

## Food Security in Bangladesh: Progress, Current Crisis and Future Challenges

Dr. Mahabub Hossain

Executive Director, BRAC

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## Definition of food security

" Access by all people at all times to enough food needed for an active and healthy life. Its essential elements are the availability of food and the ability to acquire it". (Reutlinger, 1985)

National level:

**Availability** of sufficient stocks to meet domestic demand till the stock can be replenished from domestic production and/or imports

Individual level:

**Access** to food from own production, market and/ or from government's transfer mechanism

## AVAILABILITY OF FOOD

### Availability: Domestic production

- Production of the staple food - rice and wheat - has increased at a faster rate than population
- During this decade however production has remained almost stagnant as:
  - Wheat is giving way to maize as livestock feed
  - Technological progress in boro production is getting out of steam
  - Aman production being affected by erratic monsoon due to climate change
- Production of potato and other vegetables have had satisfactory growth, particularly in recent years
- The production of pulses, oilseeds and sugar have experienced an absolute decline in production due to limited technological progress

### Trend in the production of major food items, 1970 to 2006

Food items	Production in 000 tons			Growth rate(%/yr)	
	1970-72	1999-01	2004-06	1971 to 2000	2000 to 2006
Cereals	10,584	26,002	26,539	3.2	0.4
Rice	10,393	24,126	25,962	3.0	1.4
Wheat	111	1,807	988	10.2	-10.5
Potatoes	1,637	3,342	4,308	2.5	5.2
Vegetables	1,182	1,794	1,815	1.5	2.3
Pulses	376	379	310	0.0	-4.2
Oil crops	250	486	245	2.3	-12.8
Sugar	1,367	955	737	-1.2	-5.0
Fruits	1,384	1,869	2,670	1.0	7.2

Source: Hossain et al (2005): BBS (October 2006)

### Rice as a strategic commodity for food security

- ❑ Famine in 1974: political sensitivity about rice
- ❑ Rice accounts for 71% of cropped area, 94% of food grain production
- ❑ Government concerned in maintaining stable supply of rice at affordable prices

### Does Bangladesh produce enough cereals to meet domestic needs?

Indicators	1999-2000	2005-06
Population (million)	128	139
Per capita need( Kg year)	166	166
Total need (million ton)	21.2	23.1
Domestic production (million ton)	26.00	27.3
Deduction for seed, feed and wastage(10%)	2.60	2.73
Availability for consumption	23.40	24.57
Supply - demand gap 1	<b>2.20</b>	<b>1.47</b>
Estimate of need for nutritional adequacy	22.9	24.9
Supply-demand gap 2	<b>0.50</b>	<b>-0.33</b>

If official statistics are reliable Bangladesh had a surplus production in year 2000, and at most a marginal deficit in 2006

### Inconsistency of official statistics on area under rice and wheat production,2005

Crops	Census estimates		official statistics		Estimate of production (000 tons)
	1996	2005	1995-96	2004-05	2004-05
Aus rice	1680	1081	1664	1039	1,840
Aman rice	4270	4247	5648	5432	8,600
Boro rice	2486	3754	2755	4068	13,630
Wheat	616	363	640	479	710
Cereals	9052	9445	10707	11108	24,780

- The area under cereals reported in official statistics is about 1.7 million ha higher than that estimated by agricultural census
- The over-estimate is mainly on account of aman rice
- If the estimates from census are accurate, the domestic production would be about 2.5 million tons less than that reported in official statistics

## Trend in imports of major food items (000 tons)

Food items	1970-72	1999-01	2004-05
Rice	511	872	1294
Wheat	971	1969	638
Sugar	23	230	678
Pulses	-	245	347
Oil	51	904	1229

- Bangladesh has always been importing cereals to meet domestic demand
- In normal years, Bangladesh imports about 2.0 million tons of rice and wheat
- In years of natural disasters, the import goes up to about 15 per cent of domestic demand

## ACCESS TO FOOD

## Marketable surplus of rice, by landownership group, 2003-04

Land owned (ha)	Share of the group(%)	Production of rice(ton/household)	Consumption requirement (ton/household)	Marketable surplus ton/household	Rate of surplus
Own only homestead	25.7	0.42	1.33	-0.91	-68
Up to 0.20	12.8	0.65	1.50	-0.85	-57
0.21 to 0.40	12.8	1.26	1.57	-0.31	-20
0.41 to 1.00	20.2	1.98	1.62	0.36	22
1.01 to 2.00	8.9	3.65	2.05	1.51	74
2.01 & over	4.6	7.32	2.48	4.84	195
Total	100	100	1.58	-0.07	-4

