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**FOOD SECURITY AND CONTAINING ESCALATION IN PRICES**  
*FACTS AND IMPLICATION FOR POLICY*

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## **Introduction**

1. Food security is defined as “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). It is important to view food security from both national and individual angles. At the national level food security means the availability of sufficient stocks of food in the country to meet domestic demand until such time as stocks can be replenished from harvests or imports. At the individual level, it means that all members of the society have access to the food they need, either from their own production, from market and/or from the government’s transfer mechanism.

2. In view of repeated experience of famine during the Second World War and the early 1970s, for long periods, food security was synonymous with achieving self-sufficiency in rice production and stabilization in rice prices. A doubling of rice production from the mid-1970s to the turn of the last century, improvements in road and communication infrastructures and increased real incomes made possible by general economic development have transformed the Bangladesh food economy. Indeed, Bangladesh passed a major milestone in its efforts to achieve food security at the end of the 1990s, since for the first time in its history, food grain production exceeded target requirements (based on 454 gm/person/day).

3. Yet food security has not been achieved, and whatever progress has been made would be difficult to sustain in view of the growing pressure of population on extremely scarce natural resources. Domestic food grain production remains susceptible to floods and droughts thereby perpetuating the threat of major production shortfalls and inadequate food availability. Moreover, increases in cereals production have not been accompanied by significant increases in availability of other foods. Over 40% of the population lives below the food consumption-based poverty line, lacking sufficient resources to afford diet of 2,122 kilocalories (kcal) per person per day, along with other basic necessities. The recent hike in food prices severely affected the livelihoods of these poor households.

4. Apart from the prevailing deficit in total calorie intake, the normal diet of Bangladeshi people is seriously imbalanced, with inadequate consumption of fat, oil and protein, and with more than 80 per cent of calories derived from cereals. Women and children are especially vulnerable due to their greater nutritional requirements. This dietary imbalance reflects insufficient domestic production of non-cereal foods (pulses, oilseeds, meat, milk and eggs), low incomes, food preferences and lack of nutrition education. Moreover, the general health environment and caring practices compound the problem of inadequate food intake, further contributing to poor nutritional outcomes.

## **Production and availability of food**

5. Major items in the food basket in Bangladesh are rice, wheat, pulses, potato, vegetables and fish. These food items account for almost 85 percent of the total calorie and protein intake. Rice and wheat alone contribute to 74 percent and 57 percent of the total per capita calorie and protein intake respectively. Other food items which are considered essential are pulses, oil, and spices such as chilies, onion and salt.

6. Rice production declined in absolute terms immediately after the Independence in 1971 due to the destruction of infrastructure during the Liberation War and the consecutive natural disasters. The country faced severe food insecurity and famine in 1974-75 due to the shortfall in domestic production caused by floods, and unavailability of imports which led to a skyrocketing of the price of rice.. However the growth of cereal production resumed from 1976 and had almost an unhindered growth since then (except for a short period in the early 1990s). The growth in rice production kept pace with population growth in the 1980s, and by a significant margin in the late 1990s. The growth of production again stalled during the first half of this decade.

7. The respectable growth in rice production was propelled by adoption of high-yielding modern varieties of rice, facilitated by an expansion of irrigation infrastructure. More than half of the cultivated land now has access to irrigation facilities, developed mostly by private investment on small-scale shallow tubewells and power pumps. The adoption of modern rice varieties has reached almost 80% of rice cropped area. Only in the deep-flooded areas in the depressed basins, and in the salinity affected coastal areas farmers still grow low-yielding traditional varieties. Almost 90% of the growth in rice production came from the increase in yields made possible by the technological progress in rice cultivation. The dry season irrigated boro rice

contributed to over 80 percent of the increase in rice production since independence, and now accounts for over 55 percent of the total rice production in Bangladesh. The easy ways of increasing production has already been exploited. Without development and diffusion of technologies for the unfavorable environments (salt-affected coastal areas, flood-prone areas in the Northwest, Char lands, etc), sustaining the growth in rice production will be difficult.

8. Bangladesh does not have a favorable agro-climatic environment for growing wheat because of the short winter season and heavy soils. Wheat is grown mostly in the north-western region of the country which has a relatively longer winter period. Till the late 1960s wheat was an unimportant crop occupying less than one percent of the cropped area. The availability of high-yielding modern varieties in the late 1970s induced farmers to grow more wheat replacing low-yielding dry season crops such as pulses and oilseeds. The area under wheat expanded exponentially from 126,000 ha in 1976 to 676,000 ha in 1985, while the production increased from 117,000 tons to 1.46 million tons. The expansion was halted over the next decade when expansion of ground water irrigation through shallow tube wells lead to rapid expansion of boro rice cultivation. Wheat production picked up again since 1996 due to a favourable trend in the price of wheat relative to rice. Recently, maize has been replacing wheat because of its higher yield and profitability and suitability to the agro-ecological conditions in Bangladesh. Wheat now accounts for less than 4% of the total cereal production.

