-poor as having zero poverty gap). However, this measure of poverty is not sensitive towards the changes in the distribution among the poor. Severity of poverty, on the other hand, is measured by the squared poverty-gap index defined as the mean of the squared proportionate poverty gaps (again the mean is calculated over the entire population, counting the non-poor as having zero poverty gap). Table 3.2 and 3.3 reports findings on poverty in Bangladesh according to the poverty gap index and the squared poverty gap index respectively. It is clear from the tables that the poverty trend of the sectors over time and the intersectoral ranking according to different studies on Bangladesh do not vary with changes in the measures employed. In other words, conclusions regarding changes in poverty according to the head-count index described earlier in detail hold even when alternative measures of poverty are employed in the studies.

**Table 3.2: Poverty-Gap Index (per cent)**

Year	Sector	Sen and Khan (1993)	Hossain and Sen (1992)	Ravallion and Sen (1994)	Hossain and Sen (1998)
1973/74	Rural	n.a	25.6	n.a.	-
	Urban	21.1	n.a.	n.a.	
1981/82	Rural	n.a.	20.2	n.a.	-
	Urban	14.9	n.a.	n.a.	
1983/84	Rural	n.a.	13.2	15.0	15.0
	Urban	12.1	n.a.	11.4	11.4
1985/86	Rural	n.a.	9.2	10.9	10.9
	Urban	7.3	n.a.	7.3	7.3
1988/89	Rural	n.a.	10.8	13.1	13.1
	Urban	7.7	n.a.	8.7	8.7
1991/92	Rural	n.a.	n.a.	14.6	14.6
	Urban	n.a.	n.a.	8.4	8.4
1995/96	Rural	n.a.	n.a.	n.a.	14.1
	Urban	n.a.	n.a.	n.a.	6.0

**Table 3.3: Squared Poverty-Gap Index***(per cent)*

Year	Sector	Sen and Khan (1993)	Hossain and Sen (1992)	Ravallion and Sen (1994)	Hossain and Sen (1998)
1973/74	Rural	n.a.	11.8	n.a.	-
	Urban	9.45	n.a.	n.a.	
1981/82	Rural	n.a.	8.1	n.a.	-
	Urban	6.2	n.a.	n.a.	
1983/84	Rural	n.a.	4.9	5.9	5.9
	Urban	4.7	n.a.	4.4	4.4
1985/86	Rural	n.a.	2.9	3.6	3.6
	Urban	2.4	n.a.	2.5	2.5
1988/89	Rural	n.a.	3.7	4.8	4.8
	Urban	2.4	n.a.	2.8	2.8
1991/92	Rural	n.a.	n.a.	5.6	5.6
	Urban	n.a.	n.a.	2.8	2.8
1995/96	Rural	n.a.	n.a.	n.a.	5.5
	Urban	n.a.	n.a.	n.a.	1.9

## **4. OTHER DIMENSIONS OF POVERTY**

Paul Streeten (1990) has likened the measurement of poverty to the removal of six veils, in which one starts with the outer veil, money income, and proceeds through the veils of real income, direct measures and impact indicators to the distribution of benefits within the household. Studies on poverty in Bangladesh covers a wide spectrum ranging from those based on income (expenditure) distribution between households to direct measures involving the distribution of nutrient intake even at the individual level within the households.

Direct measures of under-nutrition may be divided into two categories, namely, input based and outcome based. Input based measures compare nutrient intake against some requirement standard to assess nutritional status. Another set of indicators based on the physical manifestation of malnutrition, such as anthropometry, clinical symptoms etc. may be termed as outcome based measures of nutritional status. Information for estimating such measures is collected through nutrition surveys.

The nutrition section of the Department of Biochemistry, University of Dhaka conducted the first nutrition survey in the then East Pakistan during 1962-64. The results of the study were published by the U.S. Department of Health, Education and Welfare (DHEW) in May 1966. The survey consisted of dietary, biochemical and chemical studies on populations. Since then the Institute of Nutrition and Food Science (INFS), University of Dhaka, carried out large nutrition surveys on rural areas of Bangladesh in 1975/76 and in 1981/82 and by the Bangladesh Institute of Development Studies (BIDS) in 1982/83 and 1990/91 respectively. The methodology for collecting information on food consumption by nutrition surveys is different from those by the BBS described earlier. The nutrition surveys carried out by the organizations mentioned above collected information on dietary intake and food consumption (of the household or individual) by a 24 hour weighing method supplemented by a recall method on food eaten outside the home by individuals. BBS, on the other hand, rely on the interview method and the information is obtained invariably at the household level. Hence, the nutrition surveys are more accurate in the sense that the information on food consumption is recorded by the interviewers by measuring the food actually eaten rather than relying on the information provided by the respondents themselves.

The nutrition surveys were conducted in a number of rounds to capture the seasonality in food consumption. Information on food intake by region is also reported. Thus it is possible to analyze seasonal and regional variations in food and nutrient intake. More importantly, it is now being increasingly argued that the burden of poverty falls unequally even among the members of the same household. Hence, information on food intake at the individual level available from nutrition surveys provides an opportunity to analyze the problem of maldistribution of food between different age -sex groups within the household.

### **Food Consumption**

Table 4.1 reports per capita food intake per day in 1962-64, 1975/76 and 1981/82 according to large-scale nutrition surveys carried out by the DHEW and the

INFS and in 1982/83 and 1990/91 by the BIDS in the rural areas of Bangladesh. The table indicates that the food intake in 1981/82 in rural areas of Bangladesh dropped by about 5 per cent and 14 per cent compared to that in 1975/76 and 1962/64 respectively. Nevertheless, Chowdhury (1993), on the basis of a review of various studies on food production, food availability and consumption in Bangladesh for the relevant period concluded that food intake on a per capita basis fluctuated widely between years but on an average stagnated between the early sixties and early eighties. The food intake figure for 1990/91 indicates that it was higher by about 6 per cent compared to that in 1980/81 and lower by around 9 per cent compared to that in 1962/64. Chowdhury (1995) further argues that the evidence on food intake reported in table suggests that the per capita food intake in general stagnated between the early sixties and the early nineties in rural Bangladesh while yearly fluctuations were also discernible.

**Table 4.1: Per Capita Food Intake in Rural Areas**

*(gm/person/day)*

<b>Year/Agency</b>	<b>1962/64 (DHEW)</b>	<b>1975/76 (INFS)</b>	<b>1981/82 (INFS)</b>	<b>1982/83 (BIDS)</b>	<b>1990/91 (BIDS)</b>
	886.00	807.30	764.50	746.30	810.70

**Source:** Chowdhury (1993b) Table 3.1 pp. 326.

**Note:** includes only fully weaned children.

### **Seasonal and Regional Variations in Food Intake**

Agricultural activity in general, and food production in particular, in the rural areas of Bangladesh revolve around three main seasons of rice production; namely, the Aus, Aman and the Boro seasons. It is argued that there is a close relationship between domestic food consumption and production and as such seasonal variations in food consumption would coincide with the cycle of food production in the region. Aman is the major food crop of the country and is harvested between mid-November and January. Pulses are available early in the year being harvested from February through March. Boro is also a winter crop being harvested between April and May. Aus is grown in March and April and harvested from June to August. Chowdhury, (1993) in a recent study based on the nutrition survey conducted by the Institute of Nutrition and Food Science (INFS) on selected locations of rural Bangladesh in 1975/76, shows that food consumption in fact varies according to the seasons discussed above. Moreover, there are wide regional variations in food consumption depending primarily on the productivity of land. It was further pointed out that regional variations in food intake are wider than seasonal variations. Fluctuations in both food prices and income drive the seasonal variation. Haggblade (1994) points out that the production of a large winter rice crop in recent years has transformed July's price spike into a post-boro harvest price trough. Given increased labor demand during the Boro harvest, wage income has also increased during this period. Thus the agricultural transformation has favorably influenced food prices and income to protect the level of food consumption during this period. Prices now peak in March

– April and September – December (Ahmed, et al 1994). The absence of employment before the Aman harvest (Clay 1981) makes the second lean season especially acute particularly for the rural landless who depend on wage labor for their income. In other words, the transformation in agriculture since independence has resulted in impressive growth in winter crops thereby reducing the nutritional stress that existed during that period. Yet the pre-Aman harvest lean period persists and the variation in food intake between the pre- and post-harvests is still quite substantial.