Source: Bayes and Hossain(2007)

- o Marketable surplus of rice is generated in households who own more than 0.4 ha of the land
- o nearly two third of rural households has rice deficits, who are adversely affected by rising rice prices
- o About 15% of households who own over 1.0 ha of land market substantial amount and gain from rising rice prices

## Access to food: consumption of different food items, Estimated by HIES

Food item	Intake for balanced nutrition (gm/person/day)	Rural area			Urban area		
		1983-84	1991-92	2005	1983-84	1991-92	2005
Rice	390	421	481	477	351	416	389
Wheat	100	65	42	12	79	55	28
Vegetables and potatoes	225	140	176	221	179	209	228
Pulses	30	26	17	13	22	22	19
Fish	45	29	32	40	39	48	50
Meat & egg	34	10	12	18	22	20	32
Milk	30	22	18	32	34	23	36
Total	934	741	797	921	761	843	895

Source: BBS, Report of HIES, various years

- o Food consumption has increased substantially overtime and is approaching balanced nutrition
- o Substantial decline in the consumption of wheat and pulses but consistent increase in the intake of vegetables, oil, fish and meat, indicating an improvement in the quality of diet
- o The consumption of cereals has started declining in both rural and urban areas with increased consumption of other food items

### Trend in the prices of quality food, relative to rice

Year	Pulses	Oil	Fish
1975-77	1.6	6.1	4.2
1980-82	1.9	4.7	4.7
1990-92	2.3	4.9	6.9
1998-00	2.6	4.3	8.8
2005-06	2.8	4.1	9.5
February 2008	2.8	3.4	6.3

**The increase in relative price reflects shortage of other food items, relative to rice**

### Trend in poverty in Bangladesh, 1983-2005

Year of survey	Rural	Urban	Rural	urban
1983-84	54	41	5.9	4.4
1991-92	53	34	5.6	2.8
2000	44	26	4.0	2.3
	(52)	(35)	(4.9)	(3.3)
2005	44	28	3.1	2.1

Source: Ravallion and Sen(1996), Sen and Hume(2004) BBS, HIES(2005)

- o Considerable progress in poverty reduction for both rural and urban areas, irrespective of the poverty measures
- o Improvement better in recent years, due to acceleration in economic growth
- o The incidence of poverty still remains very high at 40 percent, 44% for the rural and 28% for the urban area

### Trend in real agricultural wage rates, 1983-84 to 2006

Year	Nominal wage rate(Tk/day)	Price of coarse rice(Tk/kg)	Real wage in rice equivalent(Kg/day)
1983-84	19.58	7.29	2.7
1991-92	41.77	11.08	3.8
1995-96	45.58	12.58	3.7
2000-01	57.81	11.62	5.0
2005-06	89.83	15.80	5.7
2006-07	96.33	18.96	5.1

- o The real wage for agricultural laborers has a consistent upward trend
- o In 2005, it was equivalent to 5.7 kg of rice, about 60% higher than the minimum wage stipulated by the land reforms commission, 1984
- o The labor market has become tight; the wage rate responds to rice prices

### Trend in the food consumption of the bottom and the top quintile groups (gram/person/day)

	Bottom 20 percent households			Top 20 percent households		
<b>Rural area</b>	1983-84	1991-92	2005	1983-84	1991-92	2005
Cereals	332	386	427	665	647	521
Vegetables	98	119	224	228	261	231
Pulses	5	8	8	22	28	16
Fish	12	13	21	51	60	64
<b>Urban area:</b>						
Cereals	315	413	417	516	470	417
Vegetables	107	142	207	282	284	287
Pulses	11	16	11	33	29	26
Fish	18	25	30	62	81	89

Source: Hossain et al (2005) for 1983-84 and 1991-92, and own estimate for 2005 based on BBS HIES report 2005

- o The gap in the consumption of cereals and vegetables for the poor and the non-poor households has almost disappeared
- o The gap in the consumption for better quality food has also been reduced, but still remains substantial

## TARGETING THE POOR : SAFETY NETS

### Seasonal variation in the whole sale price of rice, 1975-77 to 2001-02 (De-trended co-efficient to variation)

Period	Nominal price	Real price
1975/76 to 1992-93	12.2	10.0
1993/94 to 2001-02	10.0	7.4
1975/76 to 2001-02	14.6	9.3

