

Agro-economic and social vulnerability

Bangladesh
Food Insecurity and
Vulnerability Information
and Mapping System (FIVIMS)



B A S E L I N E R E P O R T

BASELINE REPORT ON AGRO-ECONOMIC AND SOCIAL VULNERABILITY ASSESSMENT

Bangladesh
Food Insecurity and
Vulnerability Information
and Mapping Systems (FIVIMS)

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Acronyms

BARC	Bangladesh Agriculture Research Council
BARI	Bangladesh Agricultural Research Institute
BBS	Bangladesh Bureau of Statistics
BIDS	Bangladesh Institute of Development Studies
BRRRI	Bangladesh Rice Research Institute
BMD	Bangladesh Meteorological Department
BMI	Body Mass Index
BRAC	Bangladesh Rural Advancement Committee
CAMPE	Campaign for Popular Education
CELS	Child Education and Literacy Survey
CPEIMU	Compulsory Primary Education Implementation Monitoring Unit
CPI	Consumer Price Index
DAE	Department of Agricultural Extension
DAM	Department of Agricultural Marketing
DCI	Direct calorie intake
DES	Dietary Energy Supply
DMB	Disaster Management Bureau
DPE	Directorate of Primary Education
EFA	Education for All
FAO	Food and Agriculture Organization
FFW	Food for Work
FIVIMS	Food Insecurity and Vulnerability Information and Mapping Systems
FPMU	Food Planning and Monitoring Unit
GIS	Geographical Information System
GR	Gratuitous Relief
HES	Household Expenditure Survey
HIES	Household Income and Expenditure Survey
HKI	Helen Keller International
HPI	Human Poverty Index
IFPRI	International Food Policy Research Institute
INFS	Institute of Nutrition and Food Science
IPHN	Institute of Public Health Nutrition
IPI	Income Poverty Index
IPRSP	Interim Poverty Reduction Strategy Paper
LGED	Local Government Engineering Department
LIFDC	Low-Income Food Deficit Countries
LLP	Low Lift Pump
MDG	Millennium Development Goals
MoA	Ministry of Agriculture
MoF	Ministry of Food
NGO	Non-Governmental Organization
NNS	National Nutrition Survey
NSP	Nutritional Surveillance Project
PMS	Poverty Monitoring Survey
STW	Shallow Tube Well
TFR	Total Fertility Rate
UNDP	United Nations Development Programme
VGD	Vulnerable Group Development
VGF	Vulnerable Group Feeding

Executive summary

FIVIMS is an FAO-sponsored effort to measure and monitor food insecurity status globally and nationally by providing accurate and timely information on the incidence, nature and causes of chronic food insecurity and vulnerability. The Bangladesh FIVIMS is a part of that effort. Food security pertains to food availability, food accessibility and the ability of the body to utilize food consumed. The general objective of the national FIVIMS is to provide guidelines for establishing a mechanism that directs data sharing and interagency coordination to best collect and utilize information that will be used to make decisions to reduce food insecurity and vulnerability countrywide.

Bangladesh is a country with scarce resources and its major challenge is to feed its huge population. During the 1990s, however, data from the Bangladesh Bureau of Statistics (BBS) shows that the country made remarkable progress in food production, especially rice. For example, by 1999/2000, the country produced 25 million tonnes of foodgrains (rice and wheat), more than the necessary requirement for the population. Vegetable production almost doubled during the last decade with potato per capita availability rising from 27 g/day to 58 g/day in 1999/2000. Sustained increases in all kinds of animal products – fish, meat, egg and milk – were also seen. For example, the per capita availability of fish increased from 20 g/day in 1991 to 34 g/day in 1999/2000 owing mostly to an increase in inland fishery. The total per capita availability of animal products, however, was still 40 g/day less than the required amount (126 g/day). The production of some items, such as pulses (one of the major sources of protein), oilseeds and fruits, declined and may be described as “casualties” of the revolution in cereal production. Thus, while self-sufficiency in cereal production has been achieved, the country is still deficient in production of all other food items needed for a balanced diet.

The main sources of food intake data are provided by the Health Expenditure Survey (HES) and the Household Income and Expenditure Survey (HIES) conducted by BBS and surveys from the Institute of Nutrition and Food Science (INFS) of Dhaka University. The large differences in data that are seen between these two organizations, likely stem from differences in data collection and data analysis methodologies. For example, INFS data from 1995/96 reports food intake of 728 g/capita/day and calorie intake of 1868 kcal/capita/day, while HES data from 1995/96 reports food intake of 914 g/capita/day and calorie intake of 2254 kcal/capita/day. Because these figures are important for policy making at the national level, such large differences should be resolved through the Bangladesh FIVIMS.

Poverty is the major cause of food insecurity. However, different measures (income, expenditure and calorie intake) provide different figures regarding its incidence. The main database for national poverty measurement contains data from HES and HIES and can be disaggregated up to five divisional levels. There is a need, however, for data disaggregated to the district or upazila level. While Bangladesh has made notable progress in poverty reduction, a significant portion of the country's population still lies below the poverty line or below the range of food intake prescribed to maintain a healthy life.

Bangladesh has made considerable progress in providing primary education to its people recently. Although different organizations apply different definitions of literacy when collecting data, all show that the literacy rate has increased significantly over the last 25 years. The sources also show a high aggregate level of enrolment rates among primary schoolage children in both rural and urban areas, and practically no gender difference in enrolment.

Access to electricity is an important factor influencing poverty reduction, particularly in rural areas. Although access to electricity at the household level has increased over time, urban areas account for the majority of the supply; only about one third of the country's overall population had connection to electricity in the year 2000. While Bangladesh has a relatively high level of road communication when looking at total kilometers of road (i.e. paved and unpaved), continued development of road communication is crucial to the continued development of the Bangladesh economy.

Flood is a major crisis that the country faces nearly every year, severely affecting the food intake of the poor both in quantity and quality. Slum dwellers, who usually have no household food stock and are accustomed to buy food from the market on a daily basis, suffer most from flood.

About a quarter of the population in Bangladesh are considered to be extreme poor. While the macrostudies do not provide any direct information regarding their characteristics nor the causes of extreme poverty, a Bangladesh Rural Advancement Committee (BRAC) microstudy indicates that the extreme poor are those who have negligible assets beyond the home they live in and own no more than 10 decimals (one-tenth acre) of land including their homestead. In one-third of these households, a female heads the household and there is no adult male income earner. More than 80 percent of the extreme poor cannot afford to consume more than two meals a day and a significant proportion of them have to send their schoolage children to labour for survival. The major causes of poverty seem to be inheritance, or lack thereof; land redistribution owing to family break-up; loss of an income earner; natural calamities (mainly flood and river erosion); morbidity and dowry payment.

Introduction to FIVIMS and its objectives

By the year 2015, in accordance with the millennium development goals (MDG), Bangladesh is committed to:

1. eradicating hunger, chronic food insecurity and extreme destitution;
2. reducing poverty by 50 percent;
3. attaining universal primary education for all schoolage children;
4. eliminating gender disparity in primary and secondary school education;
5. reducing infant and under-5 mortality rates by 65 percent and eliminating gender disparity in child mortality;
6. reducing the proportion of malnourished under-5 children by 50 percent and eliminating gender disparity in child malnutrition;
7. reducing the maternal mortality rate by 50 percent;
8. ensuring access to reproductive health services for everyone;
9. reducing substantially, if not totally, social violence against women and children;
10. ensuring disaster management and preventing environmental degradation to overcome the persistence of deprivation.

FIVIMS is an FAO-sponsored initiative that emerged from the 1996 World Food Summit (WFS) and aims to measure and monitor the food insecurity status of individual countries by providing accurate and timely information on the incidence, nature and causes of chronic food insecurity and vulnerability. Food security refers to the physical and social access, by all people at all times, to enough food for a healthy productive life (FAO, 2000). Conversely, food insecurity exists when people lack, transiently or persistently, access to sufficient quantities of safe and nutritious food to achieve normal growth and development, and to secure an active and healthy life.

The essential elements of the concept of food security are availability of food, the ability to acquire food from market and the ability to properly utilize food consumed. Given the high inequality in the distribution of income, availability of food at the national or community level does not ensure its equitable access to all. At the household level, an individual may obtain food through self-production, purchase from market, food-for-work programmes or payment-in-food, feeding programmes or subsidies. Acquisition of food from market is mainly determined

by household economic status. Utilization of the nutrients available from food consumed is dependent upon an infection-free health situation.

Accurate and timely information on the incidence, nature and causes of chronic food insecurity and vulnerability is crucial. National policy makers need this information to formulate and implement policies and programmes to reach MDG. Information about food insecure and vulnerable people is lacking in many countries. FIVIMS is a network within which a wide range of activities may be carried out at both national and international levels in support of improved information to realize these goals.

At the national level, FIVIMS is implemented by linking information systems that gather and analyze data relevant for measuring and monitoring food insecurity and vulnerability. At the international level, FIVIMS is implemented through a diverse programme of activities that aims to support national FIVIMS and to establish a common database and information exchange network.

Goals and objectives of Bangladesh FIVIMS

Primary goals

- Provide general guidelines for establishing an integrated national information network regarding food insecurity and vulnerability.
- Create a mechanism for directing data and resource sharing and interagency coordination.
- Improve utilization of information needed to make decisions to reduce food insecurity and vulnerability.

Overall objectives

- Provide access to more comprehensive up-to-date information regarding food insecurity and vulnerability.
- Enhance food security policy formulation.
- Improve the design and targeting of interventions.
- Monitor progress toward the 2015 goal of reducing the number of undernourished people by at least half.

Specific objectives

- Increase attention on food security issues.
- Improve the quality of food security data and analysis.
- Facilitate integration of complementary information.
- Promote better understanding of user needs and better use of information.
- Improve access to information through networking and sharing.



Methodology of Bangladesh FIVIMS

Key indicators for assessing food insecurity and vulnerability

A large number of factors, both natural and man-made, obstruct the ability of a person to obtain an adequate supply of nutrients. FIVIMS suggests a detailed list of key indicators for assessing food insecurity and vulnerability at the macro, meso and micro levels. Indicators may be country specific and selection of a particular indicator will depend on availability, reliability, compatibility and authenticity of information, as well as available level of data disaggregation.

FIVIMS use a country's existing data and information systems, which determine, in part, the selection of indicators. At meetings and workshops attended by the FNFP, the TC, the TF and networking agencies, materials from various sources should be used to identify the appropriate indicators. Appropriate indicators may also be selected by applying a multiple regression analysis to existing data. Data sources, data requirements, frequency of data collection and data coverage should then be determined through discussion among all agencies attending meetings and workshops.

In line with global FIVIMS suggestions, national consultants for the Bangladesh FIVIMS selected indicators for their baseline reports in consultation with the TF members (Table 1 and Table 2). Only those indicators found in published data aggregated to at least rural and urban divisional levels were selected.

Several sectoral information systems and databases, which are collected, maintained and updated by different ministries and agencies for specific objectives, exist in Bangladesh. The Bangladesh FIVIMS will use these existing systems and databases to select and refine the core list of indicators to assess food insecurity and vulnerability.

TABLE 1 Baseline indicators suggested by Global FIVIMS guidelines

FOOD INSECURITY AND NUTRITION STATUS INDICATORS (core indicators)				
Food consumption		Health status		Nutrition status
<ul style="list-style-type: none"> • Average per person dietary energy supply (DES) • Cereals, roots and tubers as percentage of DES • Percentage of population undernourished 		<ul style="list-style-type: none"> • Life expectancy at birth • Under-5 mortality rate 		<ul style="list-style-type: none"> • Proportion of under-5 children that are underweight, stunted or wasted • Percentage of adults with body mass index (BMI) < 18.5 kg/m²
NATIONAL FOOD INSECURITY AND VULNERABILITY INDICATORS (additional indicators)				
Economic conditions	Food availability	Food access	Food supply and access stability	Risks, hazards and shocks
<ul style="list-style-type: none"> • GNP per capita • Growth in GNP per capita • GNP per capita as purchasing power parity 	<ul style="list-style-type: none"> • Food production index by country • Volume of food production, food use, trade and stock changes for major food commodities, by commodity group and by country groupings • Ratio of supplies to requirements of the country's five major grain exporters 	<ul style="list-style-type: none"> • Gini Index of income distribution • People living below national poverty line • People living on less than US\$1/day 	<ul style="list-style-type: none"> • Index of food production variability • Food price index • Changes in cereal production among low-income food deficit countries (LIFDCs) (with and without China and India) • Export price movements for wheat, maize and rice 	<ul style="list-style-type: none"> • Number of countries facing food emergencies

Description of major data sets used in baseline report

Population census, BBS

In Bangladesh, a population census is usually conducted in the first year of each coming decade. The first census in independent Bangladesh, however, was conducted in 1974, followed by the second in 1981, the third in 1991 and the fourth in 2001. The provisional report on the five percent sample of the 2001 Population Census has recently been published. The national census includes information on population characteristics, household characteristics and housing, economic participation and occupation, fertility and mortality and migration.

TABLE 2 Bangladesh FIVIMS agro-economic baseline indicators

FOOD PRODUCTION, AVAILABILITY AND CONSUMPTION	SOCIO-ECONOMIC FACTORS
Land use (under crop, non-crop, forest, etc.)	Literacy (7+ yrs, 15+ yrs, bread earners, gender)
Food production (cereal & non-cereal, fisheries, livestock)	Level of education (15+ yrs, bread earners, gender)
Food availability (cereal & non-cereal, fisheries, livestock)	Land ownership
Food requirement (cereal & non-cereal, fisheries, livestock)	Sources of income
Food consumption (cereal & non-cereal, fisheries, livestock)	
FACTORS AFFECTING FOOD PRODUCTION	RISKS, HAZARDS AND SHOCKS
Cropping intensity	Disaster (flood, drought, cyclone)
Irrigation	Seasonality
Rainfall	Coping capacity
FOOD ACCESS	INFRASTRUCTURE ACCESS
Poverty incidence	Electricity
Poverty inequality (income)	Paved roads
Food price	
Food expenditure	
Income/expenditure share (cereal, non-cereal; food, non-food; education, housing, recreation, etc.)	

Agriculture Census, BBS

The first Agricultural Census in independent Bangladesh was conducted in 1977 on six percent of total agricultural holdings. Since then, two censuses have been completed, one in 1983/84 and the other in 1996. The latter census was organized in two schedules: schedule I collected data related to land holdings, including sex of head of holdings, land ownership, land tenure, land use, cropping patterns, irrigation, use of chemical fertilizer, livestock and poultry, agricultural inputs, farm population, rural transport and cottage industry; schedule II, a probability sample survey, collected detailed supplementary information of farm holdings, including information on land fragmentation, crop sharing, farm forestry, fisheries and storage facilities. The census data can be disaggregated by division, district, union and even by *mauza*, as well as by farm holding (small, medium and large non-farm and farm holdings).

HES/HIES, BBS

The BBS HES and HIES are the main sources for estimating poverty and food insecurity in Bangladesh. The HES was first conducted in four cities in the mid-1950s. Thereafter, geographical coverage was extended to rural areas to provide national estimates. Since independence, a total of eight surveys have been completed, the first in 1973/74 and the last in 2000. In HIES 2000, the methodology was changed considerably from that used in earlier surveys. HIES 2000 included income of households in addition to expenditure and consumption and introduced detailed modules on education and health. Food consumption in a household is recorded by the 24-hour recall method for 14 consecutive days (in contrast to direct weighing method followed in the National Nutrition Survey of Dhaka University). HIES 2000 was published in November 2002. The survey results are representative up to five rural and urban divisional levels. The report presents results on household population characteristics; basic household needs, including housing structure, toilet facilities, access to safe drinking water and electricity; income and expenditure; consumption; poverty; education; health; and some community characteristics.

National Nutrition Survey, INFS, Dhaka University

The National Nutrition Survey (NNS) has been conducted by Dhaka University since the early 1960s. The first nutrition survey was conducted in 1962–64 in both rural and urban areas of what was then East Pakistan by the Department of Biochemistry. The university's INFS conducted a nutrition survey of rural Bangladesh in 1975–76 and again in 1981–82, and, in 1995–96, a national nutrition survey of rural and urban areas. For the latter survey, a total of 1 245 households were randomly selected from 32 villages and nine urban localities. Food intake information was collected from 6 315 individuals of all age groups. Food consumption was recorded for 24 hours by direct weighing of the uncooked food as well as of the raw food ingredients before cooking. In calculating consumption of food by family members, leftover food from the previous day, if any, cooked food left for the coming day and any cooked food coming from or given to other households were taken into consideration. In addition to food intake, anthropometric data of children and women, anaemia prevalence and economic and social determinants of nutritional deficiencies were recorded. The data are disaggregated by region (north, west, central, southeast) as well as by metropolitan and small municipal areas.

Nutritional Surveillance Project, Helen Keller International/ Institute of Public Health Nutrition

Under the Nutritional Surveillance Project (NSP), Helen Keller International (HKI) and the Institute of Public Health Nutrition (IPHN) have been collecting information on health and nutrition of mothers and children in Bangladesh since 1990. The surveys are conducted six times

every year in rural and urban areas throughout Bangladesh, providing one of the richest data sources on health and nutrition in the country. NSP uses a multisampling stage that was revised in 1998 to provide national representative data. In each of the six divisions, data is collected from four randomly selected *thanas* (these remain the same from survey to survey). From each of these 24 *thanas*, 10 clusters are selected with a probability proportionate to size for each survey. Within these clusters, 30 households (with at least one physically able child aged 6-59 months and a mother) are systematically sampled from one randomly selected village. The sample size per survey is around 7 200 households (1 200 per division). Data is collected on child nutrition (wasting, stunting, underweight) and health status (diarrhoea, ARI), breast-feeding and child feeding practices, food consumption patterns, food prices, agricultural production, household sociodemographics, employment status of household earners, parental education and natural disasters.