A nutritional survey conducted by the Bangladesh Institute of Development Studies (BIDS) in the rural areas of Bangladesh in 1990/91 shows that (see Chowdhury, 1995, pp. 79) the peak (post-Aman harvest) period per capita food intake of 884.6 gm is around 20 per cent higher than the lean (pre-Aman harvest) period intake of 736.9 gm in 1990/91. Further, (Chowdhury, 1995, pp. 79) it was found that the highest per capita food intake in Noapara village of Kushtia district (1123.59 gm) is about 65 per cent higher than that in Baraichara village of Magura district (682.44 gm), that reported the lowest per capita food intake in 1990/91. Thus it is clear that even though there is one major lean period in Bangladesh in general, the variation in food intake between regions is still quite large and such regional variations are still much wider than the seasonal variations that exist.

### Nutrient Intake

Table 4.2 reports per capita nutrient intake according to various nutrition surveys by different organizations from the early sixties to the early nineties when food intake figures as reported earlier are converted into nutrient intakes. It shows that intake of calories in 1981/82 had gone by 7 per cent over 1975/76 and by 14 per cent compared to 1962/64. The level of calorie intake in 1990/91 was higher than that in 1981/82 but lower by 12 per cent compared to the early sixties. Similarly, protein intake had fallen by 18 per cent during the same period.

**Table 4.2: Per Capita Nutrient Intake 1962/64 – 1990/91**

Nutrients	1981/82 (INFS)	1975/76 (INFS)	1962/64 (DHEW)	1990/91 (BIDS)	Requirement
Energy (k cal)	1943	2094	2251	1989	2273
Protein (gm)	48.4	58.5	57.9	47.7	45.3
No. of families	597	674	1052	400	-

Source: Chowdhury (1995), Table 5.5 pp. 82.

### Inter-Household Distribution of Nutrient Intake

Table 4.3 indicates that the problem of protein energy malnutrition (MEM) in rural Bangladesh is not alarming at the aggregate level. But the distribution of nutrient intake between households reveals a totally different story. Table 4.3 indicates that only 41, 24 and 21.2 per cent of households met the calorie requirement

in 1975/76, 1981/82 and 1990/91 respectively. In other words, poverty according to nutritional norms (meeting calorie requirement) increased substantially between 1975/76 and 1990/91.

The percentage of households meeting less than 80 per cent of calorie requirements (the “hard-core” poor) for the relevant periods were 35, 49 and 39.6 per cent respectively. In other words, the incidence of “hard-core” poverty in 1990/91 was higher than in 1975/76 but lower than in 1981/82.

**Table 4.3: Percentage Distribution of Rural Households Meeting Different Proportions of Calorie and Protein Requirements**

Per Cent of Requirement	Calorie			Protein		
	1975/76 (INFS)	1981/82 (INFS)	1990/91 (BIDS)	1975/76 (INFS)	1981/82 (INFS)	1990/91 (BIDS)
Less than 50	9	8	4.2	4	5	0.5
50 – 59	6	10	4.2	2	5	2.1
60 – 69	8	14	13.2	3	9	5.8
70 – 79	12	17	18.0	7	12	12.2
80 – 89	11	15	18.0	6	12	16.4
90 – 99	13	12	21.2	7	9	12.7
100 and above	41	24	21.2	71	48	50.3

Source: Chowdhury (1995), Table 5.6 pp. 83.

### **Intra-Family Distribution of Nutrient Intake**

Chowdhury, (1993) in a recent review of nutritional studies in rural Bangladesh, refers to the latest nationwide nutrition survey carried out by the INFS in 1981 and notes that the extent of malnutrition within the households varies substantially according to individual characteristics (age, sex etc). In fact, it is pointed out that according to the survey, rural households on an average met 87% of the calorie requirement; none of the age groups of boys and girls under the age of 20 years met their calorie requirements; and boys and girls under the age of 12 met less than the level of requirement met by households on an average; i.e., they met less than 87% of their requirement. Further, within these age groups, the younger the children, the larger the deficiency. Lactating and simultaneously pregnant mothers are deficient by as much as 30 per cent. In other words, there is acute maldistribution of food within the household and mothers and young children are particularly vulnerable. A recent survey conducted by the BIDS in 1990/91 (Chowdhury, 1995) reports similar findings of maldistribution of food within the household according to individual characteristics of members of the households as reported below. Table 4.4 shows the distribution of nutrient intake as a percentage of requirements within the family according to age-sex composition in 1990/91. It indicates that none of the boys and girls under the age of 20 years meets the calorie requirement. Further, the younger they were, the higher was the deficiency. In general, girls were worse off compared to boys.

**Table 4.4: Age-Sex Structure of Malnutrition in Rural Bangladesh 1990/91**

*(percentage of nutritional requirements met)*

Age Group Age (in years)	Calorie		Protein	
	Male	Female	Male	Female
1 – 3 Years	52.0	48.3	69.9	66.0
4 – 6 Years	67.7	58.9	95.2	87.8
7 – 9 Years	68.1	60.9	93.9	83.9
10 – 12 Years	70.9	71.1	92.3	81.9
13 – 15 Years	76.4	85.6	83.9	93.8
16 – 19 Years	84.5	96.2	103.9	98.8
20 – 39 Years	90.4	97.8	121.8	102.7
40 – 49 Years	95.9	96.9	130.2	109.9
50 – 59 Years	88.0	98.6	110.0	104.1
60 – 69 Years	95.9	107.0	104.4	96.3
70 Years and above	105.1	114.6	96.9	83.6

**Source:** Chowdhury (1995), Table 5.7 pp. 84.

### **Anthropometric Indicators**

The etiology of the nutrition problems in Bangladesh, as in most developing countries, is very complex. But it is generally agreed that the immediate factors determining nutritional status are food and disease. Anthropometric measures are based on physical manifestations of under-nutrition. They reflect the consequences of under-nutrition not only due to inadequate food intake, but also poor absorption or decreased biological utilization of nutrient intake due to the presence of various infectious diseases in the body. Hence, it may be considered as an outcome based indicator of malnutrition.

Under-nutrition of children can be assessed by many different methods: clinical, biochemical or anthropometric. The anthropometric method requires simple measurement tools. Skills to collect the necessary information and interpret it do not demand a long training period and as such are relatively less expensive to implement than other methods. Yet, they are no less sensitive and specific in identifying nutritional problems compared with the alternative methods available. In fact, it is argued that anthropometry is a better indicator of moderate to severe PEM, while clinical and biochemical methods fail to identify mild and moderate forms of PEM.

Three different categories or types of under-nutrition using age, weight and height indicate different aspects of the nutritional status of children. For example, weight-for-height and height -for -age refer to different types of deficits in describing a child's nutritional status and are termed "wasting" and "stunting" respectively. Wasting reflects deficit in tissue and fat mass compared to that of a normal child of the same height or length, which may occur due to growth failure, or loss of weight of the child. On the other hand, stunting reveals reduced skeletal growth compared to

that of a normal child of the same age. Furthermore, these indicators highlight different consequences as a result of the poor nutritional status of a child. A child can fail to gain weight or height or even lose weight but he/she cannot lose height even under extreme nutritional stress. During the initial few years of life, the rate of growth of weight is much higher than that of height. Catch-up in height requires a much longer time period than that of catch-up in weight. The usefulness of linear measurement (height or length), as a long-term indicator of growth, or its failure, is now widely recognized. Height is a more stable growth parameter than weight. Diminished stature is a reflection of chronically inadequate nutrition. A simple measurement of weight at a certain height on the other hand, reveals the current status of nutrition of the child. Finally, weight-for-age is primarily a non-linear combination of the two types of anthropometric measures discussed above.