### Seasonal variation in rice prices around years of natural disasters

Year	Type of year	Coefficient of variation in monthly price
1977-78	Normal	5.8
1978-79	Drought	17.7
1979-80	Normal	8.4
1985-86	Normal	6.7
1986-87	Flood	12.1
1987-88	Flood	8.3
1996-97	Normal	6.3
1997-98	Flood	15.7
1998-99	Normal	6.1

o Seasonal price fluctuations has reduced over time

o Transitory food insecurity problem remains due to increase in prices in years of natural disasters

o Chronic food insecurity (monga) at times of the year remains a problem

### Changes in policies to address seasonal price fluctuation and food insecurity for vulnerable groups

- o Public food distribution system initiated to stabilize market prices and to supply subsidized food to targeted consumers and vulnerable groups
- o A policy of progressively greater reliance on market force in achieving food security since early 1980s
- o A gradual roll-back of subsidies on monetize channels, with withdrawal of rationing systems
- o Increasing allocation through non-monetized channels to support safety nets programs- FFW, FFE, VGF, VGD etc
- o Initiation of open market sales as a method of price stabilization
- o Private sector allowed to import food to help market stabilization during period of rising prices
- o From food for work to cash for work program
- o Reduction in the stock holding from 15 million tons in the 1970s to 0.6 million tons in the 1990s

### Trend in PFDS off take and share of monetized channels

Year	PFDS (000 mt)	Share of monetized channels(%)
1973-74	2067	93
1980-81	2009	77
1985-86	2089	63
1996-97	1391	10
1998-99	2134	12
2000-01	1774	15
2001-02	1464	17
2003-04	1083	27
2004-05	1366	37
2005-06	1246	28

o Substantial reduction in supply of food through government channels

o The share of monetized channels has been on the decline till mid-1990s by late 1990s

o It reversed somewhat with the introduction of cash for work for program in recent years

# THE FOOD CRISIS

## The current food security crisis: International scenario

- ❑ Since 2000, near stagnant of production against increase in demand led to depletion of rice stocks in the international market
- ❑ Rapid build up of capacity for bio-diesel and ethanol production led to increase in demand for agricultural produce as feed
- ❑ Prices increased by 15% per year during 2001-06 period, part of the increase is due to appreciation of Asian currencies
- ❑ Upward pressure in the price of rice and wheat in the Indian market due to erratic monsoons and depletion of stocks
- ❑ Government imposition of successively higher export price in India triggered abnormal increase in prices in the World's market over the last six months
- ❑ The import parity prices has become the ruling price in the domestic market in Bangladesh

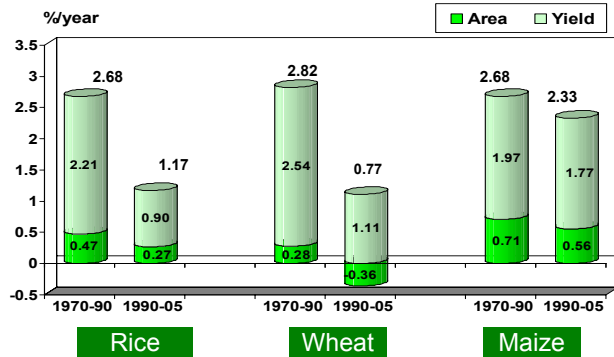
## Food crisis: the national scenario

- ❑ The immediate crisis is alarming
- ❑ Doubling of the price within one year seriously erodes the capacity of below poverty-households to access staple food
- ❑ The present high level of rice intake can help withstand substantial reduction in consumption without affecting physical ability
- ❑ Availability of substitute food- potatoes and vegetables may induce poor households to change food habits under pressure
- ❑ The tightness in the labor market: agricultural wages and service change in the informal sector may increase may partly compensate the negative effect of rising prices
- ❑ The groups at high risk are industrial workers, and low-paid government employees with fixed incomes
- ❑ The government must build-up stocks for expanded subsidized food distribution and operation of safety new program
- ❑ Bulk of rice will come to market during may-July period
- ❑ The government must engage in substantial domestic procurement of food grains to build-up stocks to check possible deterioration of the situation in October-November