The Child Education and Literacy Survey, Compulsory Primary Education Implementation Monitoring Unit

The first Child Education and Literacy Survey (CELS) was conducted in 1995 by the Directorate of Primary Education (DPE). The Compulsory Primary Education Implementation Monitoring Unit (CPEIMU) conducted another three surveys in 1997, 1999 and 2002. CPEIMU was established in 1991 after promulgation of the 1990 Primary Education (Compulsory) Act. Goals of this act include increasing primary school enrolment and attendance rates; reducing the dropout rate; increasing the participation of communities and civil societies in school development; improving the quality of primary education for all; and ensuring primary education access to all children 6–10 years of age by 2015. CELS took representative samples from 64 districts in 2002. The fieldwork was conducted jointly by BBS, DPE and CPEIMU. The 2002 CELS is the fourth survey on child education conducted by the CPEIMU. The main objectives of CELS 2002 were to estimate the current status of Education for All (EFA) in terms of 18 core indicators and to monitor progress in enrolment, literacy, dropouts and repetition.

Education Watch, Campaign for Popular Education

Education Watch is a project of the Campaign for Popular Education (CAMPE), which was set up in 1998 by a group of institutions and individuals who aimed to provide an annual independent assessment of primary education in Bangladesh. CAMPE is a coalition of more than 400 non-government organizations (NGOs) involved in primary and non-formal education. Since 1999, four Education Watch reports have been published, covering the issues of internal efficiency, quality of education and literacy (Table 3).

TABLE 3 Contents of Education Watch reports

EDUCATION WATCH REPORT	YEAR OF PUBLICATION	ISSUES
Hope Not Complacency	1999	Internal efficiency enrolment, dropout, attendance, learning achievement, physical facilities, teacher training, community participation, supervision and supply of books
A Question of Quality	2000	Quality of education scores of 53 terminal competencies introduced at the primary level in Bangladesh
Renewed Hope, Daunting Challenges	2001	Internal efficiency enrolment, completion and repetition; education financing; household cost of schooling; income, expenditures and assets of the schools
Literacy in Bangladesh: Need for a New Vision	2002	Literacy (11+ years) calculated by administering a literacy test that required use of reading, writing and calculation skills in practical life situations

Uses of other data

In addition to the major data sources mentioned above, the data listed below was collected or compiled by different agencies from available sources on a regular basis.

1. Bangladesh statistical yearbooks, BBS
2. Rainfall data, Bangladesh Meteorological Department (BMD)
3. Road infrastructure data, Local Government Engineering Department (LGED)
4. Agricultural production data, DAE
5. Data on losses from natural disasters, Disaster Management Bureau (DMB)
6. Food price data, DAM
7. Data on food procurement, imports and stocks, Food Planning and Monitoring Unit (FPMU)
8. Data on poverty and food insecurity, BRAC
9. Data on 1998 Flood, BRAC and International Food Policy Research Institute (IFPRI)

Food security is a complex issue that needs to be viewed from different aspects and reviewed in different ways. Most of the data collected from published documents and used to date by Bangladesh FIVIMS national consultants are disaggregated to rural, urban, and divisional levels. While some data is available at the district level, there is an urgent need to incorporate disaggregated data to the upazila level owing to the uneven distribution of the poor and vulnerable within districts. Although disaggregated data to the upazila level has been collected by various surveys, it is often not included in final reports. Because the consultants usually lacked access to the primary databases from which the data were collected, they were not able to incorporate this valuable information into the Bangladesh FIVIMS baseline reports.

Bangladesh background information

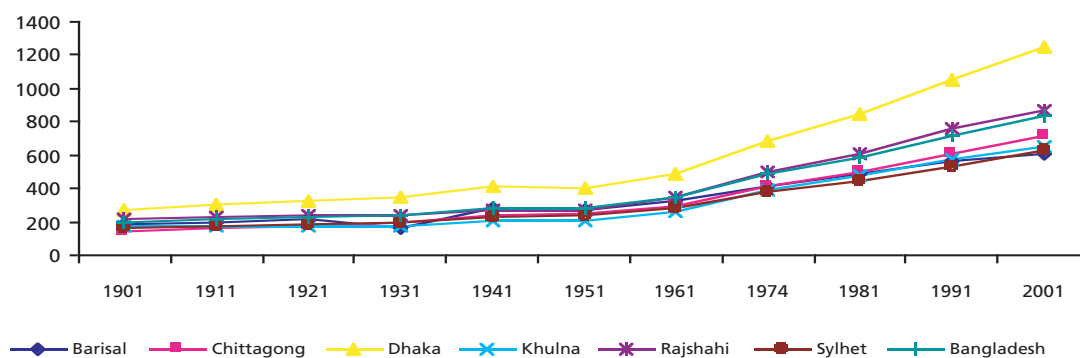
Bangladesh is predominantly a flat land area (147 872 km²) that extends from the Bay of Bengal in the south to the highlands of India under the foothills of the Himalayas in the north. More than 250 rivers, including three major ones – the Padma (downflow of the Ganges), the Jamuna (downflow of the Brahmaputra) and the Meghna – help drain the Himalayan ranges, passing the effluent to the Bay of Bengal. This huge volume of water causes yearly floods and an estimated annual silt load of about 2.4 billion tonnes (United Nations Development Programme [UNDP], 1995), which constitutes the natural base for soil revitalization. Bangladesh, lying between latitudes 21° and 26° N and longitudes 88° and 93° E, is also strongly affected by monsoons. The yearly rainfall ranges from 120–240 cm, with an average of 200 cm.

Bangladesh is a subtropical country with three main seasons: hot (March–May, high temperatures and humidity), monsoon (June–September, regular rainfall and rising rivers) and cool (October–February, drier air and cooler temperatures). The average temperature ranges between 11 °C and 34 °C.

Demography

The country is divided into six administrative divisions, 64 districts and 507 subdistricts, or upazilas (BBS, 2002). According to the provisional report of the 2001 population census, the estimated population in the country is 123.85 million, with an average household size of 4.9 persons. The male-female ratio is 104:100 and nearly 77 percent of the population lives in rural areas. Bangladesh is one of the most densely populated countries in the world with 838 persons living per km². Population tripled in the twentieth century; among its six administrative divisions, population density is highest in Dhaka (1 253 per km²) and lowest in Barisal (613 per km²) (Figure 1).

FIGURE 1 Growth in population, 1901-2001, by division



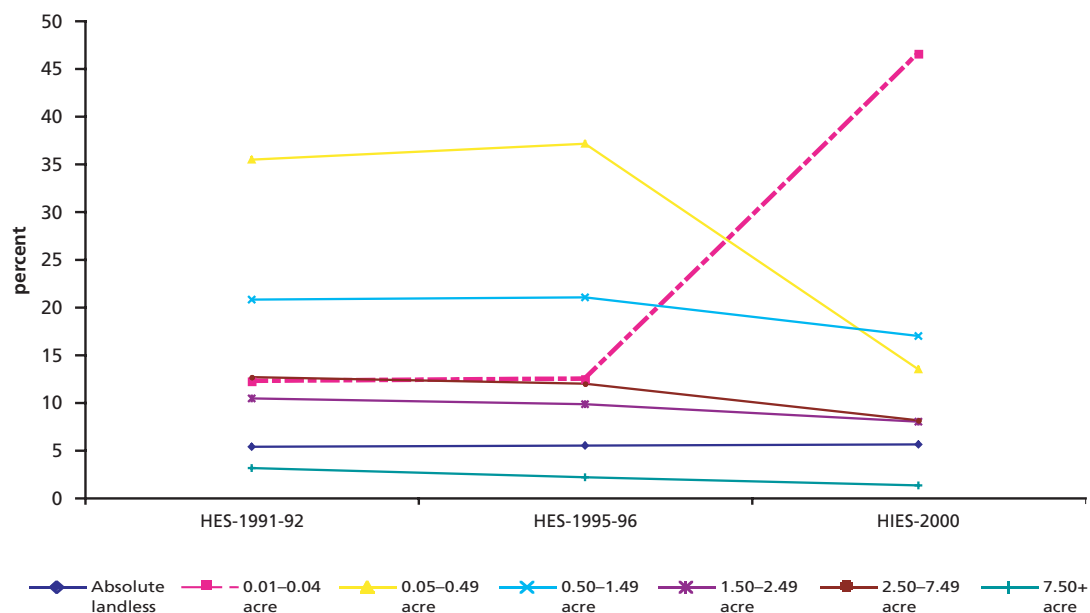
Source: Population Census 2001, BBS

Bangladesh has achieved remarkable success in reducing the annual population growth rate; it has declined from 2.9 percent in the mid-1970s to 1.5 percent in the late-1990s, representing a greater reduction than in India (1.8 percent) or Pakistan (2.5 percent). The total fertility rate (TFR) has also declined, from 6.3 to 2.9 during the period from 1975 to 2000. Further reductions are needed, however; if the current rate of growth continues unchecked, the country's total population will be more than 180 million in 2025 and 208 million in 2050.

Distribution of rural households with land ownership

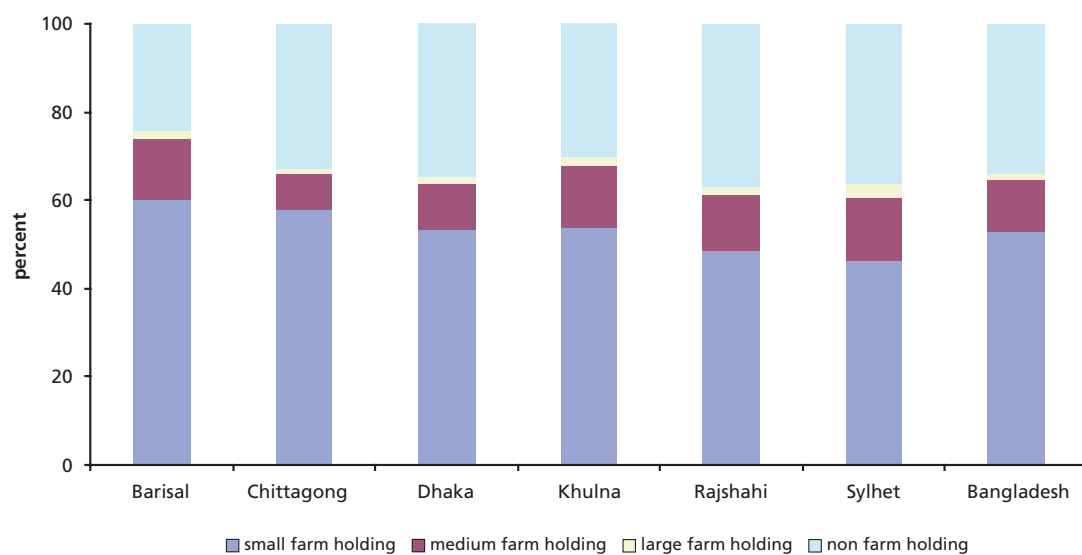
Land is the major productive asset of the rural Bangladeshi people but also a scarce resource. As population increases so does the total number of landless, who are often destitute. According to one survey, the percent of rural households owning less than five decimals (one-twentieth acre) of land has increased threefold from 18 percent in 1991/92 to 52 percent in 2000 (HIES, 2000). Additionally, there has been an increase in the number of marginal/small farmers and a concomitant decrease in the number of large farmers owning more than 7.5 acres of land across the country (Figure 2 and Figure 3). Rapid urbanization and increasing use of land for infrastructure development are contributing to the loss of agricultural land at an annual rate near one percent (Table 4).

FIGURE 2 Changes in land ownership



Source: BBS, HIES, 2003a

FIGURE 3 Divisional distribution of households by farm holding



Source: Bangladesh Census of Agriculture/BBS, 1996

TABLE 4 Land utilization statistics

YEAR	TOTAL LAND ('000 ACRES)	LAND UNDER CROPS (PERCENT)	FORESTLAND (PERCENT)	FALLOW LAND (PERCENT)	CULTIVABLE WASTE AND HABITATION (PERCENT)	SINGLE CROPPED AREA (PERCENT)	DOUBLE CROPPED AREA (PERCENT)	TRIPLE CROPPED AREA (PERCENT)	CROPPING INTENSITY (PERCENT)
1989/90	36 669	65.95	12.83	7.32	13.9	43.52	44.55	11.94	168.42
1990/91	36 670	65.5	12.80	6.49	15.21	40.30	47.70	12.00	171.70
1991/92	36 670	61.25	12.75	4.26	21.74	39.06	48.81	12.13	173.06
1992/93	36 670	58.99	12.75	4.48	23.78	33.93	52.91	13.15	179.22
1993/94	36 670	52.02	12.74	2.68	32.56	37.87	49.75	12.38	174.52
1994/95	36 669	52.16	13.26	2.73	31.85	37.78	49.81	12.41	174.64
1995/96	36 669	52.56	14.50	2.64	30.3	40.84	45.13	14.02	173.18
1996/97	36 669	52.86	14.53	2.63	29.98	37.09	50.11	12.80	175.71
1997/98	36 669	53.70	15.20	2.45	28.65	35.97	51.26	12.76	176.79
1998/99	36 669	53.84	15.20	3.04	27.92	37.53	50.22	12.25	174.73
1999/00	36 669	54.82	17.70	2.35	25.13	36.79	50.97	12.24	175.45
2000/01	36 669	54.46	17.70	2.69	25.15	35.78	51.54	12.70	176.94

Source: BBS, various years

Land use

According to the land utilization statistics presented in Table 4, the net sown area declined during the period from 1989 to 2001, from 66 percent to 55 percent, indicating an annual loss of agricultural land of approximately one percent. Some improvement has been seen in the late 1990s when the use of forestland increased from 13 percent to 18 percent, possibly owing to a massive social forestry programme implemented by the government with the assistance of various NGOs.

Use of agricultural land

With population increasing, the country began adopting green revolution packages¹ to increase food production in the 1960s. Currently, nearly two-thirds of total cultivable land is used for multiple crop production (see map in Annex 1).

Rice is the major staple in the Bangladesh diet, with more than 80 percent of all cropping areas used for paddy production (Table 5). While total cereal production (rice and wheat) has remained the same since independence, the total area under cereal cultivation has increased to nearly 85 percent of the total cropped area. Cultivation of vegetables in general, and potatoes in particular, has also expanded. In contrast, the cultivation of pulses and oilseed, which had been increasing steadily over the years, began a gradual decline in 1997/98.

¹ Expansion of total cropping area by increasing cropping intensity; replacing low-yield crops with high-yield varieties; using chemical fertilizers, insecticides and pesticides; increasing irrigation and improving production management.

TABLE 5 Percentage of crop area utilization under different crops

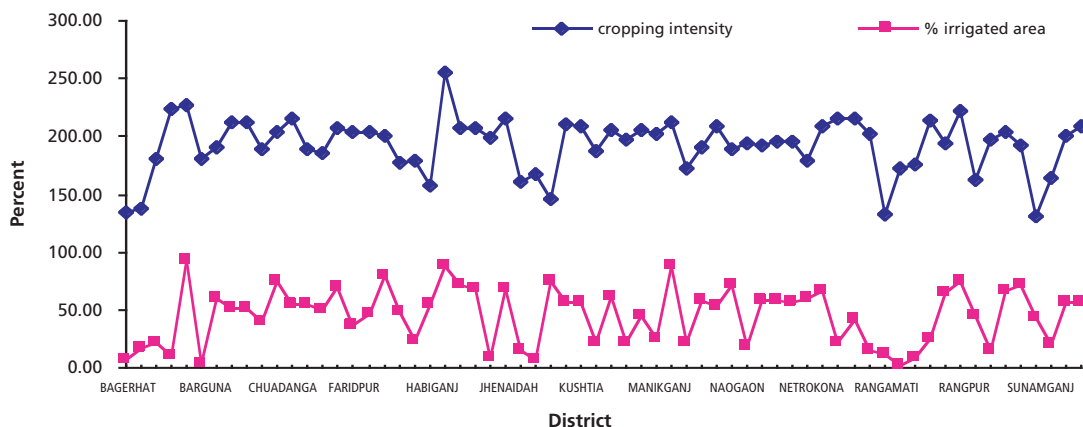
YEAR	CEREALS	PULSES	OILSEED	VEGETABLES	FRUIT	POTATO	SPICES	CASH CROPS	TOTAL CROPPED AREA ('000 ACRES)
1970/71	80.69	2.99	2.7	0.97	1.07	0.97	1.33	9.29	30 579
1980/81	84.17	2.5	2.36	0.97	1.13	0.97	1.11	6.8	32 212
1990/91	79.73	5.21	4.07	1.23	1.18	1.23	1.05	6.29	34 527
1995/96	79.8	5.19	4.12	1.42	1.29	1.42	1.06	5.7	33 245
1996/97	79.86	5.01	4.03	1.42	1.28	1.42	1.05	5.93	33 959
1997/98	79.84	4.76	4.02	1.44	1.26	1.44	1.03	6.21	34 540
1998/99	79.9	4.72	4.0	1.73	1.27	1.73	1.1	5.54	34 246
1999/00	81.45	3.49	3.12	1.73	1.29	2.0	1.77	5.15	35 264
2000/01	81.33	3.31	2.94	1.73	1.34	2.01	1.12	6.22	35 335
Net change 1970–2001 ('000' acres)	4 064	255	213	315	146	414	-11	-643	4 756

Source: BBS, various years

Irrigation as a factor of production

One of the major factors contributing to the increase in cropping intensity is the increase in areas under irrigation, from 12.4 percent in 1980/81 to 31 percent in 2000/01. Irrigation coverage still varies widely by district, however, with the lowest level (1.3 percent of total crop area) in Patuakhai and the highest (92 percent of total crop area) in Bogra (Figure 4). Recently, Bangladesh has achieved self-sufficiency in rice production mainly owing to expansion of irrigated *boro* rice cultivation, which gives yields twice that of other rice crops. According to the BBS, *boro* rice cultivation increased from 8.3 percent in 1970/71 to 34.5 percent in 2000/01, most likely owing to the introduction of irrigation facilities. The development of these facilities negatively correlates with the average rainfall of a district. For example, there are few irrigation facilities in Bhola, Patuakhali, Feni, Rangamati and some districts in the Sylhet, Barisal and Khulna divisions, where the average annual rainfall is relatively high (Table 6).