The average height and weight of rural children under 5 in 1981/82 were higher than those reported in the preceding two surveys conducted in 1975/76 and 1962/64 (INFS, 1983, pp. 103) respectively. The heights and weights of children above 5, however, registered a declining trend. BIDS surveys for rural areas carried out in 1982/83 and 1990/91 show that (Chowdhury, 1995, pp. 85) the average height and weight of male as well as female children of all age groups in 1990/91 in general were higher than those in 1982/83. But the average heights and weights of the rural children of both sexes and all age groups were lower in 1990/91 compared with the median heights and weights of the reference population of the corresponding age groups. The three nationwide BBS surveys carried out in 1985/86, 1989/90 and 1992 also show that (BBS, 1994 pp. 48) the average heights of children improved during this period while the average weight in 1989/90 improved compared to 1985/86 but deteriorated slightly in 1992. Hence, it can be concluded from evidence gathered over the period covering the early sixties to the early nineties by various agencies that during this period the average heights and weights of children in Bangladesh in general continued to improve.

Weight-for-age is one of the oldest and most commonly used indicators of PEM. It combines both the short term and long term consequences of under-nutrition. Severity of malnutrition may be indicated by using different cut-off points from the reference median weight-for-age. These cut-off points are quite arbitrary.

Table 4.5 reports the percentage of children aged 6-71 months suffering from severe malnutrition according to the standard deviation score (Z-score) categories using NCHS reference population. It shows that the percentage of children suffering from severe malnutrition decreased from around 30 per cent in 1985/86 to around 25 per cent by 1992. Similar improvement took place in the rural areas as well where it declined from around 31 per cent to around 25 per cent while in the urban areas it slightly increased from 20 to 21 per cent during the same period. As a consequence the gap between the rural-urban incidence of severe malnutrition narrowed considerably from 10 per cent in 1985/86 to less than 5 per cent by 1992. The table also shows that there was little change in the prevalence of severe malnutrition among rural children between 1982/83 and 1985/86.

Table 4.6 reports the incidence of malnutrition among children under 5 in rural areas of Bangladesh according to the percentage deviation from the Harvard reference population. It shows that the incidence of severe malnourishment among rural children decreased from around 25 per cent in 1975/76 to less than 10 per cent by 1982/83. It may be noted here that the findings from Table 4.5 and 4.6 are not

comparable since they report on children of different age groups and employ dissimilar approaches and criteria for evaluating the nutritional status of children. But it may be pointed out here that the BIDS findings from the survey carried out on rural children in 1982/83 have been reported in both the tables by employing similar methodologies for the children of relevant age groups by the respective agencies so that the results in these tables can be compared in terms of trends in the incidence of malnutrition even though the extent of it cannot be compared due to different evaluative criteria used by these agencies. Hence, it can be concluded from the findings reported in Tables 8.6 and 8.7 that the incidence of severe malnutrition among children in rural areas of Bangladesh, decreased substantially between the mid-seventies and early nineties.

**Table 4.5: Comparing Prevalence of Severe Malnutrition Among Children Aged 6-71 Months**

*(per cent)*

<b>Agency</b>	<b>BIDS</b>	<b>BBS</b>	<b>BBS</b>	<b>BBS</b>
<b>Year</b>	<b>1982/83</b>	<b>1985/86</b>	<b>1989/90</b>	<b>1992</b>
<b>Region</b>				
Rural	31.4 (1132)	30.9 (1872)	26.7 (1513)	25.4 (1325)
Urban	-	19.9 (1411)	21.6 (843)	21.1 (785)
National	-	29.7 (3283)	25.9 (2356)	24.9 (2110)

**Note:** i) Severe malnutrition. Weight for age less than  $-3SD$  of NCHS reference population according to Z-score categories.

ii) Sample sizes in the parentheses.

**Source:** Col. (2) calculated from BIDS 1982/83 nutrition survey; Col. (3) and Col. (4) from BBS (1991), Table F34 pp. 120 and Table 11 pp. 30 respectively; Col. (5) from BBS (1994) Appendix Tables C3 pp. 98, C6 pp. 100 and C9 pp. 102 for national rural and urban areas respectively.

**Table 4.6: Comparing Severity of Malnutrition Among Rural Children of Under 5 Year Age Group by Percentage Deviation**

<b>Indicator Agency</b>	<b>Year</b>	<b>Normal</b>	<b>Mild (1st degree)</b>	<b>Moderate (2nd degree)</b>	<b>Severe (3rd degree)</b>	<b>Reference Standard</b>	<b>Sample Size</b>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
INFS	1975/76	3.49	17.68	53.08	25.81	Harvard	430
INFS	1981/82	10.00	28.82	46.08	15.10	Harvard	510
BIDS	1982/83	6.70	31.80	52.60	8.80	Harvard	1009

**Note:** Various categories of underweight according to percentage shortfall from the reference median weight -for-age are as follows:

<b>Categories</b>	<b>Percentage of median weight-for age</b>
Normal	: 90% and above
1st degree Malnutrition	: 89.9 – 75.0 %
2nd degree Malnutrition	: 74.9 – 80.0%
3rd degree Malnutrition	: Less than 60%

**Source:** Chowdhury (1995), Table 5.10 pp. 90.

## **5. PUBLIC FOOD DISTRIBUTION SYSTEM AND TARGETED FOOD PROGRAMS**

### **Review of GOB Food Policy**

The Public Food Distribution System (PFDS) has a long history, dating back to the time of the Great Bengal famine in 1943, when a distribution system based on ration cards was introduced in Calcutta. Later on, the system was expanded to other urban areas and eventually to the rural areas as well. Since then, there have been numerous program changes, particularly just after the independence of Bangladesh in 1971 and after the food crises that took place in 1974. Most notably, Public Works and Food for Work schemes were started in 1975.

At present there are a large number of food distribution and food aid development programs that are in operation in the country. Some of them involve the sale of grain to a specific group of beneficiaries, others include the distribution of grain for special programs, and finally still others involve the use of the proceeds (monetization) of the sales of the grain for development projects. Some of these programs are operated by the GoB, while others are implemented by national or international NGOs.

Historically, all these programs were operated under the umbrella of the Ministry of Relief. At present this arrangement is under revision. The debate started in 1989 when the SIFAD task force was commissioned to undertake a complete review of the food-assisted development programs. One of the recommendations of the SIFAD task force was to improve the institutional arrangement of the food aid flow. It was suggested that all development food aid programs would become an integral part of the Annual Development Plan and that they would be monitored by approved agencies.

### **From Emergency Relief to Poverty Alleviation and Development**

Initially, food assistance programmes were intended as relief programs and were designed to help the poorest portion of the population. It is well recognized now that just providing some food assistance will not reduce poverty in the long run and will not alleviate household food security in the future. Development safety net programs have to be used in the most efficient way to provide the means of alleviating transitory poverty in times of distress. Ultimately, increasing household food security requires increasing the incomes of the poor and reducing the level of poverty. This can be achieved, among other ways, by providing training and credit, and finally by building infrastructures that can improve the lives of the whole communities.

Along this line, there has been a constant change in emphasis from the simple delivery of food to the type of activities that are carried out using food subsidies. Development aid has to be used to promote projects that not only help the poorest people, but that also have the possibility of making an impact on alleviating poverty in the medium and long run. These projects have to be able to create rural infrastructure, improve roads, telecommunications and links between growth centers. In addition to developing rural infrastructure projects they should also develop the

human capital of the participants. The WFP has been a constant promoter of this strategy. They have made clear in their mandate that they will put more emphasis on employment and income generating activities for landless men, households and especially for women (from livestock to silk, fisheries, forestry and horticulture). A very good example of their approach is reflected in several of their programs like the Vulnerable Group Development (VGD) where, imparting training for developing various skills is an important aspect of the program.