## The upward trend in price: Is it going to stay?

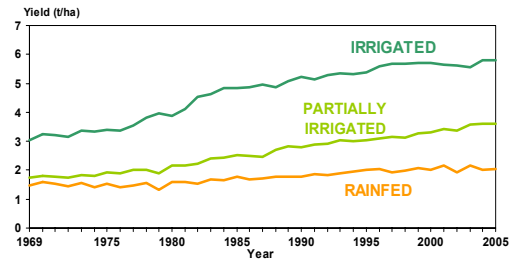
- ❑ Agricultural prices in the world market has had a secular downward trend with short term cyclical fluctuations off and on
- ❑ High prices and profitability induce growth in production through investment in irrigation and land augmenting technological progress, thereby depressing prices
- ❑ The supply response may be limited this time
  - Not enough excess capacity for increasing production
  - Technological progress getting out of stream in the irrigated ecosystem
  - climate change induced Erratic monsoons and not availability of appropriate technology constrain increase in production from the rain fed systems
  - Rapid increase in demand for agricultural produce as feed in the vastly expanding bio-fuel industry
  - Increase in prices of fertilizers and fuel puts an upward pressure on the cost of production
- ❑ It is projected that the high prices going to stay till 2012

## Sources of growth in cereal production, 1970-2005



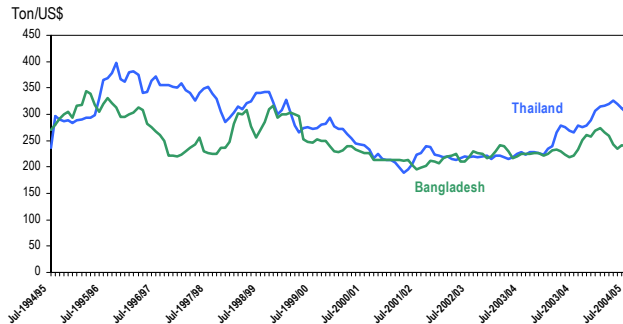
- The growth in production has substantially slackened for all cereals during recent years

## Trend in rice yield, irrigated and rainfed environments, 1969-2005



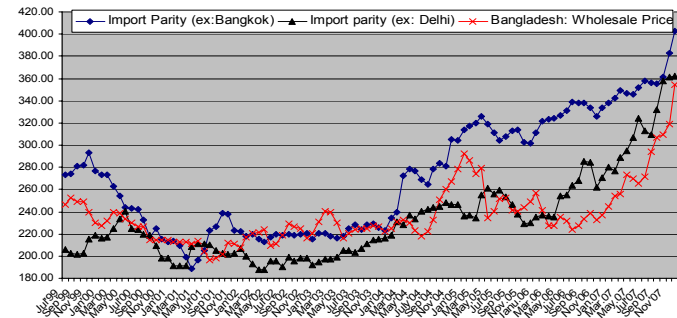
Ecosystem	No. of countries	Rice area (m. ha)	Rice yield (t/ha)			Growth in yield (%/yr)	
			1969-72	1990-92	2003-05	1970-90	1990-05
Irrigated	19	45.1	3.17	5.14	5.73	2.8	0.7
Partially irrigated	22	63.1	1.78	2.84	3.60	2.4	1.7
Rainfed	24	18.5	1.53	1.81	2.06	0.9	0.8

## Trend in rice price in Bangladesh compared to the world market, recent period



- Domestic prices remain lower than world prices during the last decade
- Contributed to poverty reduction of the vast majority of rural landless and urban labor class

## Comparison of domestic prices with import parity price FY 00- FY 08



## The trend in the price of rice in the World market

Year	Thailand parboiled rice	Vietnam 5%broken	India 25% broken
2003	196	183	163
2004	247	224	No export
2005	285	255	236
2006	300	266	247
2007	332	313	292
September 07	328	313	302
December 07	381	360	335
January 08	389	377	495
February 08	492	444	615
March 08	710	730	1000

## Sustaining food security in future

- Re-evaluation of policy: Back to self sufficiency from self- reliance
- An increase in population by almost 2 million every year means that we must target in increase in production by 0.35 million tons of rice every year
- In addition, the current deficit of 2.5 million tons to be covered by domestic production
- A 3.5% annual growth in rice production to be targeted to ease the situation within the next five years
- Increase R&D investment will take time to have effect
- Possible medium -term measures
  - Adoption of hybrid rice
  - Use of quality seeds
  - Reducing yield gaps through better crop management
  - Efficient operation of input markets

## Conclusions

- Progress in achieving food security has helped in withstanding the crisis somewhat
- For staple food self- sufficiency is a more sensible policy than self-reliance
- The government must increase capacity to operate a subsidized food distribution system, to stabilize prices and assist the vulnerable groups