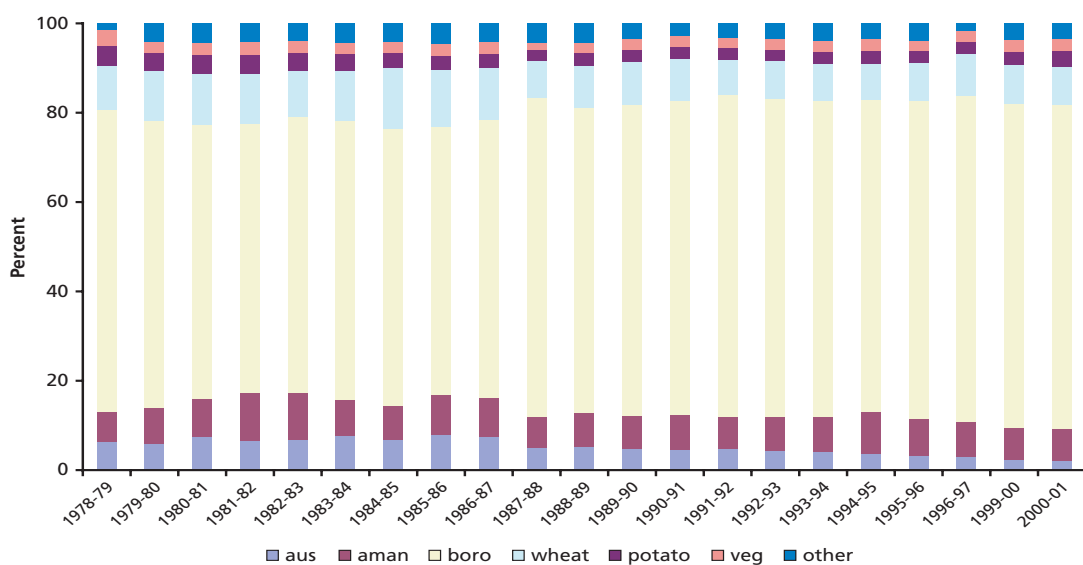
FIGURE 4 Cropping intensity and irrigation by district



Source: Ministry of Agriculture (MoA)/DAE, Agricultural Census 1996, BBS

Irrigation is mainly provided for rice (*aus*, *aman* and *boro*), wheat, potato and vegetable cultivation (Figure 5). The irrigated *boro* rice area constituted almost three quarters of the total irrigated crop area, a trend that seems to be increasing (Figure 6). Traditional irrigation methods commonly used just two decades ago, such as the use of the low lift pump (LLP), have been gradually replaced by the relatively inexpensive shallow tube wells (STW), which are more suitable for use by small and marginal farmers owing to easy installation and use.

FIGURE 5 Total irrigation area under different crops



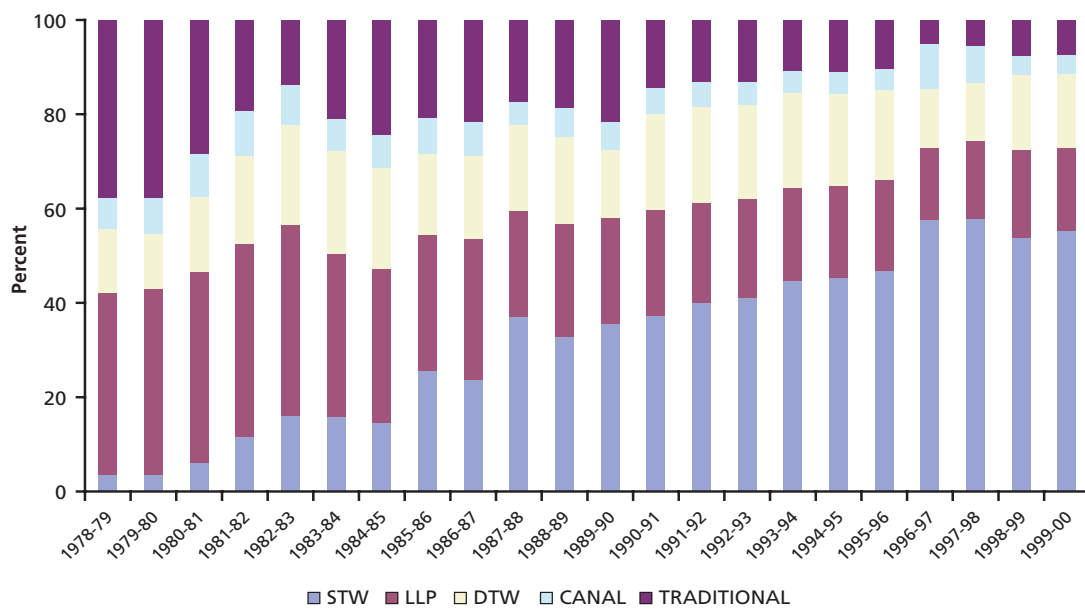
Source: BBS

TABLE 6 Average monthly rainfall (cm) from 1990 to 2002

SERIAL NO.	OBSERVATION STATIONS	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL	AVG.
1	Dinajpur	11	10	9		198	384	387	355	477	125	10	9	2 05	171
2	Rangpur	12	11	20	122	2 1	447	383	379	409	175	12	4	2 240	187
3	Rajshahi		19	20	51	142	253	314	244	317	105	18	8	1 501	125
4	Bogra	10	14	14	77	201	305	378	297	353	142	10	10	1 81	151
5	Mymensingh	9	22	42	13	329	421	411	323	350	214	19	7	2 288	191
	Sylhet	10	49	159	331	5 1	787	7 0	25	535	1 8	21	7	4 024	335
7	Srimangal	8	45	10	170	434	449	358	33	272	194	35	14	2 42	202
8	Ishurdi		25	35	75	179	2 3	278	219	342	97	19	8	1 552	129
9	Dhaka	10	23	7	11	330	281	379	312	288	182	32	10	2 034	170
10	Comilla	11	33	89	140	345	355	4 0	288	214	159	49	13	2 1 0	180
11	Chandpur		33	72	197	275	325	427	313	2 1	143	33	5	1 994	1
12	Jessore	14	25	49	5	179	328	31	248	243	112	39	8	1 31	13
13	Faridpur	11	28	4	117	248	307	33	309	22	177	3	9	1 85	155
14	Madaripur	7	33	8	122	27	374	394	325	249	155	4	5	2 059	172
15	Khulna	14	59	59	1	179	344	327	301	259	127	47	5	1 788	149
1	Satkhira	14	43	49	87	1 0	304	3 1	284	289	127	40	4	1 7 9	147
17	Barisal	14	33	77	10	233	410	443	331	23	17	59	4	2 12	177
18	Bhola	10	3	74	98	25	473	434	343	2 4	178	50	5	2 22	18
19	Feni		3	115	180	392	552	80	57	321	184	71	9	3 090	258
20	M.court	8	3	109	142	3 5	559	8	5 7	349	202	7	7	3 101	258
21	Hatiya		27	3	91	333	25	70	488	409	2 7	0	20	3 079	257
22	Sitakunda	7	35	109	145	393	581	93	557	329	240	74	12	3 1 3	2 4
23	Sandwip	14	33	102	105	459	804	873	49	394	270	9	10	3 5	305
24	Chittagong	7	41	71	115	3 4	572	705	548	24	21	3	17	2 9 3	247
25	Kutubdia	9	29	70	73	303	80	821	5 4	27	218	83	11	3 135	2 1
2	Cox's Bazar		28	57	84	370	821	1 013	91	400	239	109	15	3 837	320
27	Teknaf	0	23	23	50	344	1039	1 1 8	9 4	405	2 5	87	5	4 379	3 5
28	Rangamati	7	31	101	11	411	505	580	430	2 8	157	0	17	2 88	224
29	Patuakhali	7	3	55	123	228	55	574	470	3 0	209	58	4	2 8	224
30	Khepupara		38	4	107	314	550	84	482	370	290	81	8	2 997	250
31	Sydpur	12		22	87	221	425	420	344	4 3	141	12		2 1 4	180
32	Tangail	8	27	53	125	281	303	327	2 5	302	138	29	9	1 872	15
33	Mongla	10	3	48	71	191	389	35	329	32	153	53	1	1 9 8	1 4
34	Chuadanga	15	24	21	50	1	245	334	232	307	109	24	10	1 543	129
	Total (cm)	311	1 027	2 138	3 801	9 921	16 016	17 712	13 988	11 109	6 054	1 575	296	83 867	6 989
	Average (cm)	9	30	3	112	292	471	521	411	327	178	4	9	2 4 7	20

Source: BMD

FIGURE 6 Total area under different methods of irrigation



Source: BBS



Food production and availability of net production

Food production

Although food production data are collected by BBS, Bangladesh Rice Research Institute (BRRI), Bangladesh Agricultural Research Institute (BARI), Ministry of Agriculture (MoA)/DAE and Ministry of Food (MoF) on a regular basis, BBS is the only agency authorized by the government to publish this data. The published documents used to prepare this report mainly provide district-level data on cereal production; for other food items, only national data were available.

Bangladesh has made remarkable progress in food production, especially rice, during the 1990s (Table 7). In 1999/2000 a total of 25 million tonnes of cereal (rice and wheat) were produced, more than the requirement of the total Bangladesh population, and vegetable production nearly doubled from the first half of the decade. A milestone in potato production was also observed, marking a 2.5-fold increase in per capita availability from the beginning of the decade (from 27 g/day in 1990/91 to 58 g/day in 1999/2000). Along with cereal and vegetables, the 1990s showed a sustained increase in animal products (fish, meat, egg and milk), reaching a total per capita availability of 86 g/day at the end of the decade. For example, the per capita availability of fish increased from 20 g/day in 1990/91 to 34 g/day in 1999/2000, owing mainly to an increase in inland fishery; meat production increased from 8 g/day in 1990/91 to 13 g/day in 1999/2000; and egg and milk production registered similar increases, though the availability of egg remained appallingly low (4 g/day).

Along with the positive change in production of some food items, negative growth was observed in other items. Total production of pulses, one of the major sources of protein for the poor, oilseeds and fruits dropped in the 1990s. These items appear to have become the casualties in the cereal production revolution. For example, pulse production fell to a record low of 383 thousand tonnes by 1999/2000. Accordingly, per capita availability decreased, as it did for oilseed and fruit.

The net production availability of sweeteners and spices remained almost unchanged during the 1990s.

TABLE 7 Production and availability of selected food items in Bangladesh from 1991 to 2000

FOOD ITEMS	PRODUCTION (MILLION MT)		NET CHANGE (PERCENT) (1990/91 to 1999/2000)	NET PRODUCTION AVAILABILITY ² (G/CAPITA/DAY)		BUNDLE SUGGESTED FOR BALANCED FOOD INTAKE ³ (G/CAPITA/DAY)	NET PER CAPITA SURPLUS/GAP (COLUMN 8-9)	NORMATIVE BUNDLE SUGGESTED BY WORLD BANK (G/CAPITA/DAY)	NET PER CAPITA SURPLUS/GAP (COLUMN 8-11)		
	1990/91	1994/95		1999/2000	1990/91					1994/95	1999/2000
1	2	3	4	5	6	7	8	9	10	11	12
CEREALS	18.9	18.1	24.9	31.8	417	375	496	372	124	437	59
rice	17.9	1.8	23.1	29.1	395	349	459	312	147	397	2
wheat	1	1.25	1.84	84.0	22	2	37	0	-23	40	-3
PULSES	0.52	0.53	0.38	-26.9	12	11	8	66	-58	40	-32
ANIMAL PRODUCTS	2.39	3.09	4.11	72.0	52	64	86	126	-44	118	-36
fish	0.9	1.2	1.55	72.2	20	25	34	50	-1	48	-14
meat	0.3	0.45	0.	83.3	8	9	13	22	-9	12	1
egg	0.08	0.13	0.2	150.0	2	3	4	7	-3	-	
milk	1.0	1.24	1.7	70.0	22	2	35	47	-12	58	-23
FRUIT	1.42	1.43	1.32	-7.0	31	30	27	57	-30	20	7
VEGETABLE	2.25	2.58	4.41	96.0	50	53	88	262	-174	177	-89
potato	1.24	1.5	2.95	137.9	27	31	58	130	-72	27	31
OIL	0.13	0.13	0.11	-15.4	3	3	6	38	-32	20	-14
SUGAR AND GUR	0.8	0.83	0.87	8.8	18	17	17	28	-11	20	-3
SPICES	0.4	0.26	0.43	7.5	9	5	9	10	-1		

² calculated based on production data presented in Table 2.

Net production availability = (Gross production - 10% [deducted for seed and loss from the gross production])/total population

³ Yusuf, H.I.K.M. 1997. Sustainable Food Security Report, FAO, Rome.

Food production and a balanced diet

One of the major challenges in Bangladesh is to provide the large population with sufficient quantities of food. Because the country has limited means to import food, domestic agricultural production is the main determinant in shaping the meals, and therefore the nutrition, of the population. Table 7 (above) provides a detailed calculation of the net production availability of food items and the differences between this bundle and the poverty bundle suggested by the World Bank and the bundle suggested for a balanced diet⁴.

According to the World Bank prescribed minimum food bundle, the country broadly reached self-sufficiency in production of cereal, potato, fruit and meat. The bundle suggested for a balanced diet, however, indicates that the country is deficient in production of all non-cereal food items.

Net food availability and food intake

Except for cereal, no accessible data exists to calculate net availability⁵ of food consumed at the household level. This figure is difficult to determine since food may be obtained through self- or local production and through legal (e.g. public and private import, food aid) or illegal (e.g. cross-border trade) means. There is also a lack of data regarding the proportion of imported consumable goods used for human consumption. In this instance, however, household consumption can act as a good proxy. The difference between the rate of production and actual consumption indicates the proportion of food that is obtained from non-production sources. Differences between actual consumption, which is considered to be an indicator of market availability, and the prescribed bundles showing the consumption-requirement gap can help policy makers formulate appropriate policy interventions.

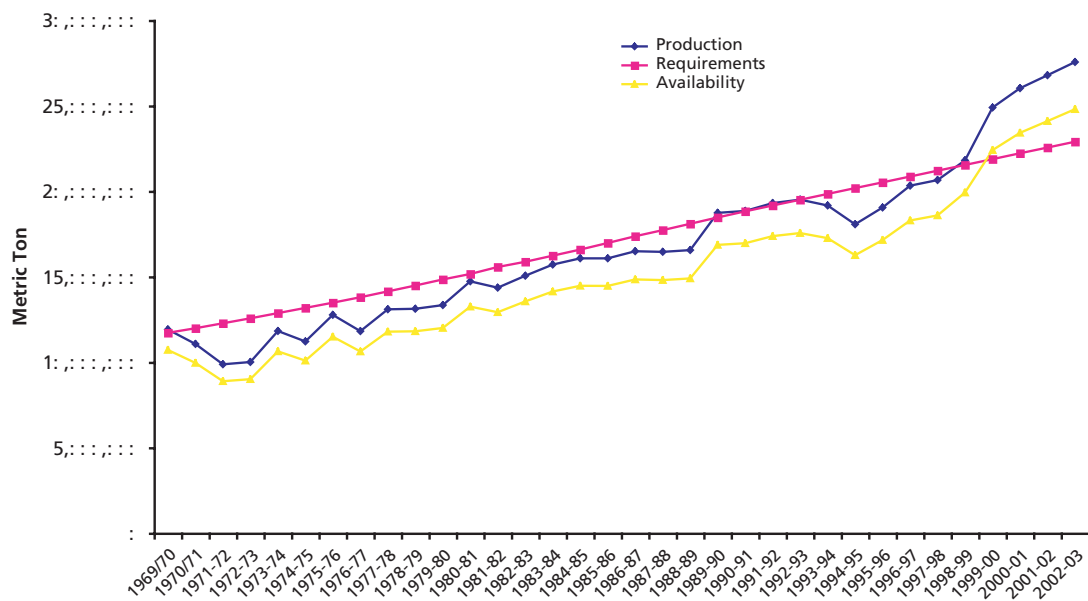
Figure 7 and Annex 2 present foodgrain production, requirement and net availability during the period from 1969/70 to 2002/03. The macro data of availability from this period indicate a

⁴ A balanced diet is composed of food items in such quantities and such proportions as to meet the body's requirements for nutrients to maintain a healthy and active life. Recommendations for balanced diets for an average Bangladesh citizen have been made (Halder, 2002). Among all recommendations, the bundle suggested for balanced food intake in Table 7 most closely resembles the universally accepted energy ratios – 60 percent from carbohydrate, 25 percent from fat/oil and 15 percent from protein (Garrow and James, 1993). This formula calculates the total quantity of food as 949 g/person/day, supplying 2310 Kcal and 99 g protein.

⁵ Net availability is calculated by deducting 10 percent for seed and loss from the gross production, then adding that figure to net import and changes in government stock.

considerable acceleration in the aggregate foodgrain production, as has been indicated in the Interim Poverty Reduction Strategy Paper (IPRSP). This accelerated growth performance of cereal production needs to be considered in tandem with the potential limitation posed by the gradual decline in the total amount of cultivable land.

FIGURE 7 Foodgrain production, requirement and availability



Source: BBS; *Bangladesh Food Grain Digest*, July 2002; World Food Programme

Data from the year 2000 show a reduction in the gap between production and actual consumption of non-cereal food items, indicating the declining dependence on imports and the increasing strength of the local economy to feed people using internal resources (Table 8). For example, in 1999/2000, Bangladesh produced enough cereal, meat, milk, potato, sugar and gur to fulfill 100 percent of the country's demand and significantly reduced the gap between supply and demand for fish and vegetables as well. Pulses and spices, however, continue to be fulfilled mainly from imports.