It is increasingly becoming evident that food aid needs to be combined with financial and technical assistance to maximize the benefit from any anti-poverty program. This realization is reflected in the more recently designed programs like the Integrated Food for Agricultural development Project (IFADEP) and the Integrated Food for Development (IFFD) Project. At present there is also a need to reinforce the work done so far using unskilled work and to add more infrastructures that might require more skilled workers. For example, there is a need to build more culverts (this is to allow the free flow of the small bodies of water that had been separated by small roads and embankments) requiring more skilled workers which will reduce the employment opportunities for poorer unskilled laborers. Thus one will have to be quite ingenious to invent useful activities that require more of unskilled workers in the future.

### **Public Food Distribution System (PFDS)**

Food aid supply by WFP and other donors is delivered at port (Chittagong or Mongla). Once the commodities are delivered they are merged with the other government stock in the Government storage facilities.

Some projects use commodities for their programs (FFW) and other use cash. The programs that use cash require the GOB to sell the grain and to deliver the proceeds to them at a specified price in a fixed amount of time. This process is known as monetization. Take for example the IFFD. The GOB receives the grain from PL480 to carry out the programs managed by CARE. The grain is delivered to the Ministry of Food, which is responsible to convert it in cash. The delivery time (usually four months) and the conversion price are negotiated at the time the grain is delivered. The cash is then deposited in local banks and made available to CARE to operate their programs.

When programs are carried out in kind, the projects collect the amount of grain needed at the local level. The GOB is responsible for delivering the required amounts of the commodities at the local level for the programs. The GOB uses their PFDS network to transport the grain from the central storage locations to the local storage sites (LSDs). This is the system that is used for the WFP programs. In this case the WFP helps to pay for the distribution cost. They provide payment for half of the estimated cost (in 1994 it was estimated to be \$46 a ton). half of the cost is supplied in kind (vegetable oil) and half in cash.

### **Targeted Food Programs**

It was pointed out earlier that Bangladesh is an extremely poor country. About half of its population in 1991/92 was suffering from hunger and malnutrition. PFDS is an important element of the food economy of Bangladesh, ostensibly designed to

improve access to and consumption of foodgrains by various target groups. A large quantity of food is channeled through the PFDS. Given the large quantities of foodgrain moving through the PFDS, its effectiveness assumes immediate importance. Targeted intervention of transferring income in the short run is considered to be an efficient way of increasing the real income of the poor to improve their access to food. The government has intervened in two major ways to relieve the nutritional stress of the poor: (i) through price subsidies on foodgrains and (ii) targeted income transfers.

Through its general open market sales (OMS) operations, the government aims to depress seasonal price increases, thereby relieving consumer stress in the lean seasons of September and October. Through its targeted ration channels government offers rice and wheat for sale to selected groups at various rates of discount over market price.

Income transfers involve payment in cash or in kind “for work” or free through such programs as Food for Work (FFW), Vulnerable Group Development (VGD), Food for Education (FFE), Rural Maintenance Programme (RMP) etc. Some of these programs allow the purchase of commodities (rice or wheat) at subsidized prices, some deliver commodities for free, others for work and still others deliver cash. All of these programs increase the real income of the recipient households. The cost of running the program and the benefits received by the households to a large extent depend on the manner in which the income transfer is carried out.

We have seen that with subsidies being gradually withdrawn and ultimately eliminated from all the monetized channels — except essential priorities (EP) — the role of this channel in the PFDS has declined substantially. The Modified Rationing program begun in 1956 was discontinued in 1989 due to the well-documented failure of the program to provide consistent supplies (Ministry of Food 1986; INFS, 1979, 1980) and partly because of large quantities estimated to have leaked out of the system. It was replaced by the Palli (rural) Rationing (PR) program in 1989.

Foodgrains distributed under the PR program were priced at 25 per cent less than the SR price. Except for the six SR areas, the PR program operated all over the country covering about 6 per cent of the non-SR population according to the 1991 population census. In terms of total offtake, the PR program was largest among the monetized channels, and second largest among all PFDS distribution channels, accounting for 19.5 per cent of total PFDS foodgrain offtake in 1990/91. But this program was also found to be ineffective and was discontinued since December 1991.

Ahmed (1992) in a recent evaluation of the PR program estimates that between its inception in April 1989 and its suspension in December 1991, the government provided a fiscal subsidy of Tk. 5.54 billion (U.S. \$ 158.95 million). The average rate of subsidy during the period was 39.9 per cent. In 1990/91 government subsidies for the PR program stood at Tk. 2.15 billion (U.S.\$ 60.21 million). Leakage defined as the reallocation of program resources intended for the target group to the non-target population was estimated to be 69.4 per cent. Thus the program was only 30.6 per cent effective in reaching the target group. In fact, it was shown that it costs the government Tk. 6.55 to transfer one taka of income to an eligible beneficiary of the program. If the program was 100 per cent effective in reaching the target population, then the government could provide one taka of income to a beneficiary at a cost of Tk. 1.73 only. Thus the author concludes that the PR program provided only

meager converge of the needy in relation to the number of poor remaining in extreme poverty. Moreover, the effects of the program in increasing the real income of an eligible beneficiary were insignificant. For such minimal effects, however, the government incurred a substantial cost. No wonder then, that the PR program was suspended in 1991, only about two years after its introduction.

The OMS program was initiated in 1979/80 to halt the price rise attributable to consumer apprehensions over foodgrain shortfall. It was originally intended for use during the brief periods before the aman and boro/aus harvests when prices rise. Various evaluations (Ministry of Food 1986; BECON 1988) have recognized its potential effectiveness as a price stabilizer and have recommended its more frequent use. In fact, the authors of the BECON study were able to show that in the aggregate PFDS contributed effectively to overall food security. However, they stated that a disaggregated analysis would show large variations in coverage. The effective channels according to them were the OMS, VGD and FFW. MR according to them was extremely ineffective. Another study carried out by EUREKA (1986) also pointed out that the FFW and VGD programs are well targeted; the MR channel was also well targeted by very thin in its coverage and not very effective. A large percentage of poor rural households (31.8 per cent) had no access to the PFDS. The rest had access only to the MR program. Participation in that program was very sporadic. Another finding was that the urban middle classes benefited the most from the PFDS.

Three programs, namely, food-for-work (FFW), vulnerable group development (VGD), and food-for education (FFE) have recently been studied (Chowdhury and Sen, 1997).<sup>6</sup> These programs claim 55 per cent of the total foodgrain allocated in various food-assisted programs. In monetary terms, they represent a considerable proportion of the sectoral budget. For instance, the FFE program alone represents over 35 per cent of total allocations in primary education. The key question is whether these programs reach the target group, i.e., the poorest and the most vulnerable.

The evidence presented in Tables 5.1 and 5.2 suggests that both FFW and VGD programs reach the poorest of the poor. This can be verified by comparing the relative weight of the extreme poor households in these programs with the general weight of the extreme poor in the overall rural distribution. Thus, the bottom three expenditure groups account for 22 per cent of rural households (roughly corresponding to the group of the extreme poor). These groups display an overwhelming presence in FFW and VGD programs (72 and 92 per cent, respectively).

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<sup>6</sup> Food-for-education is primarily a schooling program for the boys and girls who come from land-poor families. However, the program also attempts to improve the nutritional status of the school children.

**Table 5.1: Average Consumption by Household Expenditure Groups: A Comparison Between FFW Beneficiaries and Rural Distribution**

Monthly Household Expenditure Groups	FFW Beneficiary (1988/89)		Rural HES (1988/89)	
	% of Household	Average Monthly Consumption	% of Household	Average Monthly Consumption
< 750	33.1	548.85	5.05	572.89
750 – 999	24.45	834.87	7.73	883.98
1000 – 1249	15.78	1087.04	9.96	1127.22
1250 – 1499	11.05	1327.86	10.28	1370.47
1500 – 1999	9.94	1670.33	19.61	1739.97
2000 – 2499	2.18	2179.42	14.64	2240.83
2500 – 2999	1.23	2697.42	9.88	2728.57
3000 +	1.76	4067.03	22.85	4882.69
<b>Total</b>	<b>100.00</b>	<b>1042.93</b>	<b>100.00</b>	<b>2404.81</b>

Source: Chowdhury and Sen (1997) Table 3.7, pp. 36.