9. In the context of food security, an important point to note is that the cereal production has become more resilient to natural disasters over time because of the dramatic change in the seasonal composition of production. The area under the early-monsoon low-yielding aus rice (April to July) has been reduced from 3.5 to 1.1 million ha; so the loss of production from the late arrival of the monsoon rains (drought) is now substantially lower than it was earlier. Similarly, the area under the direct-seeded deep-water aman rice (March- November) has been reduced from 2.2 to 0.7 million ha, substantially reducing the crop losses from floods. In the deeply flooded area, farmers now keep the land fallow during the monsoon season or practice pond aquaculture with raised embankments, and grow high-yielding boro rice crop (February to June) with irrigation. The boro rice area has expanded from 0.5 million ha in the early 1970s to nearly 4.5 million ha by 2008. The boro rice together with wheat now brings nearly 60 percent of the cereal production during the March to June period; their share of the total cereal harvest was less than 10 percent in the early 1970s. The farmers can now recover the loss from the traditional monsoon season aman crop within four to five months, while earlier they had to wait for a year to recover the losses. This change in the seasonal composition of production also had a smoothening effect on the seasonal variation in rice prices.

10. The rapid expansion in the production of cereals was achieved partly through reduction of area and production of pulses and oilseeds and sugarcane. Pulses and oilseeds are important sources of protein and micronutrients, particularly for the poor. The reduction in the production of these crops has negative effect on nutritional balance. Recently, the production of oilseeds has picked up, but the decline in the pulses and oilseeds has accelerated.

**Table 1: Long-term trend in the production of major food crops; 1970-2007.**

Food item	Production in '000 tons				Growth rate (%/yr)	
	1970-72	1990-92	1999-01	2006-07	1971-2000	2000-2007
Cereals	10584	19223	26002	28056	3.1	1.3
Rice	10393	18157	24126	27318	2.9	2.2
Wheat	111	986	1807	737	10.1	-7.8
Potatoes	1637	1715	3342	5167	2.5	10.8
Sugar	1367	991	995	851	-1.2	-2.4
Pulses	376	518	379	259	0.03	-4.3
Oil crops	250	466	486	683	2.3	5.7
Vegetables	1182	1354	1794	1862	1.4	0.6
Fruits	1384	1338	1369	3319	-0.04	13.5

Source: FAO 2004, Food Balance Sheet and Bangladesh Bureau of Statistics..

11. Bangladesh has substantial biological and physical resource base for fish production. In terms of nutrition, fish also occupies a significant position in the dietary habits of the people. The growth in fish production was sluggish in the 1970s. The growth picked up in the 1980s, and was very rapid (7% per year) in the recent years due to rapid expansion of pond aquaculture. The growth in the production of meat and milk has remained unsatisfactory despite the expansion of the poultry industry, while their demand has been growing fast.

### **Trend in imports and availability of food**

12. Availability of food at the national level depends not only on domestic production but also on imports and exports. Except shrimp, Bangladesh does not export any other food item. But the country is heavily dependent on imports of almost all food items to meet the demand from growing population. Despite the favorable trend in the domestic production over the last three decades, Bangladesh is not yet self-sufficient in cereal grains. The imports of rice remained stagnant at around 0.5 million tons per year, with substantial increase in imports in years following poor harvests due to floods and droughts. Bangladesh imported over 2.0 million tons of rice during 1973-75, 1988-89, and 1998-99; all these years followed years of disastrous floods or droughts. In 1999-2000 following the disastrous floods of 1998, Bangladesh imported over 3.5 million tons of rice and wheat. In a few odd years (1991, 2000) following bumper harvests, the government declared achieving self-sufficiency in rice production, only to find that it slipped back to import dependence due to increasing demand from growing population.

13. The rapid increase in imports of rice in recent years raise question about the accuracy of the official statistics on rice production on the basis of which the food balance sheet data indicate surplus rice production in the country. The Report of the National Level Sample Survey conducted in 2005 showed the area under aman rice was one million ha less than that reported in the Statistical Yearbook. If the Survey data is correct, total rice production in Bangladesh would be three million ton less than that is reported in official statistics. This inconsistency of the data from the same source needs to be resolved for effective policy making.

14. Bangladesh used to receive substantial amount of wheat from outside the country, mostly in the form of food aid. Commercial import of wheat has increased consistently over time despite the rapid growth in domestic production due to the reduction in food aid in recent years. The volume of imports increased from 1.0 million tons in the early 1970s, to 1.4 million tons in the early 1990s, and further to 2.0 million tons during the 2000-02 and continues to grow since then. Recent imports are mostly on account of the private sector. Wheat is an inferior table food in the Bangladeshi diet, but the demand has been growing due to urbanization and the practice of eating away from home by the rising urban middle class.