TABLE 8 Differences between production and actual consumption of selected food items

FOOD ITEM	DIFFERENCES BETWEEN 2000 ACTUAL CONSUMPTION AND THE PRESCRIBED BUNDLES (PERCENT)		PRODUCTION CONTRIBUTION TO CONSUMPTION (PERCENT)	
	World Bank	Balanced diet	1995/96	2000
CEREAL	10.2	23.6	73.7	101.9
rice	13.4	32.0	75.2	100.1
wheat	-132.	-248.8	77.2	215.1
PULSES	-150.0	-312.5	78.6	50.0
ANIMAL PRODUCT	-34.1	-43.2	70.3	97.7
fish	-23.1	-28.2	5 .8	87.2
meat	7.7	- 9.2	75.0	100.0
egg	n/a	-1 .7	100.0	.7
milk	-93.3	-5 .7	81.3	11 .7
FRUIT	28.6	-103.6	107.1	96.4
VEGETABLE	-25.5	-85.8	34.6	62.4
potato	50.9	-13 .4	2.0	105.5
OIL	-53.8	-192.3	30.0	46.2
SUGAR AND GUR	-185.7	-300.0	188.9	242.9
SPICES	-	80.0	13.5	18.0

Source: HIES, 2000 calculated using data from Table 7

Food intake data

Three of the major sources of data on food intake under BBS – Poverty Monitoring Survey (PMS), HES and HIES – collect consumption data from a nationally representative sample that can be disaggregated up to five divisional urban and rural levels. HKI and IPHN, which have been collecting consumption data since 1990 under the NSP, collect data once every two months to cover seasonal vulnerability. Additional data are available from the following sources: IFPRI through a 1991/92 food consumption and nutrition survey; BRAC, which has a time series and panel database on consumption from a representative sample of its microfinance beneficiaries and other poor households; and INFS, which also provides gender-disaggregated data relating to intrahousehold food distribution.

Table 9 presents national, rural and urban aggregate results of food consumption from surveys conducted by INFS and BBS. According to INFS, during the period from 1962/64 to 1995/96, per capita total food intake in rural and urban areas fell 99 g/capita/day (from 841 to 742 g/capita/day) in rural areas and 24 g/capita/day (from 726 to 702 g/capita/day) in urban areas. At the national level, consumption of all food items except potato and meat fell during the same period. The rural data showed a steady decrease in consumption for all items during the period from 1962/64 to 1981/82, after which slight improvements for non-cereal items were observed. The urban data showed that consumption of all food items, except cereal and potato, was less in 1995/96 than in 1962/64. Cereal consumption in urban areas during these periods increased only 15 g/capita/day, while potato consumption more than doubled (from about 32 g/capita/day to 77 g/capita/day). Results of overall calorie and nutrient intake in rural areas showed a steady decrease over time.

According to HES/HIES, per capita aggregate consumption of major food items (physical quantity and calories) significantly increased in the first half of the 1990s but declined in the second half in both rural and urban areas, the same period when significant increases in production of major food items were observed.⁶ The major decreases in consumption were observed for wheat, rice, vegetables, fish and sweeteners. The consumption of pulses in rural areas, however, increased from 13 g/capita/day to 15 g/capita/day while the local production of pulses declined in the second half of the decade.

A large difference exists between INFS and BBS data in total food and total calorie intake, presumably owing to differences in methodologies⁷ applied for data collection and analysis. For example, while the 1995/96 INFS survey shows the average food intake to be 728 g/capita/day and calorie intake 1 868 kcal/capita/day, BBS shows food intake to be 914 g/capita/day and calorie intake 2 254 kcal/capita/day during the same period.

Changes in the percentage of food items consumed led to a change in total energy intake. For example, the percentage contribution of cereal to total food energy decreased from 83 percent to 75 percent during the period from 1991 to 2000, which is much closer to the desired level of 55 percent. Total energy received from vegetables and edible oil (about five percent each) needs to be accelerated further.

The contradiction between impressive growth of production and decrease in consumption in the latter part of the decade is difficult to explain.

⁷ INFS uses the food weighing method and BBS uses the 24-hour recall method.

TABLE 9 Bangladesh food intake from 1962 to 2000 (national averages)

Food	Intake g/capita/day (INFS) ^a						Intake g/capita/day (BBS)											
	National			Rural			Urban			National			Rural			Urban		
	19 2/ 4 9	1975/ 7 9	1981/ 82 9	1975/ 7 9	1981/ 82 9	1995/ 9 9	19 2/ 4 9	1975/ 7 9	1981/ 82 9	1995/ 9 9	19 2/ 4 9	1995/ 9 9	2000	1991/ 92 9	1995/ 9 9	2000	1995/ 9 9	2000
Cereals	488	43	53 .9	28	23.8	8.0	1	452	3 3.7	379	487	508.7	48 .7	521.9	502.8	442.1	422.4	
Pulses	27.	11	28	23.8	8.0	1	2 .5	10	14	14.0	15.	14.0	15.	12.9	15.0	19.4	19.0	
Animal product	74.2	1	57.	44.1	44.5	54	117	85	5	91.2	8 .7	43.8	38.5	84.5	82.2	123.8	104.5	
Fish	35.4	33	33	22.3	23	32	41.9	37	22	43.8	38.5	42.2	37.8	42.2	37.8	51.7	40.9	
Meat, poultry and egg	11.4	13	7.3	4.9	.0	9	21.9	28	11	15.1	18.5	15.1	18.5	12.0	15.4	30.0	31.0	
Milk	27.4	15	17.3	1 .8	15.5	13	53.2	20	23	32.3	29.7	32.3	29.7	30.3	29.0	42.1	32.	
Fruits	15.1	14	10.1	20.	17.4	18	17.5	13	34	27.	28.4	27.	28.4	25.3	2 .5	38.8	35.	
Vegetables (leafy and non-leafy)	134.5	112	134.	125.7	120	113	134.4	108	57	152.	140.5	152.	140.5	154.4	141.1	142.9	137.9	
Potato and sweet potato	48.8	72	55.5	52.3	2.7	70	31.	77	42	49.5	55.0	49.5	55.0	4 .7	54.7	4.4	58.4	
Added oil	8.3	8	.2	3	3		13.7	13	7	9.9	12.8	9.9	12.8	8.4	11.3	17.0	19.1	
Sugar and gur	8.8	7	7.4	7.3	8.7		11.7	9	19	37.2	50.0	37.2	50.0	35.5	48.5	45.4	5 .1	
Spices and other food items	.11	7.1	4.	7.2	12.7	.8	10	8	11	23.1	1 .9	23.1	1 .9	20.9	1 .	3 .7	17.7	
Total amount (g)	811.4	728.1	840.9	80 .9	7 5	741.8	72 .1	702	727	913.8	893.1	913.8	893.1	910.5	898.7	930.8	870.7	
Total energy (Kcal)	2 118	1 8 8	2 251	2 094	1 943	1 892	1 777	1 779	2 021	2 254	2 240	2 254	2 240	2 2 3	2 2 3	2 208	2 150	
Total protein (g)	55.31	4 .93	57.5	58.5	48.4	4 .3	49.7	48.99	49	.01	2.5	.01	2.5	5.38	1.88	9.19	4.9	
Energy from cereal (percent)	79.3	80.3	82.0	85.9	8 .4	82.2	70.4	73.3	83	78.0	75.4	78.0	75.4	79.7	77.1	9.2	8.5	

Source: INFS, BMD

^a Jahan and Hossain, 1998

Large differences in consumption exist between urban and rural areas and among different expenditure groups (Table 10). First, the total amount of food consumed by rural households is much higher than the amount consumed by urban households, regardless of income level. Second, the rural diet is much more dependent on cereal; consumption of non-cereal items such as milk, spices, vegetables and fish, to some extent, was slightly higher among the rural rich. For all other non-cereal items, there were practically no differences observed between rural and urban households, regardless of income level.

The bottom two expenditure quintiles of the population living in both rural and urban areas are the poorest section of the population and their per capita consumption of different food items was much lower than the rest of the population. Their consumption basket was deficient in both energy and protein and much more imbalanced when compared with the World Bank minimum poverty bundle.

TABLE 10 Per capita per day consumption of different food items in 2000 by expenditure quintile

FOOD ITEMS	RURAL					URBAN					NATIONAL				
	1st	2nd	3rd	4th	5th	1st	2nd	3rd	4th	5th	1st	2nd	3rd	4th	5th
Cereal	440	42	521	542	534	364	421	437	440	420	428	478	48	506	461
Pulses	10.4	13.6	16.1	13	21	11.5	14.5	16.5	16	23.1	10.6	13.8	16.2	14	22.7
Roots/tubers	155	170	12	210.8	233.3	143	15	17	186	201	153.2	167.7	188.8	202.0	212.5
Fish	21.1	32.0	40.7	52.1	67.5	21.2	28.1	34	41.5	58.2	21.1	31.2	31	48.3	61.5
Egg	2.6	5.5	5.3	7.3	3	3.1	3.8	5.2	8.7	14.3	2.7	5.2	5.3	7.8	12.5
Meat	3	6.2	1	16.6	30.3	3	7.3	11.1	17	37.7	3.1	6.4	6	17.7	35.0
Edible oil	7.2	10.0	12.4	15.5	20.1	3	11.8	14.7	18	27.1	7.5	10.4	13.0	16.7	24.6
Sweets	2.1	4.4	6.2	6	15.1	1.6	3.3	5.0	8.7	14.4	2.0	4.2	5.8	3	14.6
Spices	34	46.0	53.3	62.0	73.1	37.1	45.1	51	57.3	70.7	30	45.8	52	60.3	71.6
Milk	8.6	15.3	25	42.2	65	3.6	6	14.8	22.2	47.2	7.8	14.2	22	35.0	55.2
Fruit	13.5	14	27.8	40	53.6	11.2	23.6	18	32.4	53.8	13.1	20.2	25.4	37	53.7
Total intake (gm)	721	832	932	1042	1154	631	750	811	880	995	707	817	900	984	1052

Source: BBS, HIES, 2005a

Source of food consumed in the household

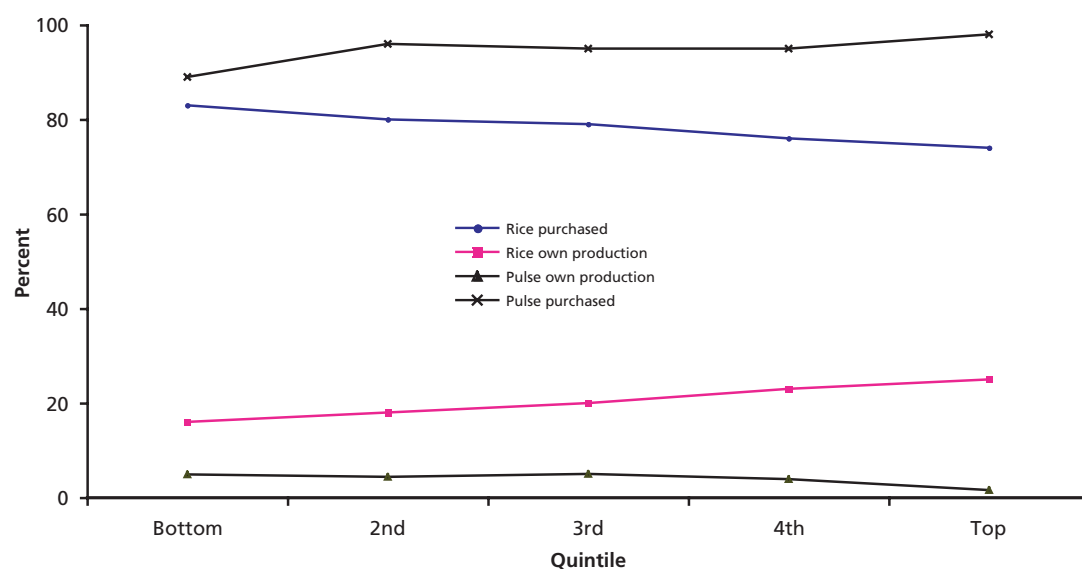
Not much information is available on the sources of food consumed in individual households, whether from self-production, purchased from market or obtained as gift, relief or exchange.

Different studies clearly show that the landless poor are very dependent on market sources. The 1997 and 2000 data from BRAC studies (Halder and Mosley, 2002) and those from HIES 2000 show that only about one-fifth to one-quarter of food items consumed at the household level, such as rice, vegetables and fish, are obtained from self-production and that the rest are purchased from the market or directly from growers (Table 11).

Interestingly, for rice, the proportion purchased decreases and the proportion produced increases as the economic status of a household increases (Figure 8). In 2000, this trend was quite pronounced with the proportion of self-production accounting for 21.8 percent of rice consumed in the poorest households but 42.8 percent in the richest. The high market dependence of the poor for all food commodities, including rice, illustrates the fact that any market fluctuations in food price, food production and market availability, will most directly and adversely affect the poor and their economic status.

Pulse production illustrates the opposite trend of rice; the proportion of pulses produced decreases and the proportion purchased increases with an increase in economic status (Figure 8). The small proportion of pulse produced overall (2–5 percent of total production), suggests the relative unimportance of pulses compared to rice.

FIGURE 8 Source of rice and pulse consumed in rural households in 1997



Source: BRAC, unpublished

TABLE 11 Source of food consumed in 1997 and 2000 in rural households, by economic status

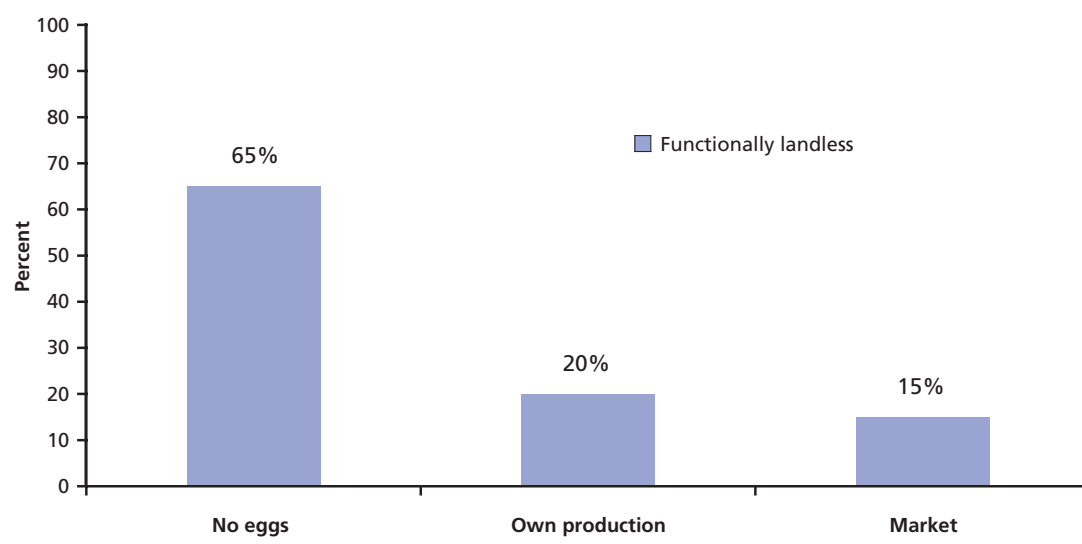
FOOD	BOTTOM QUINTILE		SECOND QUINTILE		THIRD QUINTILE		FOURTH QUINTILE		TOP QUINTILE	
	1997 ¹	2000 ¹	1997 ¹	2000 ²	1997 ¹	2000 ¹	1997 ¹	2000 ²	1997 ¹	2000 ²
RICE										
self-production	1.3	9.8	21.8	29.4	20.8	17.	34.2	22.8	19.9	41.8
purchased	83.2	88.8	74.7	8.9	79.1	79.2	9.	7.	79.2	57.4
gift/relief/exchange	0.5	1.4	3.4	1.7	0.1	0.9	1.1	0.	0.9	0.8
VEGETABLES										
self-production	21.7	.1	27.8	25.2	23.1	3.9	24.7	23.0	9.3	24.8
purchased	71.7	89.2	52.1	4.5	74.4	89.3	4.8	74.8	88.4	5.9
gift/relief/exchange	7.2	4.7	20.1	10.3	2.5	1.3	10.5	2.2	2.3	9.3
FISH										
self-production	21.3	9.9	10.8	11.4	20.3	7.8	12.1	17.7	8.3	11.8
purchased	74.8	87.3	77.0	80.9	7.1	90.0	81.0	79.4	89.4	82.7
gift/relief/exchange	3.9	2.8	12.2	7.7	3.	2.2	.9	2.9	2.3	5.5
EGG										
self-production	31.9	33.	34.4	34.7	53.8	33.0	33.1	31.8	47.	35.
purchased	8.1	.4	4.1	4.8	44.8	4.4	5.4	8.2	50.0	3.5
gift/relief/exchange	-	-	1.	0.5	1.4	2.	-	-	2.4	0.9
PULSE										
self-production	4.9	1.8	2.7	3.0	5.0	-	4.3	3.9	0.8	5.
purchased	88.9	98.2	95.1	9.0	95.0	100	94.7	94.5	98.0	93.4
gift/relief/exchange	.2	-	2.2	1.0	-	-	1.0	1.	1.2	1.0
MEAT										
self-production	-	19.9	18.3	20.0	17.0	19.9	18.2	34.5	19.9	18.8
purchased	100	79.2	73.0	73.8	75.8	79.2	73.	5.5	79.2	75.
gift/relief/exchange	-	0.9	8.	.2	7.2	0.9	8.2	-	0.9	5.

Source: BRAC, 1997, 2000¹; BBS, HIES, 2003a²

Among all food items, the proportion of eggs from self-production remains very high, from 32–54 percent (Table 11). This trend points to the tradition of raising poultry in rural households, regardless of income level.

Although most rural households raise poultry (more than 90 percent), including 80 percent of the functionally landless (less than one-half acre), a 2000 survey showed that 65 percent did not eat eggs during the week prior to the survey and only 20 percent ate eggs from self-production and 15 percent from the market (Figure 9). One prominent explanation is that eggs are either kept to hatch chicks, or are sold, given away or exchanged, which also explains why there is very low consumption of nutritious animal products in rural poor households.