**Table 5.2: Average Consumption by Household Expenditure Groups: A Comparison Between VGD Beneficiaries and Rural Distribution**

Monthly Household Expenditure Groups	VGD Beneficiary (1988/89)		Rural HES (1988/89)	
	% of Household	Average Monthly Consumption	% of Household	Average Monthly Consumption
< 750	66.53	470.00	5.05	572.89
750 – 999	19.18	812.98	7.73	883.98
1000 – 1249	7.16	1083.76	9.96	1127.22
1250 – 1499	4.11	1354.60	10.28	1370.47
1500 – 1999	2.13	1708.06	19.61	1739.97
2000 – 2499	0.32	2218.46	14.64	2240.83
2500 – 2999	0.20	2759.82	9.88	2728.57
3000 +	0.37	3259.88	22.85	4882.69
<b>Total</b>	<b>100.00</b>	<b>663.92</b>	<b>100.00</b>	<b>2404.81</b>

Source: Chowdhury and Sen (1997) Table 3.8, pp. 37.

Note that the average expenditure in each of the expenditure groups in FFW and VGD distribution is lower than the corresponding figure in overall rural distribution. This implies that, even within the same expenditure interval, these programs target the less well off. Between the two programs, the VGD beneficiaries stand out to be the most disadvantaged in terms of poverty ranking. A major reason for targeting success may lie in the nature of self-targeting that characterize these programs. It is, therefore, a cause for concern that allocations for these programs

(FFW in particular) are declining in absolute terms in recent times — from 716 to 640 thousand tons over 1992-96. Such negative developments will have adverse implications for extreme poverty.

This cannot be said with same degree of certainty when it comes to the issue of the FFE program. According to a recent BIDS survey, FFE schools have considerably higher proportion of children from land-poor households such as agricultural laborers, low-income artisans, distressed widows, etc compared with non-FFE schools. But, the program's apparent targeting success is undercut by two considerations.

First, in many cases children from non-poor households are concealed under "poor" categories; after all, without an effective local government, it is very difficult to administer poor-targeting by occupation (as done in the program). It is, therefore, believed that the extent of leakage to the non-poor groups would be much higher than the 26 per cent figure cited in the survey.

Second, the key objective of the program is to bring children from poor families into the ambit of education. It is not the issue of delivering food to low-income children, but one of supplying quality education which is what ultimately matters for long-term poverty alleviation. The BIDS study points to the problem of limited supply of schools pre-existing even at the outset of such programs. The problem was aggravated further — from bad to worse — by the introduction of the FFE program, creating further pressure on a limited physical space and inadequate staff strength, with a sharp deterioration in the quality of education (BIDS 1997).

**Table 5.3: Distribution of Foodgrain through Non-monetized Channels 83/84 – 95/96**

*(Figures in '000' tons)*

	83/84	85/86	88/89	89/90	90/91	91/92	92/93	93/94	94/95	95/96	96/97
Wheat Food for Work	368	369	589	432	420	512	164	424	493	468	399
Vulnerable Group Development	92	154	501	182	139	204	76	167	182	172	95
Test Relief	45	16	94	59	32	94	3	71	92	88	35
Gratuitous Relief	23	13	74	15	13	24	7	17	26	41	0
Food for Education								79	168	237	45
Others							3	15	38	71	6
<b>Total Wheat</b>	<b>528</b>	<b>552</b>	<b>1258</b>	<b>688</b>	<b>604</b>	<b>834</b>	<b>253</b>	<b>773</b>	<b>999</b>	<b>1077</b>	<b>580</b>
Rice Food for work			21	52	43	29	205	1	7	1	126
Vulnerable Group Development			6	6	85	26	56	0	2	1	80
Others	32	123	143	48	66	36	104	70	57	68	361
<b>Total Rice</b>	<b>32</b>	<b>123</b>	<b>170</b>	<b>106</b>	<b>194</b>	<b>91</b>	<b>365</b>	<b>71</b>	<b>66</b>	<b>70</b>	<b>567</b>

**Note:** Others' include test relief, gratuitous relief etc.

**Source:** World Food Programme.

## 6. LEAKAGE

Poverty is a direct consequence of unequal distribution of income in the presence of low average income. Income distribution, among other things, is directly related to the distribution of assets – human and material, which in its turn, is a function of the institutional framework of the economy. Rural public works programs are at best a stop gap development for alleviating poverty in the absence of pre-conditions to bring about fundamental changes in the institutional framework in a society. It preserves the existence of a stratified society with unequal access to ownership of assets. Within these limits a works program generates income and employment for the rural poor and creates some basis for the enhancement of income and employment generation within the rural economy for the capital formed in the execution of the program. However, within the prevailing social parameters the management of the program provide for diversion of resources from their intended objective of helping the poor to enriching those who control the distribution of resources. Such a diversion of resources from a project intended for the beneficiaries may broadly be termed as leakage.

Food (wheat) received in the form of “Food Aid” provided by various donor agencies are the main source of funding for running most of the targeted food programs in Bangladesh. The difference between the food received at the port and that by the actual beneficiaries identified by various targeted programs may be broadly defined as ‘Leakage’. In this broad definition of leakage are included the transport, storage, handling and other indirect costs for delivering the food from the port to the beneficiaries of a program. The above definition of leakage is very accurate, but it is still too general. In reality, the types of problems faced in each of the programs and leakages that are relevant vary substantially. Recently Ahmed et al (1994) have reviewed a complete spectrum of program options, including not only existing programs in Bangladesh, but also interesting alternatives from around the world. Table 5.4 reports their findings regarding the most-effectiveness of the programs. It shows that the ration channels are the least cost-effective as various studies have shown that there are enormous leakages. Being a commodity based channel, the high cost of commodity (rice) handling further reduces its cost-effectiveness.

On the other extreme, RMP is the most cost-effective requiring only 1.2 taka to transfer one taka to the target household. Being a “cash for work” program its costs are lower since it does not have to handle commodities. But the VGD, which provides “food for training” handles a commodity (wheat) and yet is reasonably cost-effective requiring only 1.4 to 1.5 taka to transfer 1 taka to the target household. FFW, the largest existing program in the country requires 1.8 to 2.4 taka for transferring 1 taka to the target household.

**Table 5.4: Cost-Effectiveness of Alternative Targeted Food interventions in Bangladesh**

*(Figures in '000' tons)*

<b>Program</b>	<b>Cost of supplying 1 taka of income to a vulnerable household*</b>	<b>Development impact?***</b>
<b>Existing</b>		
Ration channels	6.6 – 360	No
FFW	1.8 – 2.4	Yes
VGD	1.4 – 1.5	Yes
RMP	1.2	Yes
<b>Potential</b>		
Food Stamps	1.7	No
“Cash for work”		
construction	1.7	Yes
easily supervised	1.3	Yes
Cash transfers	1.35	No

**Notes:** \* Cost includes 1 taka income transfer plus costs of administration and leakage. Calculations value grain at the landed cost of imported wheat rather than at the government ration price.

\*\* A “development impact” is defined as any additional, lasting effect a project transferred to beneficiaries or workers.

**Source:** Ahmed et al, (1994) Table i, pp. X.

### **Leakages in the RD Program**

The analysis of the RD project and possible leakages is quite different than in the case of other programs. For RD project, there should be a direct correspondence between the work (quantity of earthwork) necessary, the amount of work actually done and the amount of work stipulated in the project proforma. Payment to the workers according to the work done at the stipulated wage rate is another important element of leakage. In other words, the padding of the volume of work done and underpayment to the workers are the two basic elements of leakage in RD projects.