FIGURE 9 Eggs consumption of rural landless households in 2000



Source: NSP, 2002



Trends in poverty

Results of the income measure

Poverty is a broad term that encompasses deprivation of all aspects of human well-being. Different measures may be applied when calculating absolute poverty and the results of these measures are not comparable.⁸ BBS possesses a nationally representative sample of poverty data that can be disaggregated to the division and, to some extent, the older district levels. The Bangladesh Institute of Development Studies (BIDS) also has poverty data from 62 villages, the aggregated results of which are representative to the national rural level.

TABLE 12 Poverty incidence estimates in Bangladesh during the period from 1973/74 to 2000

YEARS	HEADCOUNT RATIO (PERCENT)		P1: POVERTY-GAP INDEX (PERCENT)		P2: SQUARED POVERTY-GAP INDEX (PERCENT)		GINI COEFFICIENT (PERCENT)	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
2000 ¹	43.	24	11.3	7	4.0	2.3	29.7	37.9
1991/92 ²	52.9	33.	14.	8.4	5.	2.8	25.5	31.9
1988/89 ²	49.7	35.9	13.1	8.7	4.8	2.8	25	32.
1983/84 ²	53.8	40.9	15.0	11.4	5.9	4.4	24.	29.8
1981/82 ³	53	48.4	20.2	14.9	8.2	2	n/a	n/a
1973/74 ³	71.3	3.2	25.	21.1	11.8	9.5	n/a	n/a

Source: Sen, 2003¹; Ravallion and Sen, 1996²; World Bank, 1998³

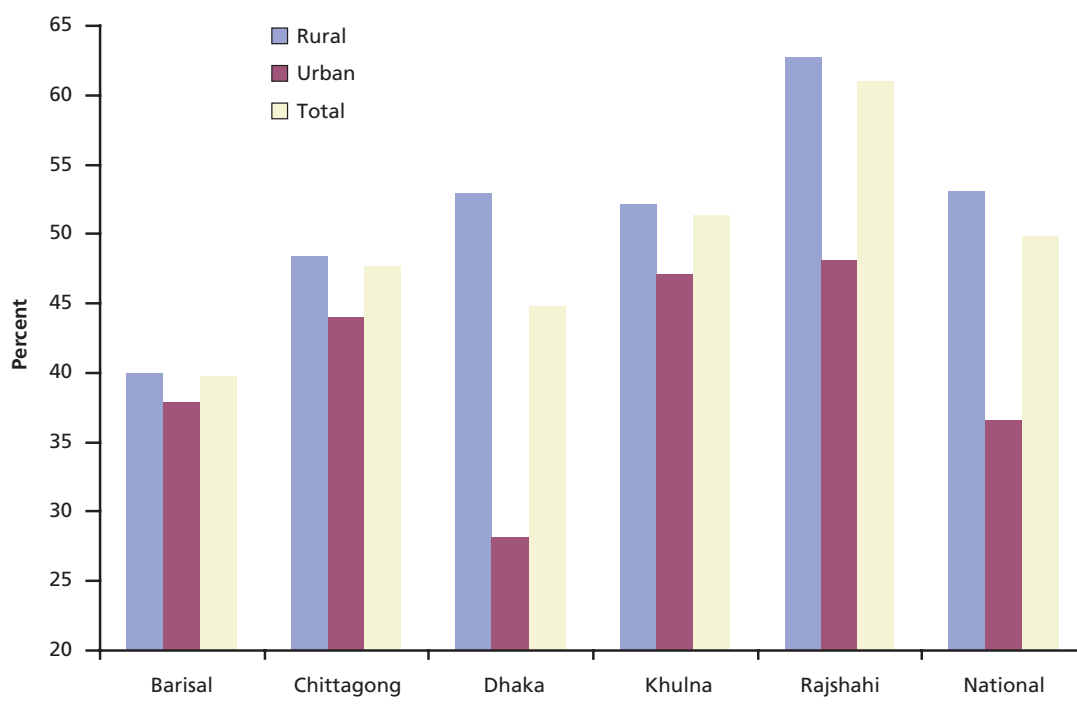
Bangladesh has made notable progress in poverty reduction since independence in 1971. In income measure, a steady reduction of the rural poverty level has been observed, from 71 percent in 1973/74 to 44 percent in 2000. The urban poverty level fell at a faster rate, from 63

⁸ There are three available approaches to measuring poverty: a direct method using information on calorie consumption; an indirect method using data on income/expenditure; and a qualitative method using the perceptions of the respondents. None of these methods are comparable to each other across time and space (Ravallion and Sen, 1996).

percent to 26 percent during the same period. Results of other poverty measures, which mainly describe depth and severity of poverty, show similar trends. Results of the Gini coefficient indicate increasing income inequality among both rural and urban populations in the late 1990s, with the rate of increase twice as high in urban areas (Table 12).

Among different geographical regions, the Rajshahi division was identified as the most poverty prone, followed by Khulna and Chittagong, with the lowest prevalence of poverty observed in Barisal (Figure 10). The poverty-gap and squared poverty-gap indices, which measure poverty depth and severity, respectively, showed similar results. The Human Poverty Index (HPI) and Income Poverty Index (IPI) measures⁹, however, showed slightly different results, placing the Rajshahi division, for example, in the middle of the list rather than at the bottom (BIDS, 2001).

FIGURE 10 Poverty incidence by division



Source: BIDS, 2001

⁹ Composite variables used for poverty ranking.

Results of the direct calorie intake measure

In direct calorie intake (DCI) measure, the national absolute poverty rate has declined nineteen percentage points since 1983/84, from 63 percent to 44 percent in 2000. This positive trend is mainly attributed to changes in the rural poverty scenario since absolute poverty in urban areas, both in percentage and absolute terms, has rapidly increased in the latter part of the 1990s, leading to a significant increase in the total number of absolute poor. In fact, estimates show that in the year 2000 a total of 55.91 million people in Bangladesh existed below the absolute poverty line (consuming less than 2 122 kcal/capita/day), one quarter of whom were living in urban areas (Table 13). Results according to the poverty line two estimate show a declining trend in rural and national hardcore poverty, both in percentage and absolute terms, and an increase in the absolute number of hardcore poor in urban areas.

TABLE 13 Population below poverty line

SURVEY YEAR	POVERTY LINE 1: Absolute poverty (2 122 kcal person/day)						POVERTY LINE 2: Hardcore poverty (1 805 kcal person/day)					
	National		Rural		Urban		National		Rural		Urban	
	million	%	million	%	million	%	million	%	million	%	million	%
2000	55.91	44.33	42.3	42.28	13.28	52.50	25.20	19.98	18.87	18.72	.33	25.02
1995/9	55.28	47.53	45.73	47.11	9.5	49.7	29.15	25.0	23.90	24.2	5.24	27.27
1991/92	51.3	47.52	44.81	47.4	.82	4.70	30.42	28.00	2.59	28.27	3.83	2.25
1988/89	49.	47.75	43.37	47.77	.29	47.3	29.49	28.3	2.00	28.4	3.49	2.38
1985/8 *	55.27	55.5	47.41	54.5	7.8	2.55	2.7	2.8	22.82	2.31	3.85	30.7
1983/84*	58.35	2.	51.05	1.94	7.30	7.70	34.25	3.75	30.22	3.	4.03	37.42

Source: HIES 2000, BBS

* Poverty lines for absolute and hardcore poverty during the periods 1985/86 and 1983/84 were estimated based on 2 200 and 1 800 kcal respectively.

Land is the scarcest resource in Bangladesh and in rural areas poverty is synonymous with landlessness. According to HES, in 1995/96 six out of ten households in rural areas were absolutely poor, consuming less than the prescribed 2 122 kcal/capita/day, and a significant proportion of these households were consuming less than 1 600 kcal/capita/day. Results of the most recent survey (HIES 2000) show significant improvement of that situation. When the national poverty rate declined 4.8 percentage points, the rate of decline was more than double among the absolute landless and those owning less than 50 decimals of land (Table 14). These people represent the microfinance target group; different research studies have also shown the positive impact of microfinancing in the reduction of poverty (Halder, 2003).

TABLE 14 Percentage of rural population below poverty lines by size of owned land

AREA OF LAND OWNED (acres)	< 2 122 KCAL			< 1 805 KCAL			< 1 600 KCAL		
	2000	1995/	percent change	2000	1995/9	percent change	2000	1995/9	percent change
All groups	42.3	47.1	-4.80	20	24.	-4. 0	7.5	14.1	- . 0
Landless	55.9		-10.10	27.8	44.3	-1 .50	15.	25.4	-9.80
0.01-0.49	48.7	58.	-9.90	23.4	32.2	-8.80	9.1	19.5	-10.40
0.50-1.49	37.7	40.8	-3.10	14.9	20.4	-5.50	.1	10.5	-4.40
1.50-2.49	31.1	33.7	-2. 0	9.5	14.9	-5.40	1.8	8.3	- .50
2.50-7.49	25.3	32.1	- .80	8.2	13.2	-5.00	2.5	.4	-3.90
7.50+	15.2	20.5	-5.30	2.7	7.1	-4.40	1.7	3.2	-1.50

Source: BBS, HIES, 2005a

Variations in results of different poverty estimates

Wide variations of the income and expenditure measure of poverty exist even within the same data source. Interestingly, the expenditure measure applied in HIES 2000 shows a higher incidence of both rural and urban poverty (about 10 percentage points higher) and a higher rate of poverty inequality than the results presented by Sen in World Development (Sen and Binayak, 2003) where the income measure was applied (Table 15).

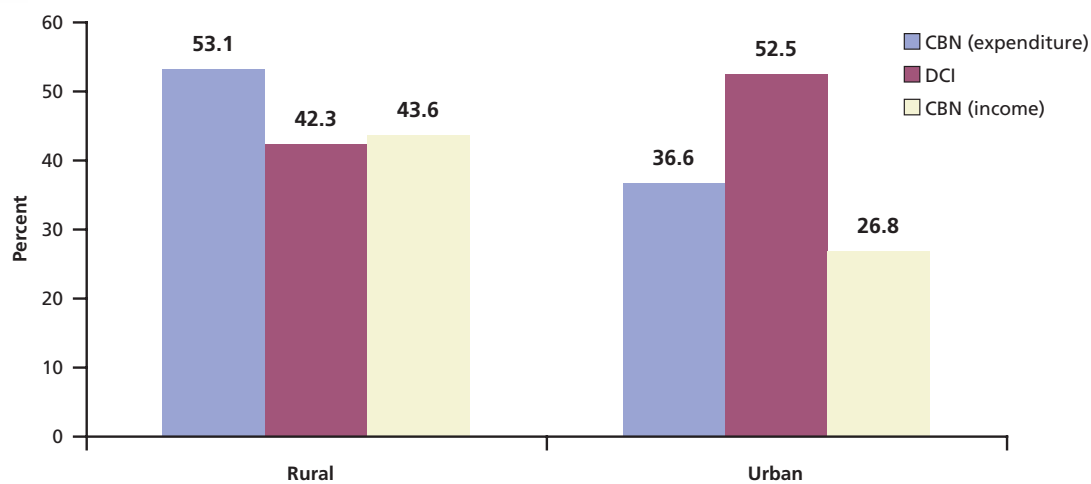
TABLE 15 Estimation of poverty using cost of basic needs (CBN) method

METHODS	HEADCOUNT RATIO (PERCENT)		P1: POVERTY-GAP INDEX (PERCENT)		P2: SQUARED POVERTY-GAP INDEX (PERCENT)		GINI COEFFICIENT	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Expenditure ¹	53.1	3 .	13.8	9.5	4.8	3.4	3 .	45.2
Income ²	43.	2 .4	11.3	.7	4.0	2.3	29.7	37.9

Source: BBS estimates; ¹ Sen, 2003²

According to the DCI method, poverty is much higher in urban areas than in rural areas, which conflicts with results calculated using other methods, including the cost of basic needs (CBN) income and expenditure method, which shows a higher prevalence of poverty among the rural population (Figure 11).

FIGURE 11 Poverty estimates by different sources



Source: BBS

Local estimation of poverty

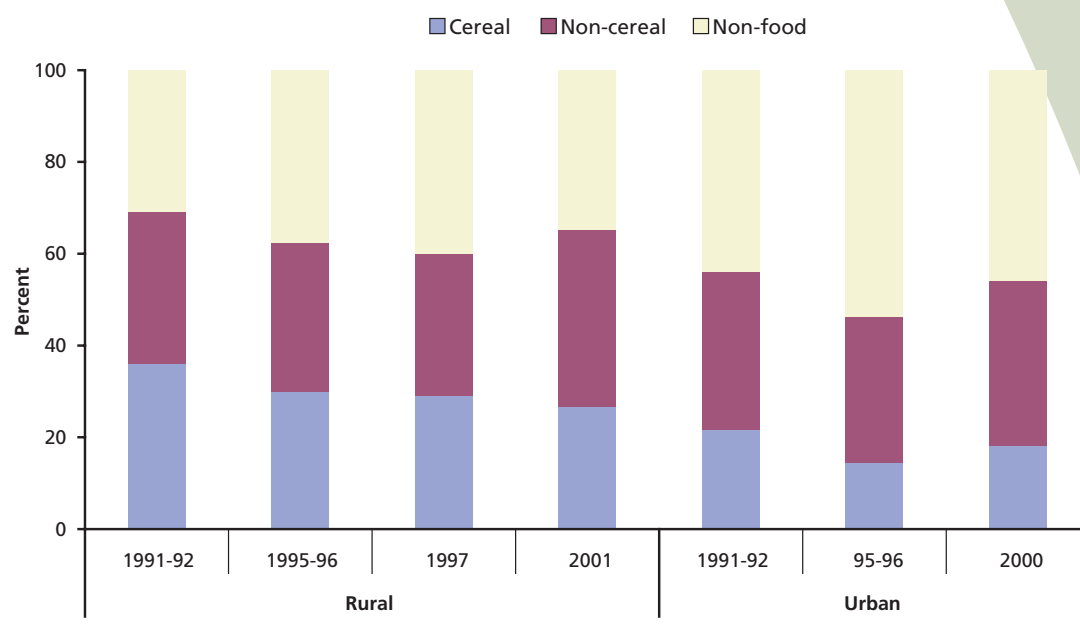
As mentioned previously HES/HIES poverty data provides estimates at national and division levels. To measure poverty beyond the division level, BBS recently collaborated with the United Nations' World Food Programme (WFP) to carry out a small-area estimation exercise. This statistical technique improved survey estimates of small levels of aggregation by combining HIES data with the WFP 2000 Child Nutrition Survey, a sample (five percent) of the 2001 Bangladesh population census and Geographical Information System (GIS) data from the World Food Program–Vulnerability Analysis and Mapping Unit (see map in Annex 3).



Food and non-food consumption expenditure

Two major changes in the pattern of household food and non-food consumption expenditure were observed in the 1990s: a shift in the expenditure of cereal and non-cereal foods and food and non-food items; these trends were stronger in rural areas than in urban areas. For example, the share of cereal consumption declined from 35.9 percent in 1991/92 to 26.6 percent in 2001 in rural areas and from 21.7 percent to 18.2 percent in urban areas. Similarly, the proportion of expenditure on food items in rural areas declined during the same period from 69.2 percent to 65.2 percent, while the proportion in urban areas only declined from 56.1 percent to 54.1 percent. Conversely, the proportion of expenditure on non-food items increased in both areas, though more in rural areas than in urban areas (Figure 12).

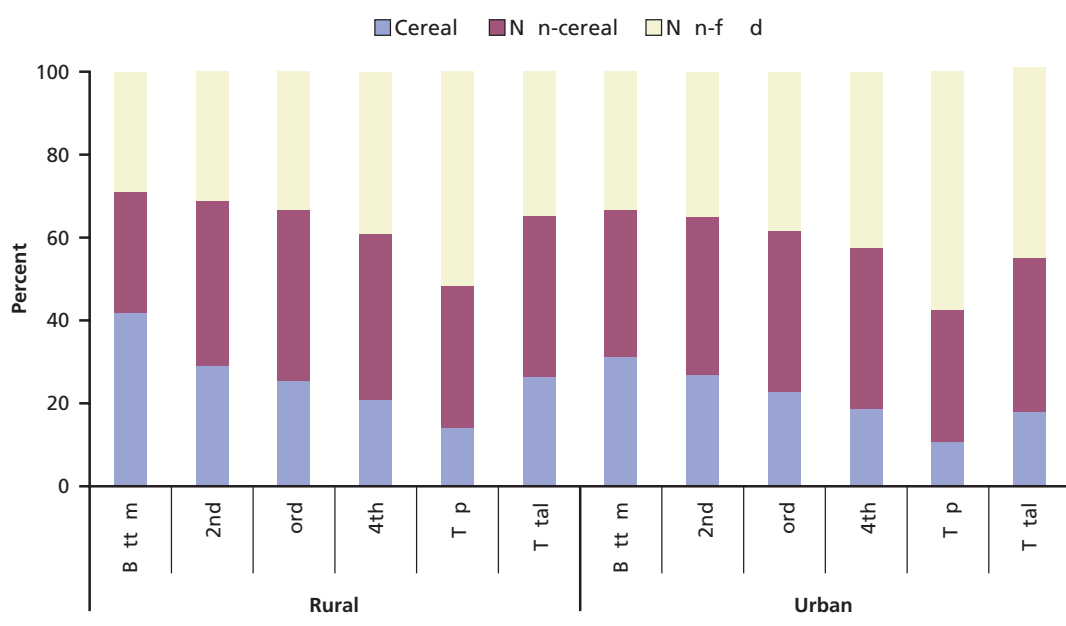
FIGURE 12 Household expenditure share



Source: BBS, various years

When food and non-food expenditure data are segregated by economic status, they show that expenditure decreases for food consumption and increases for non-food consumption as economic status improves in both rural and urban areas (Figure 13). In both areas, 41–50 percent of total food expenditures in the bottom two quintiles are used for cereals alone, compared with only 25–29 percent in the top quintile, which also uses more than 50 percent of total household expenditure for non-food consumption.

FIGURE 13 Household expenditure share by expenditure quintile



Source: BRAC, unpublished

The food expenditure pattern changed significantly in the 1990s, as per capita food expenditure increased 24 percent in rural areas and 47 percent in urban areas and cereal share, which was almost half in 1991/92, declined nearly one quarter, indicating a jump in spending for non-cereal food items; significant national increases were noted for fruit (138 percent), meat and egg (70 percent) and milk and milk products (60 percent) (Table 16).

Overall, increases and decreases were generally greater in urban areas than in rural areas. Interestingly, per capita cereal consumption was practically the same in 1991/2 and 2000, while actual expenditure on cereal in 2000 fell two percent, following the fall of rice prices in the late 1990s. Increases in consumption and prices account for the increase in expenditure for fruit, meat, egg and milk.

TABLE 16 Share of food expenditure by major food item

FOOD ITEM	NATIONAL (PERCENT)		RURAL (PERCENT)		URBAN (PERCENT)		CHANGE FROM 1991/92 TO 2000 (PERCENT)					
	91/92	95/96	91/92	95/96	91/92	95/96	NATIONAL	RURAL	URBAN			
Per capita food expenditure (Taka)	1 932	2 323	2 477	2 300	2 137	2 300	2 159	3 27	3 175	28.2	23.7	47.1
Cereal	49.74	43.93	38.02	41.23	47.81	41.23	38.9	31.05	28.9	-23.	-20.	-25.4
Pulses	3.15	2.73	2.92	2.79	2.5	2.79	3.80	3.29	3.29	-7.3	-7.	-13.4
Fish	9.2	11.	12.48	12.0	10.97	12.0	11.5	13.9	13.7	34.8	38.3	18.2
Meat and eggs	4.72	.19	8.02	.97	5.00	.97	.1	10.17	11.0	9.9	2.9	78.7
Vegetables	8.38	8.88	9.21	9.44	8.9	9.44	10.02	8.1	8.57	9.9	15.1	-14.5
Milk and milk products	2.47	4.82	3.95	3.2	4.14	3.2	4.21	7.09	4.89	59.9	3.8	1 .2
Edible oil	3.90	3.77	3.71	3.2	3.58	3.2	4.01	4.41	3.97	-4.9	-3.7	-1.0
Condiments/Spices	.99	5.44	7.13	7.22	5.57	7.22	5.88	5.00	.87	2.0	2.	1 .8
Fruit	1.25	2.35	2.97	2.57	1.94	2.57	1.33	3.72	4.10	137.	121.	208.3
Sugar and gur	1.	1.48	1.34	1.29	2.23	1.29	2.04	3.3	1.49	-19.3	-18.9	-27.0
Beverage	1.42	2.01	1.97	1.57	1.50	1.57	2.78	3.71	3.10	38.7	33.1	11.5
Miscellaneous	7.0	.74	8.29	7.2	5.74	7.2	9.52	5.3	10.2	17.4	10.	.9

Source: BBS, various years



Household income

Food security at the national level does not guarantee food security at the individual or household level if the household does not have adequate purchasing power, that is, income. Income inequality increased at the same rate during the period from 1995/96 to 2000, about 9.26 percent, in both rural and urban areas, though the overall rate was higher in urban areas. For example, the income share of the bottom 20 percent of the population, which was only 5.71 percent in 1995/96, dropped to 4.97 percent in 2000. Meanwhile, the income share of the top 20 percent of the population increased from 50.8 percent to 55.02 percent during the same period. Not surprisingly, the greatest increase in income share was observed for the top 5 percent of the population and the greatest decrease for the bottom 5–10 percent (Table 17).

TABLE 17 Percentage of household income share by decile group

DECILE GROUP	NATIONAL			RURAL			URBAN		
	2000	1995/9	percent change	2000	1995/9	percent change	2000	1995/9	percent change
Lowest 5 percent	0.7	0.88	-23.8	0.75	1.00	-25.00	0.3	0.74	-14.8
Decile 1	1.84	2.24	-17.8	2.08	2.5	-18.75	1.70	1.92	-11.4
Decile 2	3.13	3.47	-9.80	3.55	3.93	-9.7	2.81	3.20	-12.19
Decile 3	3.9	4.4	-11.21	4.45	4.97	-10.4	3.0	4.0	-11.33
Decile 4	4.77	5.37	-11.17	5.34	5.97	-10.55	4.4	4.98	-10.44
Decile 5	5.8	6.35	-10.55	6.23	6.98	-10.74	5.37	5.97	-10.05
Decile	6.84	7.53	-9.1	7.42	8.1	-9.07	6.43	7.20	-10.9
Decile 7	8.32	9.15	-9.07	8.87	9.75	-9.03	7.8	8.98	-12.47
Decile 8	10.40	11.35	-8.37	10.88	11.87	-8.34	10.0	11.35	-11.37
Decile 9	14.30	15.40	-7.14	14.50	15.58	-7.93	14.10	15.29	-13.44
Decile 10	40.72	34.8	17.42	37.2	30.23	21.14	43.5	30.05	20.83
Top 5 percent	30.	23.2	29.81	27.74	19.73	35.53	33.4	24.30	38.44
Gini coefficient	0.47	0.43	9.2	0.43	0.38	13.1	0.50	0.44	13.4

Source: BBS, HIES, 2005a

In rural areas, where 77 percent of the population lives, landholding is considered an indicator of household well-being. The contribution of different landholding groups to aggregate income shows that the reduction in the number of large farmers has reduced the group's total income share. The highest increase was for the group owning 0.01–0.04 acres (116 percent), which currently contributes around 37 percent to the aggregate rural income. As income increases, so do household expenditures, which ultimately affects the savings behaviour of a household. In 2000, the landless poor (owning 0.05–0.49 acres of land) and marginal farmers owning more than 0.49 acres but less than 2.5 acres of land spent more than 100 percent of their income on various household food and non-food items, whereas this same group had maintained an annual savings of 10–12 percent in 1991/92. Growth in income for both of these groups was also lowest during the 1990s (Table 18).

TABLE 18 Changes in income and expenditure of rural households in the 1990s by owned land size

SIZE OF LAND OWNED IN ACRE	HIES 2000				HES 1991/92			
	percent of households	Average per capita annual income (Taka)	percent of income	Expenditure income ratio	percent of households	Average per capita annual income (Taka)	percent of income	Expenditure income ratio
All Groups	100	4 81	100	88.39	100	3 109	100	87.52
Landless	5. 0	3 248	3.78	88.89	5.3	1 717	2.9	88.00
0.01–0.04	4 .54	3 841	37.12	8 .31	12.21	1 77	.98	91.10
0.05–0.49	13.47	3 713	10.38	100.22	35.44	2 428	27. 8	88.84
0.50–1.49	1 .97	4 570	1 .11	99.82	20.78	3v118	20.84	87.81
1.50–2.49	7.98	0 8	10.0	100.12	10.42	3 909	13.10	89.20
2.50–7.49	8.12	10 42	17.58	73.24	12.	4 943	20.12	84. 7
7.50+	1.31	18 233	4.97	71.74	3.13	19 395	8.32	83.93

Source: HES, 1991/92; BBS, HIES, 2003a

During the 1990s there was a major shift in rural income sources. The dominance of agriculture income share fell from 40.1 percent to 25.5 percent. The total income share of skilled employment and business and commerce ventures increased from 32.5 percent in 1991/92 to 50.1 percent in 2000. Most of this increase was attributed to improvements in the business and commerce sectors, particularly in the latter half of the decade (Table 19).

Table 19: Percentage of rural household income share by source of income

YEAR	AGRICULTURE	BUSINESS AND COMMERCE	PROFESSIONAL WAGES AND SALARY	HOUSING SERVICES	GIFT REMITTANCE	OTHER	TOTAL
2000	25.5	22.4	27.7	5	11	8.4	100
1995/9	35.4	14.7	27.7	.5	9.	.1	100
1991/92	40.1	12.4	21.1	9.1	10.	.7	100

Source: BBS, HIES, 2003a



Food price and food insecurity

Food consumption is directly linked to food price and the poor, who lack access to major production sources, are highly dependent on market sources (BRAC, unpublished; BBS, 2003). The typical consumption basket consists of a wide range of food and non-food items, the prices of which have increased manifold over time (Table 20). The Consumer Price Index (CPI) includes prices of the major food items usually consumed by all people irrespective of geographical location and socio-economic condition. Changes in CPI are good indicators of changes in the economic condition of the poor. For example, during the period from 1985/86 to 2001/02, the cost of living in Bangladesh increased by 144 percent overall, with a slightly higher increase noted in rural areas (Table 21). Increases in food prices, however, were six percentage points higher in urban areas.

TABLE 20 Average price (maund/taka) of basic food items

FOOD ITEMS	1972	1975	1980	1985	1990	1995	2000	2001	2002
Coarse rice	0	183	177	279	37	4 2	443	434	503
Ata	n/a	n/a	130	199	299	377	n/a	550	543
Masur dal	72	20	325	435	874	1 134	1 35	1 2 8	1 290
Khesari dal	4	15	20	214	585	488	541	541	5 1
Soybean oil	247	84	73	1 051	1 110	1 7 7	1 378	1 187	1 388
Mustard oil	3 3	0	1 027	1 185	1 544	2 048	1 1 3	1 732	1 83
Onion	32	98	104	241	442	432	472	870	900
Potato	40	108	109	104	205	235	324	234	277
Banana 100 (sagar)	15	39	41	78	100	n/a	200	200	200
Chicken	15	338	5	1 308	1 935	2 49	n/a	3 135	3 750
Egg (100)	18	44	78	149	223	2 4	303	308	290
Milk cow	42	114	171	32	47	508	n/a	933	830
Gur cane	104	279	292	414	574	581	n/a	1 079	1 028

Source: DAM, DAE, BBS

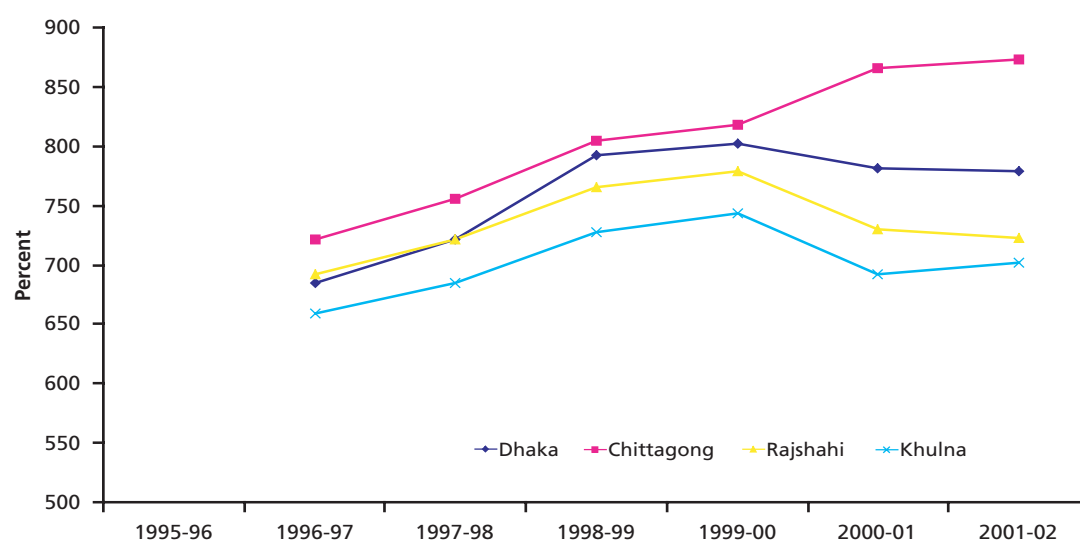
TABLE 21 Change in CPI 1989/90 – 2001/02

YEAR	ALL			FOOD		
	Rural	Urban	National	Rural	Urban	National
1989/90	13 .24	137.11	13 .37	137.04	137.75	137.04
1990/91	147.52	14 .05	147.7	148.11	14 .3	148.11
1991/92	154.1	153.24	154.44	154.3	153.95	154.3
1992/93	158.01	157.74	158. 7	157.17	158.25	157.17
1993/94	1 2.42	1 2.7	1 3.87	1 1.8	1 2.88	1 1.8
1994/95	179.0	175.2	178.4	177.3	175.27	17 .77
1995/9	191.5	185.9	190.27	189.	188.22	189.13
199 /97	19 .35	191.27	195.07	192.31	191.3	191.85
1997/98	210.15	204.41	208.7	205.84	20 .57	205.55
1998/99	228.88	222.59	227.29	229.2	233.22	229.72
1999/2000	23 .79	229.88	23 .1	237.98	242. 5	239.13
2000/01	240.39	233.91	238.7	240.08	245.30	241.40
2001/02	245.78	240.28	244.39	242.7	249.25	244.40

Source: DAM, DAE, BBS (CPI baseline: 1985/86=100)

When looking at the CPI of the rural population in four divisions, a fairly equal growth rate was seen through 2000/01, after which a decrease was observed in the divisions of Dhaka, Rajshahi and Khulna (Figure 14). Although the cost of living in Khulna increased slightly in 2001/02, it is still the lowest among all divisions. The CPI of the Chittagong division, by contrast, has always been the highest, with the gap widening in recent years.

FIGURE 14 CPI for rural population by division

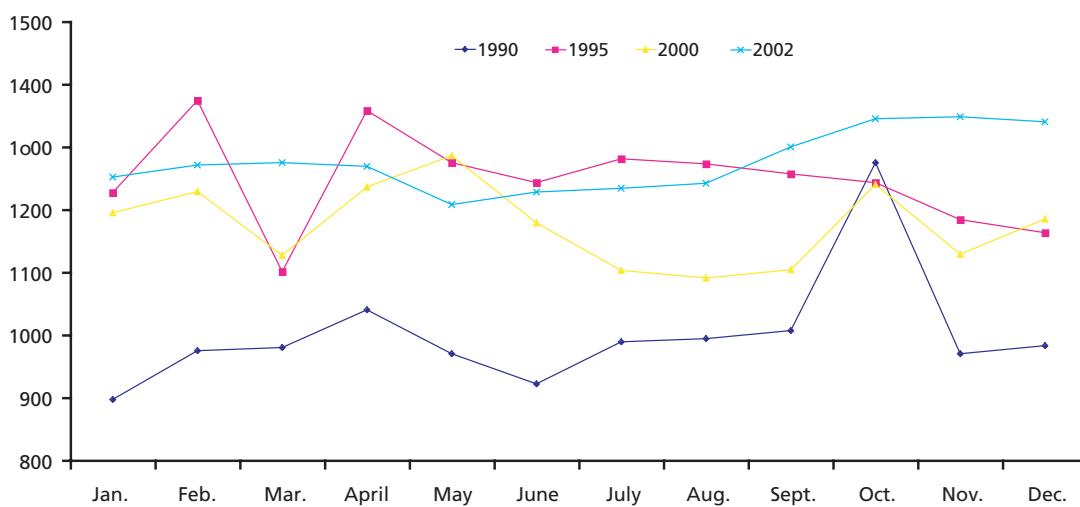


Source: BRAC, unpublished

Price of coarse rice

Because rice provides more than 80 percent of total energy to most people in Bangladesh, any fluctuation in market prices has a tremendous impact on accessibility to food, particularly by the urban poor and middle class who represent the majority of year-round buyers of foodgrain. The price of rice has typically been lowest in the harvest months of *boro* (irrigated rice, June-July), *aus* (non-irrigated rice, August) and *aman* (deep-water rice, December) (Figure 15). Today the *aman* rice harvest has less of an impact on prices than it did ten years ago. Reasons for this shift include the recent replacement of the *aman* area with *boro*, the lack of irrigation needed for *aman* and variations across geographical regions in the timing of sowing, transplantation and harvest of *aman*. Additionally, most of the small farmers who are the major producers of rice consume the *aman* paddy themselves.

FIGURE 15 Monthly variations in average wholesale price of coarse rice



Source: DAM, DAE, BBS



Education

“The educated differ from the non-educated as much as the living from the dead.”
Aristotle

Education builds human capabilities, opens opportunities and is critical for economic and social development. In the year 2000, more than 880 million adults around the world were illiterate, most from developing countries, and more than 113 million schoolage children were not in school (60 percent female and 40 percent residing in South Asia) (UNESCO 2000; Haq and Haq, 1998).

Since the adoption of international EFA goals in Jomtein, Thailand, in 1990, Bangladesh has made considerable progress in providing primary education to its people, spending 32.8 percent of the total 4.5 percent of gross national income reserved for education on primary education.

Data sources

Data in this section were obtained from the sources listed below, which generate information on literacy and school enrolment from a nationally representative sample.

- CELS/CPEIMU, 2001
- Education Watch, CAMPE
- Population Census, BBS, 2001
- HIES, 2000

Indicators

The Bangladesh FIVIMS uses the indicators listed below, which assess literacy and education standards at the subnational level.