There are two principal mechanisms by which the volume of work reported may be padded (Asaduzzaman and Huddleston, 1983). The pre-work survey can be prepared to show a larger amount of earthwork to be accomplished than the project actually requires. Again the statement of earthwork required can be based on such a rough and casual description of work to be done that it is difficult to verify. Then when the PIO in case of Relief Projects, or the Section Officer (SO) in the case of WDB project goes to the project site to record the amount of work done, he makes his measurement against the amount to be accomplished as shown the pre-work survey not against the physical condition of the project before work began. For example, in a road project the pre-work survey may indicate that a road embankment needs to be built from a height of 6 to 8 feet and widened from 9 to 15 feet. If this is a reconstruction project, these may have been the original dimensions of the

embankment, but some portions have been torn away. Thus the actual project may entail simply filling in gaps and evening out surfaces, but the statement of pre-work condition in the project proforma indicates that the added height and width were all new construction. Since the amount required to pay workers for actual volume of earth moved is considerably less than the amount claimed on the basis of earthwork measurement, the wheat claimed, but not required for wage payment, can be lifted from the LSD and used for other purposes.

Hence, it is clear from the above discussion that a pre-work survey on the engineering aspects of the project site is required to ascertain whether the amount of earthwork necessary has been over-estimated and a similar post-work survey to estimate whether the required work has been completed according to the approved engineering design. Finally, a survey on the management aspects as well as that on the socio-economic background and wage payments to the workers needs to be carried out to ascertain whether the beneficiaries belong to the target group and get the wages stipulated in the project.

The earliest study on “leakages” based on the analysis of the results of a comprehensive survey of FFW projects was carried out jointly by the Bangladesh Institute of Development Studies (BIDS), Dhaka and the International Food Policy Research Institute (IFPRI), Washington D.C. in 1982 (WFP, 1996). In a review of public rural works in Bangladesh, Hossain and Akash (1993) argue that most of the observations of the study are still relevant today. Information for the study was collected only on WFP-aided FFW projects. 31 projects sites were randomly chosen from a total of 618 sites in such a manner that at least one site would be included from the then 20 districts in the country. Analysis on the management aspects (Asaduzzaman and Huddleston, 1983), socio-economic background, productivity and wage rate of the workers (Chowdhury, 1983), engineering aspects (Nishat and Chowdhury, 1983) and employment, income and consumption (Osmani and Chowdhury, 1983) of the beneficiaries of the project were carried out by generating necessary information through different components of the study.

## **Targeting**

The primary objective of the study was to find whether the FFW workers belong to the target group, paid the wage rate they are entitled to, and get the employment provided for in the program. Project Implementation Committees (PICs) (Asaduzzaman and Huddleston, 1983) are required to inform the people in the project area about the nature of the project, the amount of wheat allotted, the wage rate and other relevant information by putting up a signboard near the project site. They are also required to maintain a Muster Roll where the names of the workers, their daily attendance and payments made to them are registered against their signatures or thumb impressions. However, the survey findings showed that most of the workers (70%) were recruited by gang leaders and labor contractors; they were generally (55%) ignorant about the stipulated wage rate and that the Muster Roll was usually prepared after the project was over. But the survey findings on the socio-economic background of the workers (Chowdhury, 1983) showed that the FFW workers had little land and less education. 85% of the workers were illiterate and around 70% were functionally landless. It was clear that both in terms of human and material capital FFW workers were far worse off than the average rural population in

Bangladesh. Consequently, the earning potential of these workers was very low. Therefore, being unskilled and poor they got themselves employed in any low paid temporary and/or seasonal job. Earthwork was neither the only nor the primary occupation of a significant proportion of the workers. The incidence of multiple occupations was very high. Hence, there was clear evidence that the FFW workers belonged to the target group in the sense of coming from the poorest section of the community.

Migrant workers (those who lived temporarily away from home in order to work at the project site) were observed in only six out of 31 sites and at each of these sites the proportion of migrants was quite high (not less than 70%). In fact, migrant workers constituted a hundred per cent of the workers interviewed at Natore in Rajshahi. On an average, for all sites taken together, migrant workers accounted for about 15 per cent of total FFW workers.

Most of the FFW workers (85%) had previous experience in earthwork. In fact, all the workers in 13 out of 31 sites had previous experience in earthwork. Moreover, it was found that 72% of the workers had previous experience of working in FFW projects as well.

### **Working Hours**

FFW workers work longer hours than the standard man-day. On an average they work for nine hours a day. It may further be noted that all the workers work for more than nine hours a day in five out of six project sites where migrant workers were observed.

### **Productivity**

The average productivity of workers as reported by them (Chowdhury, 1983) is around 13 cubic feet per hour. It varied from a low of 8 cubic feet to a high of 22 cubic feet. The FFW workers, as pointed out earlier, on an average worked for 9 hours a day. Hence, the average productivity of a FFW worker would be 117 cubic feet of earthwork per day. On the other hand, the information for the Management Survey (Asaduzzaman and Huddleston, 1983) was based on interviews carried out on seven categories of individuals starting from senior administrative officials charged with oversight responsibilities for all FFW projects within their jurisdiction, (namely, Executive Engineers (EES) for the Water Development Board (WDB) and Sub-Divisional Officers (SDOs) and Circle Officers (COs) for the Ministry of Relief and Rehabilitation) local administrative officials charged with immediate supervisory responsibilities including verification of earthwork completed and quality control (namely, Section Officers (SOs) and Sub-Divisional Engineers (SDEs) for WDB projects) and Project Implementation Officers (PIOs) for Relief Projects, the Chairman, Executive Member and one other member of the one of the Project Implementation Committees (PICs) at each project site to workers, gang leaders and labor supervisors. According to this survey the earth moving capacity of the workers ranged between 105 to 118 cft. per day. The lower range is given by the PIO/SO/SDEs, the higher one by the PIC members. As pointed out earlier, the workers' assessment of their daily productivity (117 cft. per day) falls within the range provided by various officers engaged to oversee the earthwork. However, our

estimates of productivity (on an average 177 cft. per day) are higher than the daily rate of 70 cft. used in official estimates of the amount of employment created. Therefore, the actual number of man-days of employment created is less than the official estimate would suggest. However, the loss of employment and the diversion of wheat could only occur through falsification of pre-work surveys and earthwork measurements and underpayment to workers as argued earlier.

## **Wage Payments**

The food for work program explicitly spells out that the wage payment should be made in kind (wheat, and to be paid in rice or paddy if wheat is not available) for a certain amount of earthwork done. Payments in different media (cash and/or kind) is quite common. Generally cash payments were made on a daily wage rate basis rather than the amount of earthwork done. In some places it was said that daily allowances were given which will later be adjusted for the amount of earthwork done. Thus the problem of determining a comparable wage rate for all the sites turned out to be a very complex exercise since the media of payments as well as the terms and conditions of payments varied significantly.

The following procedure was adopted to turn all the various media of payments into their wheat equivalents. Local current prices of wheat and rice collected by our investigators during the survey period were used to convert different media of payments into their wheat equivalents. Paddy was converted to rice by using a factor of 0.7. If wages were paid on a daily basis, we used our estimates of labor productivity to convert this to get the wage rate for the amount of earthwork done. Average wage payments for 1000 cubic feet of earthwork done turned out to be 42.16 seers of wheat which varied from a low of 22.08 seers (at Jaldhaka), to a high of 55 seers at (Nwabgonj) Dhaka.

The basic wage rate 42.86 seers to wheat per 1000 cft. of earthwork done plus more wheat for additional factors such as lead, lift etc., called the allied factors. From 1982, the consolidated wage rate per 1000 cft. of earthwork had been introduced for all MRR executed FFW projects. The consolidated rates for 1000 cft. of earthwork done were 50 seers for constructing Road/Embankments and 55 seers of wheat for executing a canal/river project respectively. The above rates are inclusive of allied factors. Obviously stipulated wage rates cannot fall below the basic wage rate of 42.86 seers/1000 cft. of earthwork done. Yet in 18 out of 31 sites actual wage payments were below the basic wage rate of 42.86 seers and the average was 42.16 seers.