Literacy – definitions vary across organizations; according to the Bangladesh Bureau of Statistics (BBS), a person who is able to write a letter in any language is considered literate

Literacy rate – the percentage of literate persons above the age of seven of the total population of the same age group (BBS, Census p. 123)

Adult literacy rate – percentage of literate persons above the age of 15 of the total population of the same age group

Gross enrolment rate – (number of enrolments in grades I–V/population of children ages 6–10)*100

Net enrolment rate – (number of enrolments in grades I–V/population of children ages 6–10)*100

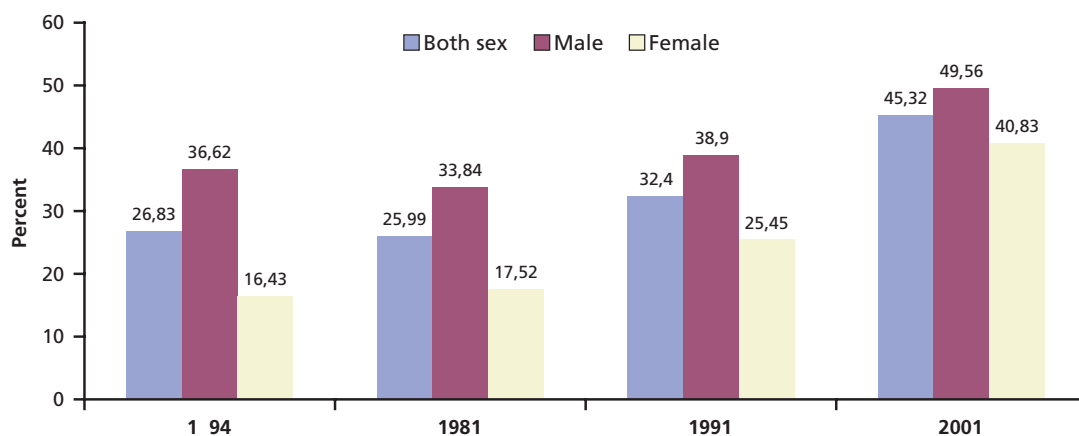
Literacy

The BBS definition of literacy as the ability to write a letter in any language was used when collecting data for the 2000 population census and HIES 2000. CELS/CPEIMU defined literacy as the ability to read and write and Education Watch 2001 used the UNESCO definition, which defines literacy as “the ability to read and write, with understanding, a short simple statement about one’s daily life,” (UNESCO, 1995).

Following the aforementioned definitions, all four organizations documented the literacy situation for two population groups: persons ages seven years and older and adults, that is, persons ages 15 and older. Population census data show that during the period from 1974 to 2001, the aggregate literacy rate of persons ages seven and older increased from 27 percent to 45 percent, with male literacy rates increasing from 37 percent to 50 percent and female rates from 16 percent to 41 percent (Figure 16).

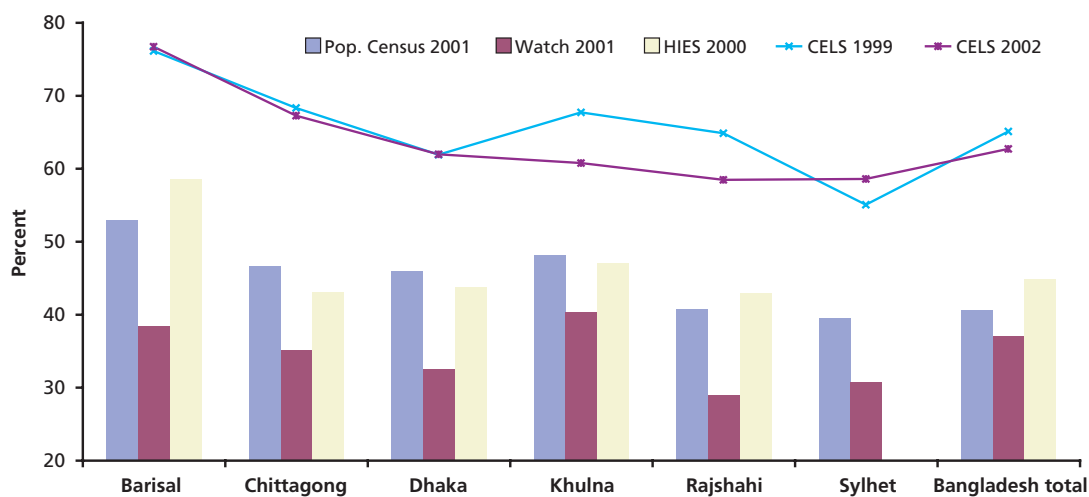
While precise literacy figures differed among data collectors, all sources showed the highest literacy rate in the Barisal division and the lowest rates in Sylhet and Rajshahi, even when taking into account differences in literacy definitions (Figure 17).

FIGURE 16 Literacy rates (7+ years) by year and gender



Source: Population Census/BBS, 2001

FIGURE 17 Literacy rates (7+ years) by division



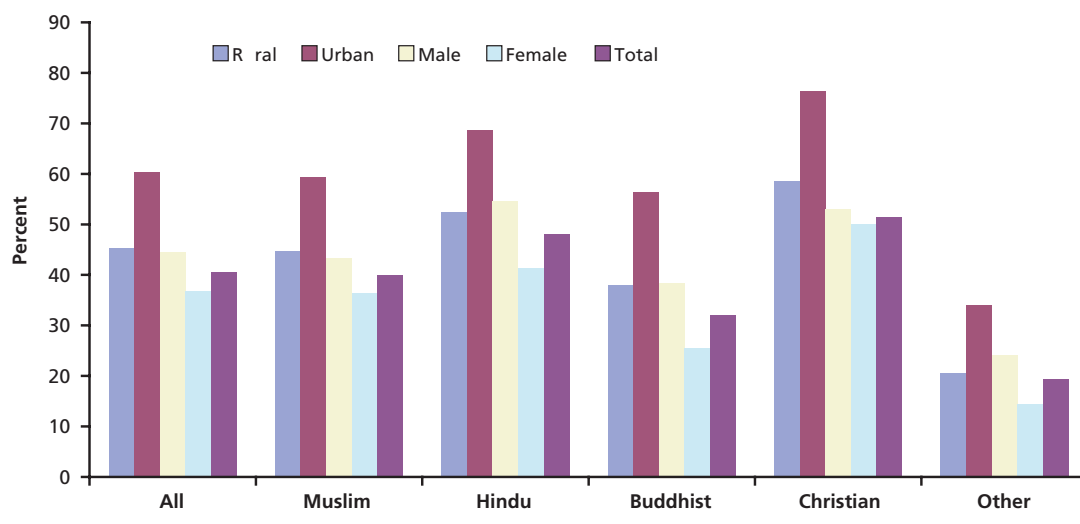
Source: various, see data source above

Literacy rates differ by area, with the urban population showing a higher rate (60 percent) than the rural rate (45 percent). Among religious groups, the literacy rates in both males and females were highest for Christians, followed by Hindus and Muslims. Although male literacy rates are higher than female rates across all religious groups, this discrepancy was lowest for Christians and highest for Hindus (Figure 18).

Adult literacy

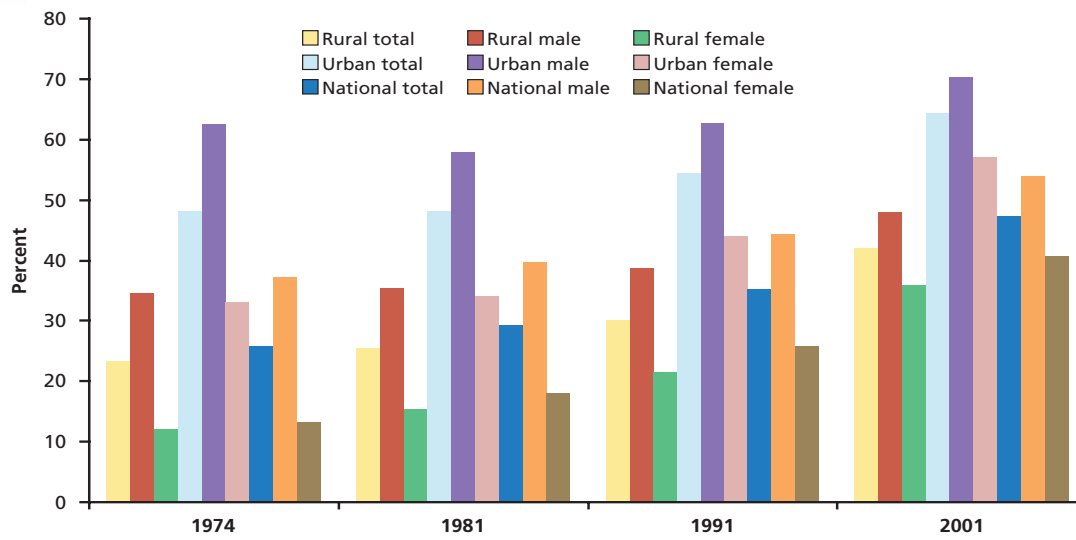
The 2001 population census showed that adult literacy rates (persons ages 15 and older) for both males and females in urban and rural areas have increased significantly during the period from 1974 to 2001, from 23.4 percent to 41.9 percent in rural areas and 48.1 percent to 64.3 percent in urban areas. Additionally, each successive census has shown a steady decrease in the gender gap (Figure 19).

FIGURE 18 Literacy rates (7+ years) by religion



Source: Population Census/BBS, 2001

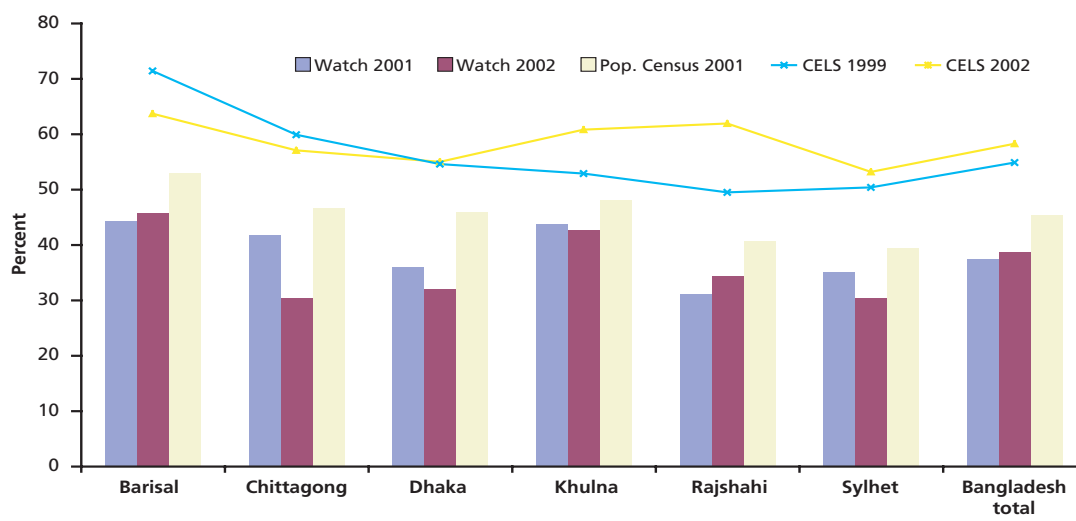
FIGURE 19 Adult literacy rates (15+ years) by rural, urban and national area



Source: Population Census/BBS, various years

As mentioned previously, different data sources provide different figures owing to differences in the working definitions of literacy (see data sources above). The only data in question regarding adult literacy rate by division, is the 1999 CELS data, which showed higher literacy rates than those reported by other sources for subsequent years and, thus, are in contradiction with the current government focus to increase education levels (Figure 20).

FIGURE 20 Adult literacy rates (15+ years) by division

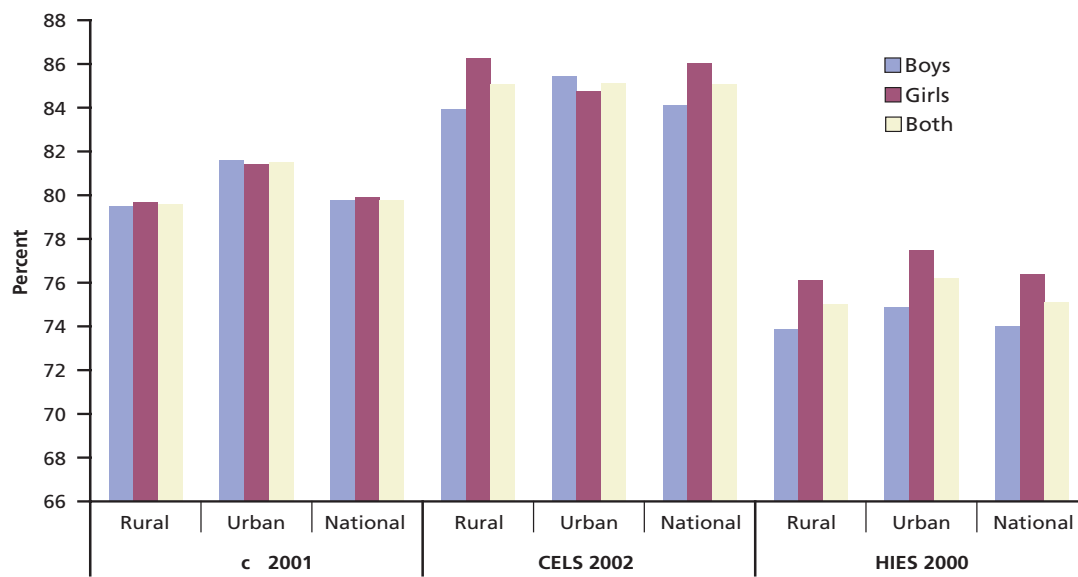


Source: various, see data source above

Primary School Enrolment

Bangladesh has made remarkable success in primary school enrolment in recent years (Figures 21-24). All sources providing school enrolment data show an increase in aggregate level of enrolment rates among primary schoolage children in both rural and urban areas and higher enrolment rates for girls than for boys.

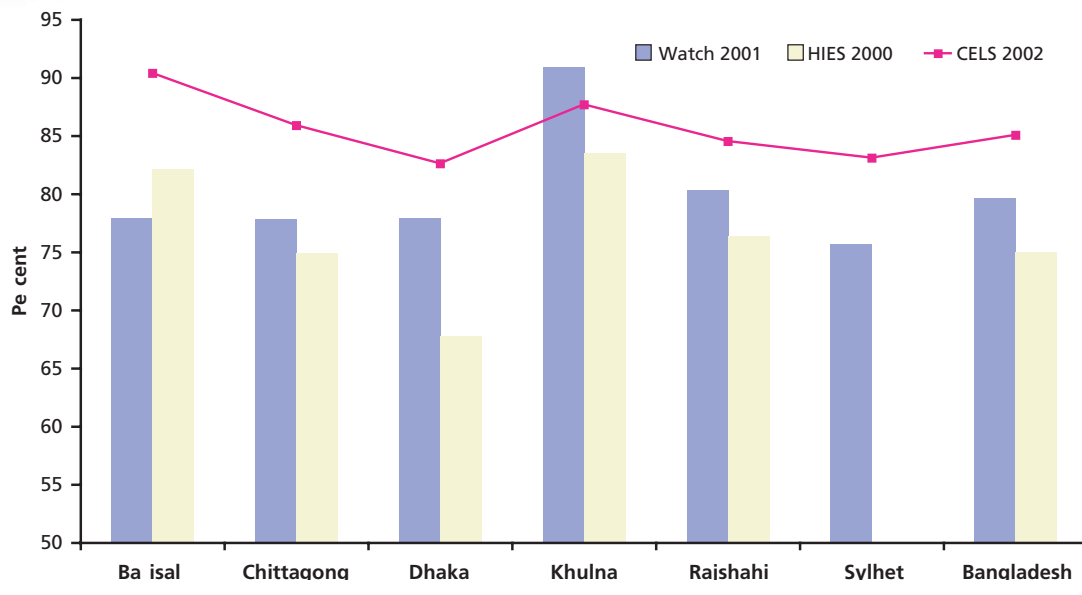
FIGURE 21 Net primary school enrolment rates for children ages 6-10



Source: various

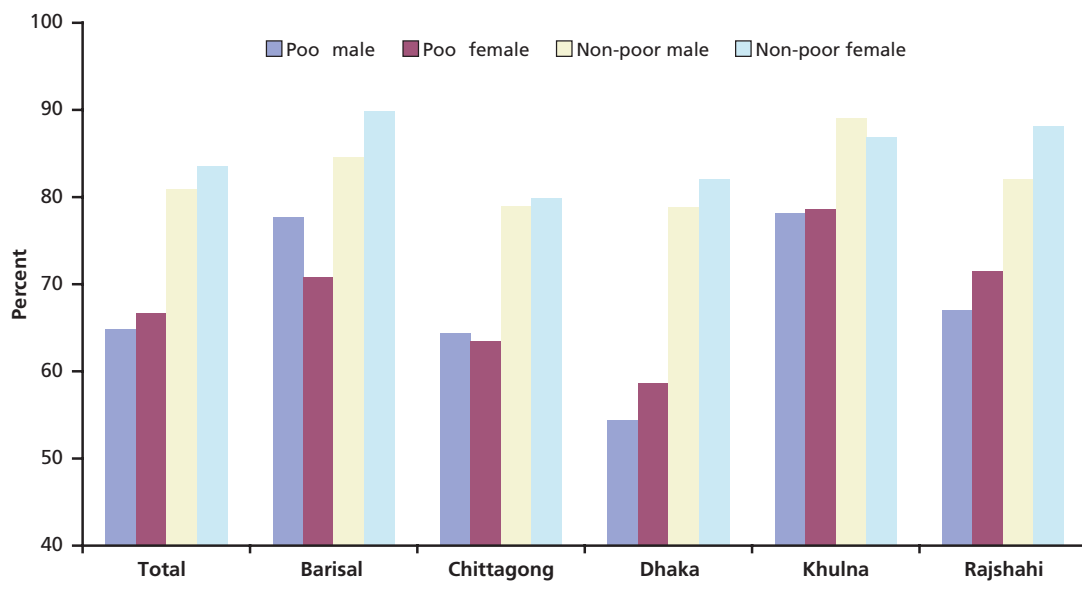
The divisional data from all of the sources showed that enrolments were highest in Khulna and lowest in Dhaka. For the latter, the higher urban slum study population and their lower level of enrolment rates resulted in the significantly lower aggregate level result. The data also showed a huge gap between the poor and non-poor irrespective of geographical division, though this gap was much more prominent in the Dhaka and Rajshahi divisions (Figure 24).