Wage entitlements inclusive of allied factors for WDB executed FFW projects were calculated from the respective project proformas of 18 of 20. Ultimately discrepancies in wage payments for 17 out of 20 projects were calculated. Workers on an average received one-third (33%) less in wages than that they are entitled to. This rate of underpayment for the nine MRR executed projects came to around 10%. The rate of underpayment for WDB projects varied from a high of around 60% (at Miresarai) to a low of around 10% (Natore), and the corresponding figure for MRR were around 30% (at Modhupur) and around 3% (at Ulipur).

It is stated by the WFP and WDB that the consolidated wage rate (basic earthwork and allied factors) for WDB projects should be recalculated on the basis of

the amount of work actually done and the amount of wheat utilized after the work season is over. A work supervisor is supposed to take a measurement of work done every week at the project site. The percentage of work done in relation to the expected amount of work to be done according to project proforma is calculated from the amount of work done as reported in the measurement books. The field investigators could not be shown the measurement books during the survey period as no such measurements are generally taken during the period when the work is done. On the other hand, when these investigators visited a sub-set of the project sites after the completion of work found the measurement books in order and they perfectly matched with the Muster Rolls. We have already observed that the Muster Roll is a charade and as such one would have serious doubts about information given in the measurement books as well. Based on queries put to local officials and PIC members about the average wage paid to workers in WDB projects, the rate of underpayment was estimated to be 21 per cent (Asaduzzaman and Huddleston, 1983).

### **Padding Volume of Work Completed**

The amount by which the reported volume of work completed is padded was estimated from information provided in the Engineering Survey (Nishat and Chowdhury, 1983). It was found, on the basis of 17 projects, that the slope of earthwork in most sites was less than that given in the proforma. The rate of deviation in the slopes, and in depth and breadth where these could be measured, indicated that the shortfall in volume of work completed as compared to the amount for which was claimed averaged around 3 to 7 per cent.

### **Total Leakage**

The 1982 study on the WFP aided FFW projects estimated leakages on account of underpayment to the workers and padding the volume of work not completed according to project design. The range of underpayment varied from 21 to 26 per cent and the padding volume of work after completion of the project ranged from 3 to 7 per cent. Therefore, total leakage on these two counts ranged between 24 to 29 per cent. There was no estimate of padding volume of work by providing an overestimate of required earthwork as no pre-work survey of engineering aspects of the project was carried out.

## 7. CONCLUDING REMARKS

The elimination of poverty remains an elusive goal for Bangladesh even after a quarter of a century of its independence. It is generally accepted that economic development is the ultimate solution for tackling the problem of poverty. For a labor surplus poor economy such as Bangladesh, poverty alleviation must address the twin problems of providing employment to the unemployed and underemployed and ensuring a wage rate that is high enough to acquire basic needs. In other words, opportunities for productive employment will have to be expanded. But until such time when the economy can absorb all the unemployed at a remunerative wage rate the government will have to ensure that the basic human needs of the people who cannot afford the market place are met.

Poverty is a complex process of multi-dimensional nature. The poor are not a homogenous group of people. They differ, among other things, in terms of occupation, location, education, and such individual characteristics as age, sex etc. The interests of one group of the poor may be in conflict with those of another. The nature and intensities of the needs of the poor are diverse. The cause of their deprivation vary and, as a consequence, the solution also differ. The key to reducing hunger and poverty on a sustained basis is not primarily a matter of finding just resources, but of combining resources with designing an efficient delivery system to reach the poor.

Initially, the anti-poverty program in Bangladesh started with providing subsidized food through ration channels in the urban areas. Targeting was broad based in terms of serving the urban population in general or people belonging to certain occupations etc. Most of the beneficiaries did not belong to the category of the poor and hence the rate of leakage was very high. Later, the introduction of various payment in kind programs indicated that targeting could be improved substantially. For example, in the FFW, it was found that the beneficiaries came mostly from the category of the poor. The program was self-targeted as the payment was based on the amount of earthwork done and the rate of remuneration was similar to the wage rate of alternative employment opportunity i.e. the agricultural wage rate. Earthwork being very hard work, people prefer to get engaged in any other alternative employment at a similar wage rate. Hence, only the poor got involved in FFW and hence targeting was quite satisfactory.

In general, two types of problems are encountered in trying to reach the target group, namely (i) including the non-poor among the beneficiaries called the type I error and excluding the poor from the beneficiaries called the type II error (Cornia and Stuart, 1992). Minimizing the sum of these two errors is an important objective of any anti-poverty program. Again there is a trade-off between the cost of targeting and the extent of leakage. As the share of poor in a society shrinks, the cost of targeting goes up. For example, if a large proportion of urban population in Bangladesh were poor, then subsidized food through ration channels in urban areas of Bangladesh would not have been a bad idea. It is therefore, obvious that one cannot think of an universal anti-poverty program. Even in a country such as Bangladesh suffering from widespread poverty, the mechanism of targeting and methods of delivery system will have to be tailored for each well identified group of poor. The participation of local people in identifying the poor and in designing an appropriate delivery system may help in improving the cost effectiveness of the various anti-poverty programs.

## **APPENDIX 5.1: A BRIEF DESCRIPTION OF THE FOOD DISTRIBUTION AND TARGETED INTERVENTION PROGRAMS**

A brief description of the food distribution and targeted intervention program is presented in Appendix 5.1. The programs can be broadly separated into two groups. The first set of programs, the sales channel, includes programs designed for the direct distribution of food grain for rationing programs or for direct sales. The second set of programs includes programs for poverty alleviation, relief and infrastructure development that use the food aid in kind or the proceeds from the sales of food aid (monetization).

**Sales distribution channels.** The first three programs, EP, OP and LEI, are ration programs based on occupational affiliation. The essential priority (EP) group includes members of the armed and paramilitary forces, along with hospital and jail inmates. They are entitled to receive a monthly ration quota of 9.3 Kg of wheat, 12.1 Kg of rice, and .93 Kg of oil. Commodities are sold at subsidized price (approximately 1/6 of the procurement price). In 1997/8 a total of 119 thousand tons of rice and 80 thousand tons of wheat were distributed under this channel.

The other priority (OP) program includes government and semi-government workers, autonomous bodies, schools, teachers and so on. At present it covers only workers in the fire and civil defense departments. The quota that they can receive is equal to 10 Kg of rice or 10 Kg of wheat and they can collect the commodities two times a month. The price is equal to the economy price. The disbursement in 1997/8 was equal to 11 thousand tons and covered approximately 200,000 households (if they get either rice or wheat).

The LEI program covers factories employing 50 or more workers in areas not covered by any other program. The grains are supplied to the factories for direct distribution. The allotment is equal to 32.66 per worker irrespective of family size. At present the program covers mostly workers in the tea garden industry. The disbursement for the 1997/8 was 15 thousand tons and covered approximately 40,000 people annually. The transfer price is equal to the Open Market Sales price (OMS).

The FM, FS and OMS are sales programs that are meant to be used for market price and supply stabilization operations. The program for the Flour Mills (FM) works in the following manner: Approved flour mills receive an allotment of wheat at OMS price for the processing of wheat into flour that was sold at the market price by the mills. This flour was mostly used for the production of bread and other confectionery items. In 1997/8, 40 thousand tons of wheat were allocated to this channel.

Open Market Sales are used to make grain available in the market in the event of a price hike. Grain commodities are sold in the market as soon as the price reaches a target level. It operates mostly during the lean seasons, between October and March. The amount of grain disbursed through this channel depends on the level of the trigger price. In 1996/7, no sales were done and in 1997/8, 160 thousand tons of rice and 20 thousand tons of wheat were distributed.

The Food for Education (FFE) is one of the latest programs to have been introduced (in September 1993).<sup>7</sup> It has two main purposes: to encourage the attendance of children in school and to improve their nutritional status. It is targeted towards children aged 6 to 10 from poor rural families. Each family is entitled to 15 Kg of wheat (or alternatively 12 Kg of rice) for one child and 20 Kg of wheat for families with more than one child. The ration is received provided that the child attends the school for more than 85 per cent of the working days. This is a mean tested program. The criteria for eligibility are a combination of the following:

- (a) The family must own less than .5 acres of land;
- (b) The principal occupation of the head of the household must be day laborers;
- (c) The head of household is widowed and distressed;
- (d) The individuals are poor professionals.