FIGURE 22 Net primary school enrolment rates for rural children ages 6-10



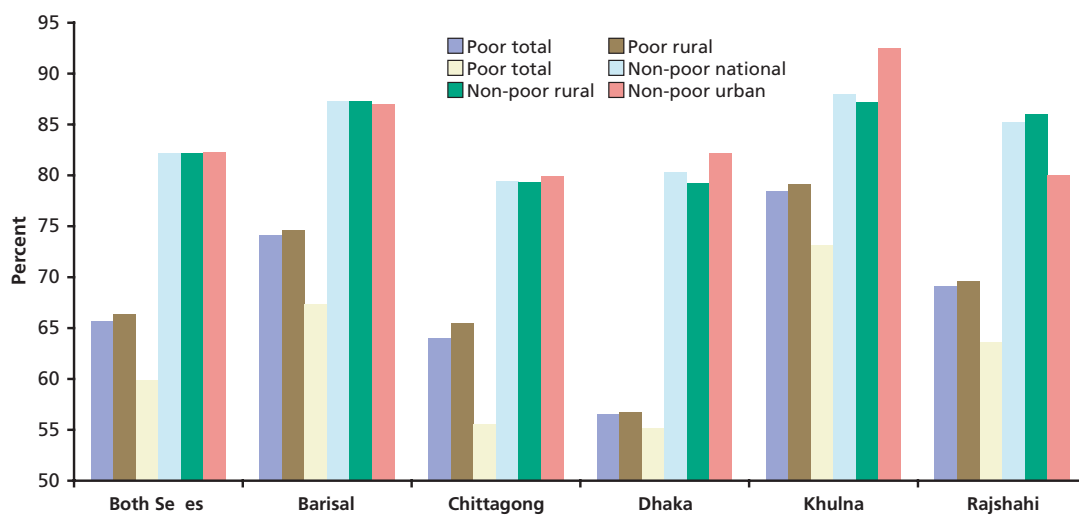
Source: various

FIGURE 23 Variations in primary school enrolment rates by gender and poverty group for children ages 6-10



Source: BBS, HIES, 2003a

FIGURE 24 Variations in primary school enrolment rates by geographic location and poverty group for children ages 6-10



Source: BBS, HIES, 2005a



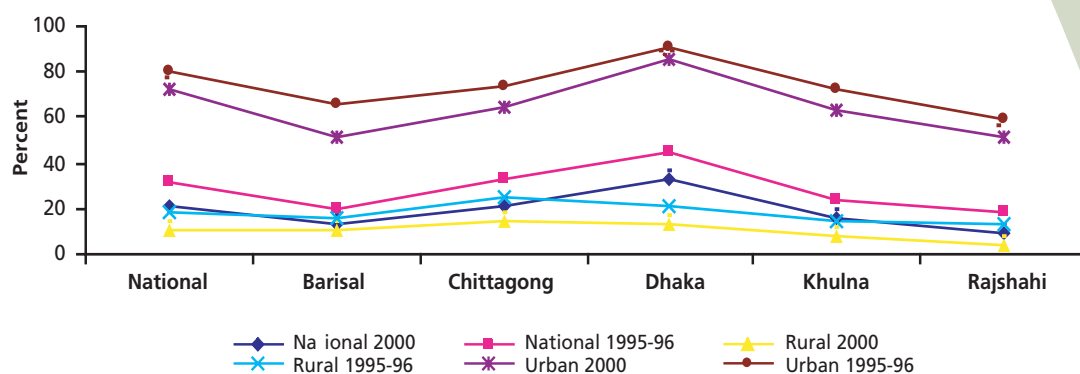
Access to infrastructure

Access to electricity

Access to electricity is an important factor influencing poverty reduction, particularly in rural areas where expansion of the electricity supply reduces cost of irrigation; supports industry modernization; extends working hours and, thus, production in commercial enterprises; strongly impacts poultry sector growth; and favourably influences social development.

Although access to electricity at the household level has increased over time, urban areas account for the majority of the supply; only about one third of the country's overall population had connection to electricity in the year 2000. A huge discrepancy still exists between urban and rural areas in all the administrative divisions, even taking into account the relatively higher growth rate of electricity supply in rural areas (Figure 25).

FIGURE 25 Access to electricity by geographic location

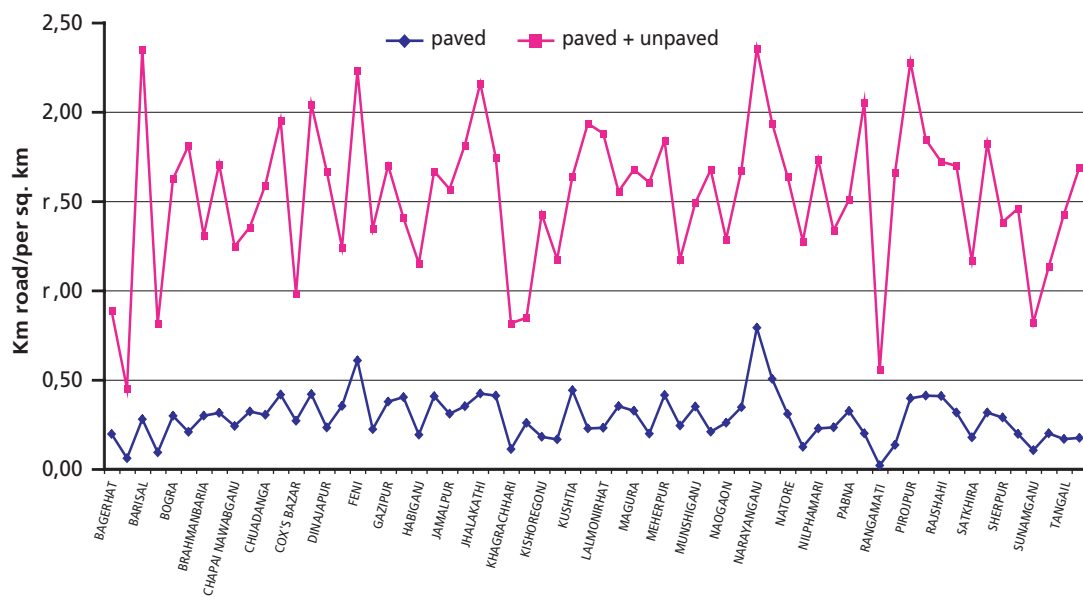


Source: BBS, HIES, 2003a

Access to road communication

Development of road communication is crucial to the continued development of the Bangladesh economy. Improved road infrastructure influences expansion of retail and service sector business in remote areas, thereby helping to create new non-farm employment opportunities. Improved road access increases the growing area of perishable and high-value crops. Bangladesh has a relatively high level of road communication when looking at total kilometers of road (i.e. paved and unpaved). District-level data on road communication show that the best communication exists in Narayanganj, Feni, Narsingdi, Kushtia, Jhalokati, Dhaka and Comilla, and the worst in Rangamati, Bandarban, Bhola, Sunamgonj, Khagrachari, Patuakhali and Kurigram (Figure 26).

FIGURE 26 Road length by district



Source: LGED, unpublished

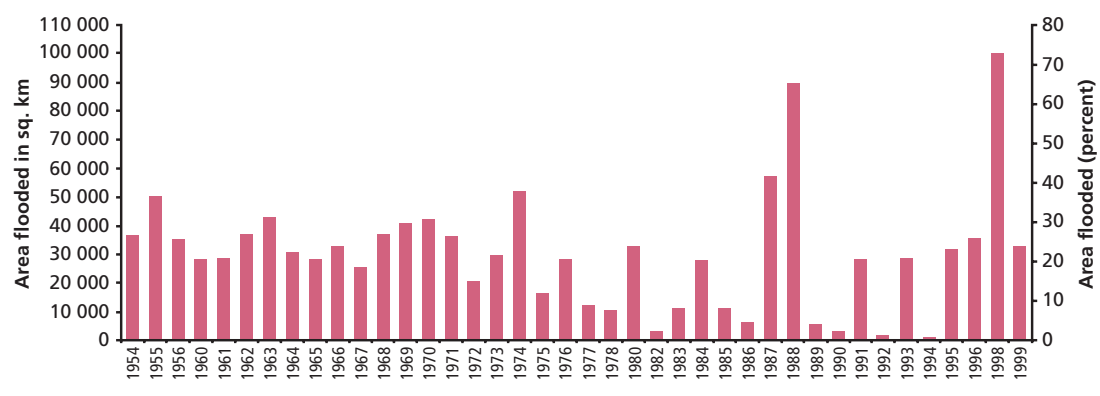
Risks and shocks

The Bangladesh Agricultural Research Council (BARC) has identified areas with high risk of natural calamities, such as flood, cyclone, drought and river erosion (see map in Annex 4). Almost every year different parts of the country are hit with at least one of these calamities. Floods, in particular, cause frequent harm and significant damage owing to the vast river system that drains water from the Himalayas through the country and the low gradient of the rivers on a mainly flat terrain; in some years flood destruction assumes catastrophic proportions.

Flood

With few exceptions, during the period from 1964 to 1999, more than 15 percent of the country's territory was inundated at some point each year (Figure 27). The worst recorded flood occurred in 1998 when more than 70 percent of the country was under water for 8–9 weeks and 55 of 64 districts were severely affected (see map in Annex 5). Substantial parts of the city of Dhaka were also submerged due to water logging and failure of drainage systems. A total of 29 million people were marooned and 18 million left in need of emergency food and health services (see detail on 1998 flood damage and government relief allocation by district in Annex 6).

FIGURE 27 Extent of floods 1954–1999



Source: LGED, unpublished

Effects of the 1998 flood: the BRAC studies

The poor usually suffer most when disaster strikes. During the 1998 flood, BRAC conducted a quick survey in rural and urban areas to assess the effects of the disaster and to measure asset damage and losses with the goal of developing a comprehensive need-based rehabilitation programme for BRAC's beneficiary households. The survey covered 11 of the worst affected districts in the BRAC programme (Manikgonj, Munshigonj, Chandpur, Sirajgonj, Pabna, Gaibandha, Kurigram, Gopalganj, Faridpur, Madaripur, and Chapai Nawabganj) and eight affected thanas of the city of Dhaka; the insights the survey gives, however, cannot be generalized for the entire country. The studies focused on a number of issues, including the struggle and coping strategies of the poor; health problems encountered during disaster; the sufferings of women and adolescent girls during flood; and the effect of flood on vegetable growers.

The BRAC study results indicate that issues affecting poor people during the 1998 flood included loss of material resources, fear of theft and extortion and separation from the established social network. Social networks were torn as many were forced to move their families and a few basic belongings (e.g. utensils and bedding) to nearby shelters and relief camps; in some cases, people even resorted to sleeping on main roads or embankments, and in several slums the poor raised the level of their beds and stoves with bamboo or brick. The most devastating loss for the poor, however, was the irreparable damage and subsequent loss of their houses.

BRAC statistics show the staggering devastation of the 1998 flood.

- Approximately 87 percent of rural and 45 percent of urban households suffered complete or partial damage to their homesteads.
- On average, the total loss of assets per household was Taka 7 301 and Taka 6 118 in rural and urban areas, respectively. Fifty-eight percent of rural and 31 percent of urban households lost some poultry, while 11 percent of rural and two percent of urban households lost cattle.
- Eighty-five percent of rural and 51 percent of urban households suffered from income loss and 33 percent of rural and 11 percent of urban households had to borrow from moneylenders in order to survive.
- Savings and loan payments were affected as 60 percent of BRAC microfinance programme beneficiaries could not deposit their regular savings or pay their loan installments during the peak of the flood. In urban areas, those who could manage to pay often did so by cutting food and other living expenses; borrowing from relatives, moneylenders or the husband's income; or selling productive assets.



- Meals were typically reduced from three to two a day owing to lack of access to food and constraints on food preparation, such as lack of dry goods and fuel. The diet of slum dwellers, who usually have little or no food stocks in the house, suffered greatly; rural residents suffered from a lack of green vegetables owing to the inundation of vegetable plots.
- Overall, the poor experienced increased uncertainty in employment, lack of access to basic health services, an increase in domestic violence and an increase in malnutrition.

Water, sanitation and health

Other major shocks resulting from the 1998 flood included the scarcity of safe drinking water and access to safe sanitation, especially for women and adolescent girls. While men often used boats or rafts to find appropriate places for defecation, women often were forced to urinate or defecate inside their own homes, after which they packed the waste in polythene and threw it in the flood water. Other women simply relived themselves while bathing in flood water, often in full public view along the roadside. Among those who resided in temporary shelters, pregnant and single young women faced the most difficulties; pregnant women suffered from lack of hygiene and medical care and young women faced the fear of harassment. As a result of unhygienic living, people suffered frequently from diarrhoea, respiratory infections, fungal skin infections on the legs and other skin diseases owing to prolonged submersion in dirty water.

Coping with the flood of 1998

Habituated with yearly flooding, the people in Bangladesh have developed mechanisms for coping with this type of natural disaster.

Shelter: People built bamboo platforms, raising the platforms as water levels rose, rather than leave their homesteads. When platforms could not be raised any further, people took refuge on roofs and later in nearby schools, empty buildings, under-construction buildings or even on nearby embankments, in culverts and along roadsides.

Poultry and livestock: To protect poultry and livestock, usually the most valuable productive assets of the poor apart from their houses, people constructed makeshift shelters in high dry places for themselves and for poultry and livestock; food was sometimes shared with animals when fodder was unavailable.

Transportation: Those who did not have access to a boat, a typical but somewhat expensive asset, sometimes constructed rafts from banana trees or used large cooking pots to swim to neighbouring houses.

Alternative income sources: Some who had access to financial resources bought boats and ferried people from one place to another; in urban areas, boat making became a booming business. Women suffered most as they were often forced to take shelter with relatives, borrow money, sell valuable assets or even beg for survival.

External Support: Government actions, which included providing vulnerable group development (VGD) cards to the flood-affected poor, agricultural loans and inputs like short-duration rice seeds and high-yield variety crop seeds, helped the poor to restart their businesses and, thereby, recover relatively quickly from their immediate losses. NGOs, such as the major microcredit providers (Grameen Bank, BRAC, Proshika), readjusted loan repayment schedules, which enabled the poor to cope with their emergency needs.

Effects of the 1998 flood: the IFPRI studies

The International Food Policy Research Institute (IFPRI) conducted a number of studies on the effects of the 1998 flood, reporting findings similar to those shown by the BRAC studies; a summary of the results are presented below.

Effect on food consumption

The landless rural poor reduced their number of meals eaten from three to two and also reduced the amount consumed to cope with the flood (Del Ninno and Roy, 1999). This practice was particularly evident for the landless, who ate even less and sometimes had to live on dry foods; females occasionally ate nothing at all.

Impact on labour market

Owing to complete damage of standing *aman* crops, the demand for post-harvest labour was significantly reduced. Thanas heavily dependent *aman* cultivation were affected most severely. Shifting from farm to non-farm wage labour was also difficult owing to lack of alternate employment opportunities. Some were able to engage in petty trading, transport, fishing and other low-return activities to cope with the loss of agricultural wages; others migrated to city centres and other areas not affected by the flood.



Distribution of relief

In response to the flood, the government of Bangladesh, NGOs and the donor community used a number of instruments to provide immediate relief to flood victims (Table 22). The criteria used for gratuitous relief (GR) allocation was the share of the number of affected people to the total population, the number of people in shelters and the total number of people reported dead. The allocation of vulnerable group feeding (VGF) cards was mainly based on the severity of losses. The overall distribution of relief was more or less consistent with need, with most of the resources going to the landless poor and some of the farmers.

TABLE 22 Distribution of relief to flood victims through targeted food programmes (rice and wheat in MT)

TIME	GRATUITOUS RELIEF (GR)	VULNERABLE GROUP FEEDING (VGF)	TEST RELIEF (TF)	FOOD FOR WORK (FFW)	TOTAL
Jul.-Oct. 1998	63.9	3.4	87.2	21.0	175.5
Nov. 1998	2.1	25.7	55.0	2.4	85.2
Dec. 1998	0.7	18.0	79.5	16.6	114.8
TOTAL	66.7	47.1	221.7	40.0	375.5

Source: FPMU

Role of government in relief operations for the poor

The government plays an important role in providing relief to the distressed, particularly during natural disasters. To protect the poor from natural disasters and other types of economic and non-economic shocks, the Bangladesh government is working in concert with NGOs and international donor agencies to provide social safety nets (Table 23.) In 2001/02, total government spending on these programmes was approximately one percent of gross domestic product (GDP) and 5.6 percent of total government expenditure.

Table 23: Distribution of relief through targeted food programmes

TYPES OF PROGRAMME	1999/2000 (RICE AND WHEAT IN THOUSANDS OF TONNES)	2001/02 (MILLION TAKA)
Gratuitous Relief (GR)	20.32	291
Vulnerable Group Feeding (VGF)	149.14	218
Test Relief (TF)	124.51	1452
Food for Work (FFW)	554.82	9 920
Vulnerable Group Development (VGD)	216.68	2 294
Food for Education (FFE)	285.97	4 610
Other*	57.69	943
TOTAL	1 351.44	19 728

Source: Ministry of Finance and Planning

* included are programmes for orphan children, distressed/widowed/divorced women, the elderly and poor freedom fighters.

During the lean food season – i.e. the pre-harvest period of *aman* (September to November) and *boro* (March to April) – when demand for agricultural labour is very low, the poor become highly food insecure. Over the years, Bangladesh has made notable progress in reducing seasonal price fluctuations of staple cereal food (Figure 15), as well as dealing with natural disasters. The country achieved self-sufficiency in rice production in the late 1990s with the adoption of new high-yield varieties. Reforms of input markets, particularly for fertilizer, irrigation equipment and seeds, and improvement in infrastructure have helped spur agricultural production. Improvements still need to be made, however, in identifying the poor¹⁰, particularly in terms of geographical targeting. For all government-funded programmes except the VGD programme supported by WFP, resources are allocated to the different geographical locations strictly according to population.

¹⁰ A World Bank analysis shows that approximately one-fourth of the population meeting the selection criteria of the food insecure belong in the richest two quintiles. Although land ownership and occupational class, two factors being used to target the poor and vulnerable, poverty and vulnerability also correlated with other factors.