The program covers all thanas, but only a few unions in each thana. The selection of the unions to be included in the program is made on the basis of its level of economic development, school achievement and backwardness. In each union all primary schools participate in the program. The school management committee and the compulsory primary education ward committee select the beneficiaries. The eligible families are issued a card and can collect the grains once a month from the school.

Each school is responsible for the transport of the grain from the LSD to the school. They receive a maximum cash allowance of taka 185 per ton of wheat, the proceeds from the sales of the empty bags and taka 300 per month. The Directorate of Primary Education and the Project Implementation Unit are overall responsible for the program, while the evaluation is done by the thana education committee.

In 1997/8 the size of the program was 300 thousand tons of grain (125 thousand tons of rice and 175 thousand tons of wheat). In 1995-96 the program covered a total of 16,159 schools in 1241 Unions. Assistance was provided to 2.2 Million students in 1.96 million families.

**Non channels and other programs.** The Vulnerable Group Feeding/ Development program (VGD) was started in 1975 by the GOB with the support of WFP. It is a poverty alleviation project targeted to women. Its main goal is to improve the living conditions of the poorest women. It is implemented in all thanas and reaches almost half a million poor women every year. To be eligible to participate in the program women need to apply for a card to the Union Parishad. To be accepted they have to satisfy the following criteria:

- (i) Have to be from household that have less than half an acre of land;
- (ii) have to earn less than taka 300 per month or no income;
- (iii) have to be daily or casual laborers;
- (iv) have to come from households lacking ownership of any productive assets.

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<sup>7</sup> Note that the FFE is considered to be a sales channel in the GDB classification because the grain that is used in the program is sold by the MOF to the Ministry of Education.

In practice not all the women that apply to the program are accepted, since the number of cards allocated to each area is fixed. The allocation of the number of cards to each area is an issue that needs to be investigated and addressed carefully. The program is organized in four separate subprojects.

- (a) The Union Parishad Groups Development (UPVGD-Income Generating IG)
- (b) The Women's Training Center (WTC)
- (c) The Institutional Feeding and Development Center (IFDC)
- (d) Group Leaders and Extension Workers (GLEW)

The UPVGD, which covers approximately 90 per cent of the program, provides saving, credit and the possibility of training. The development package provided to women includes access to saving, group formation for social awareness building and training in income earning skills (poultry production). In 1994/5 almost all women received access to credit, 78 per cent participated in income generating activities and 26 per cent received access to credit. The WCT program covered approximately 41,000 women in 1994/5. It provided then with a variety of training. The IFDC provided supplemental feeding for approximately 50,000 children and other institutions. The GLEW recruits women with the capability of becoming leaders and extension workers. In 1994/95 500 groups were formed and a total of 12,500 women participated in the group.

The implementation of the project has been gradually transferred to the Ministry of Women and Child's affair following the SIFAD recommendations. At the local level the VGD committees under the supervision of the Project implementation officer selects the women to participate in the program.

In 1997/8, 180 thousand tons of grain were allocated to the project. This includes 60 thousand tons of rice from the GOB. In addition, WFP provides a small amount of edible oil to help to pay for 50 per cent of the distribution cost.

The Rural Development projects (RD) that are run under the WFP umbrella evolved from an earlier food for work project that started in 1974, after the famine. The main objective of program is to contribute to food security and to alleviate the poverty of the poorest of the rural poor in sustainable ways by creating employment opportunities for by providing access to skill development.

The program provides funds to implement a variety of projects in four main sectors, which are carried out by Government agencies or NGOs. The four sectors of intervention are:

- (i) Water sector – implemented by the BWDB (Bangladesh Water Development Board) for the construction and rehabilitation of coastal river embankments and excavation of drainage and irrigation systems (50 per cent of funds);
- (ii) Roads – implemented by the LGED, for construction of growth centers connecting roads (20 per cent of the funds);
- (iii) Fisheries – implemented by the GOB and NGOs, for the excavation of riverine lakes and fresh water ponds;

- (iv) Forestry – implemented by the GOB and NGOs, for the planning and maintenance of trees.

Over 200 thousand tons of grains have been allocated for the program in 1997/8. The funds are derived from bilateral agreements, WFP and the GDB (their contribution is in cash for 132 to pay 30% of workers salary in cash). Parts of the amounts that are made available by the EU are distributed under the IFADEP project program. In addition, WFP supplies approximately 2,000 Vegetable Oil a year to finance a 50% subsidy of ITSH cost incurred on WFP supplied wheat.

Every year the program covers approximately 450,000 workers. They are organized in groups and work for a period of 100 days. It is expected that in the 1996-8 period they will build 2300 Km of embankments, 400 Km of roads, 1,100 Hectares of fish ponds, plant 15.9 million trees and care of 9 million old trees.

The GOB runs several FFW programs independently from donor's support. One of these programs is the Rural Infrastructure Development program. Under this channel people are engaged in development work. They provide the manpower for the construction and maintenance of the necessary rural infrastructure. These include feeder roads, embankments and so on. Workers are paid a wage rate of 40 Kg of wheat plus a variable amount depending on the distance to be covered for moving 1,000 cubic feet of earth. In practice, males receive 50 to 65 Kg of wheat and females between 65 and 83 kilograms per 1,000 cubic feet.

In 1997/8 the size of this program was 250 thousand tons grain (125 thousand tons of rice and 125 thousand tons of wheat). This program covers approximately 500,000 people every year.

The Integrated Food for Development Project (IFFD) is managed by CARE International. It includes the execution of a large number of rural development projects that are implemented in the dry season using local workers. Labor is paid mostly in cash. A small portion is still receiving payment in kind. In 1997/8 the size of the program was of 120 thousand tons.

The Rural Maintenance Program (RMP) is designed to provide cost effective maintenance for essential rural roads that have been built with funds from other FFW programs. In the same time it provides employment, income and training in necessary survival skills to destitute rural women. The funds for the project are provided by CIDA (Canadian AID agency) and the program is managed by CARE. The funds are given to the GOB in form of wheat, which is monetized by the GOB.

Women that participate in this program are selected among female heads of households who are divorced, widowed, separated or abandoned and have no means of sustaining themselves. They are organized in crews. Each crew is composed of 15 destitute women (5 from each ward). They are responsible for maintaining 15 Km of roads. They are paid taka 37 per day. They work 6 hours a day, 6 days a week. CARE pays for 90 per cent of their salary and the Union Parishad pays for the rest. The salaries are paid directly into a bank account. A percentage of their salary is deducted from the bank and is put into a saving account. Thus women are provided with access to financial institutions and some capital that can be used to start a small business when they leave the project. Besides providing for the maintenance of the roads, women are also required to participate in training.

In 1997/8 the size of the program was 50 thousand tons per year. In 1997/98 the program included 61,000 destitute women in 4,100 Unions in 62 districts and maintained 88,000 km of roads.

**Other programs.** The GOB runs a series of smaller targeted programs through several agencies. These are: a) The Border Road Program (5 million tons in 1997/8) which is usually run by the Border Road Development (BRD); b) The Police & Military Area (16 thousand tons in 1997/8) run by the Ministry of Defense; c) The Home Canal Digging (20 thousand tons in 1997/8) which is implemented by the Water Development Board; and d) the Reserve Program (11 thousand tons in 1997/8) which is run by the Ministry of Relief.

**Special programs.** Finally, there are some special programs that are used in time of special need or for special groups of individuals. The Test Relief program (TR) was meant to generate rural incomes and stimulate production and to provide help to the needy people. It is a sort of FFW with relief orientation. The program (100 thousand tons in 1997/8) is carried out by the Local Government Bodies in times of catastrophe and in lean seasons. It contains elements of seasonal and geographical (for distressed areas) targeting. The Gratuitous Program (GR) is run for short-run food security in times of catastrophe or other special situations (65 thousand tons in 1997/8). The Hill Tract program is a special program designed for minority groups (48 thousand tons in 1997/8).

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