15. The other food items for which imports have been growing very fast are oils, pulses, sugar, milk and fruits. The rapidly rising imports of these food items are becoming a major drain on the limited foreign exchange earnings of the country. The government has adopted a policy of promoting crop diversification to reduce the dependence on imports, but without much success.

16. Food aid has played an important role in meeting the domestic food demand. In the early years after independence, the country faced major food deficits, most of which was taken care of through grain imports from the United States under the PL 480 program. Between 1975 and 1977, more than 1.3 million metric tons of food grains came into Bangladesh as food aid, which was more than 85 percent of the total inflow of food grain. Increases in domestic production and augmented capacity of the government to import foodgrains commercially have resulted in the food aid imports to decrease over time.

17. In conclusion, the food availability at the national level barely kept pace with the population growth till the mid-1990s. The situation improved since the late 1990s particularly for cereal grains and potato, due to acceleration in the growth of rice production and the success in reducing the growth of population. The growth of population declined slowly from about 3.0% in the 1960s to 2.4% in the 1980s, but then sharply to 1.4% in the 1990s. The per capita availability of most other food items however declined over the last three decades, despite the sharply upward trend in imports.

## Adequacy of food consumption

18. Food accounts for bulk of the household expenditure of the poor. According to the 2005 Household Expenditure Survey, the poorest 40 percent of the population spend 70 percent of their income on food. In spite of this, a large segment of the population consumes less than 1805 kcal per capita per day, which is much below the norm of the minimum energy intake of 2,110 kcal, for living a healthy productive life.

19. The level of consumption of different food items reached in 1990s as estimated in the Household Income and Expenditure Surveys (HIES) of the Bangladesh Bureau of Statistics (BBS) can be reviewed from Table 2. The table also compares the level of food consumption with the normative food requirement prescribed by the National Nutrition Council for the average Bangladeshis for having a balanced nutrition and living a healthy productive life. It can be noted that for rural areas the consumption of rice, the dominant staple food for Bangladeshis, reached a level much higher than the minimum requirement; there is a marginal deficit for tubers and vegetables and fish; and substantial deficits for pulses, oils and livestock products that are major sources of protein and micro-nutrients. The picture is almost the same for urban areas, except that the consumption of cereals is lower compared to rural areas while the consumption of most other food items is higher. It appears from the composition of the diet that the quality of the food basket is better for urban areas compared for rural areas.

20. The total consumption of food continues to increase in rural areas, but the total intake is still about 11 percent lower than the minimum requirement, and the deficit is mostly on account of non-cereal food as mentioned earlier. For urban areas, total intake has declined in the 1990s and the present level of intake is still about 13% lower than the minimum requirement. Over time, there has been substantial decline in the consumption of wheat and pulses but respectable increases in the consumption of vegetables (including potatoes), fruits and fish. The upward trend in the consumption of vegetables and fruits reported by HIES is in contrast to the declining production obtained from the food balanced sheet data. It is a general perception that the official statistics under-report the recent growth in vegetables and fruit production in Bangladesh.

21. The decline in the food intake in the 1990s for urban areas is mostly on account of the decline in the consumption of rice. This is in contrast to the substantial increase in rice production since the late 1980s, as reported earlier. The general pattern of consumption observed during the process of economic transformation is that the staple food has the lowest income elasticity of demand, which also declines with the growth of income. After a threshold level of income, when consumers can afford to have a diversified diet needed for balanced nutrition, the per capita consumption of staple food starts declining.

**Table2. Consumption of different food items, 1983-84 to 2005,**  
(gm/person/day)

Food item	Minimum intake required for balanced nutrition	Rural area				Urban area			
		1983-84	1991-92	2000-01	2005	1983-84	1991-92	2000-01	2005
Rice	390	421	481	479	477	351	416	383	389
Wheat	100	65	42	18	12	79	55	40	28
Vegetables & potatoes	225	140	176	193	221	179	209	198	228
Pulses	30	26	17	15	13	22	22	19	19
Oils & fats	20	7	9	11	11	11	16	18	18
Fish	45	29	32	37	40	39	48	42	50
Meat & eggs	34	10	12	14	18	22	20	34	32
Milk	30	22	18	29	32	34	23	32	36

Sources: Bangladesh Bureau of Statistics (series), Report of the Household Income and Expenditure Survey, various years.  
Bangladesh National Nutrition Council for the norm of minimum food intake required for balanced nutrition, as cited in GDB (1999)

22. Does the declining rice consumption in urban areas indicate that Bangladesh has reached that level of consumption threshold at least for the urban areas? This is a controversial issue. It could be argued that the decline in rice consumption is a reflection of the upward trend in the proportion of slum population in cities emanating from the rapid rural-urban push migration, and the higher pressure for expenditures on transport, education and healthcare which could reduce the income available for the purchase of staple food.

23. Delving deeper into the trends in food consumption, a look at the consumption for the lower 40% of the population in the expenditure scale reveals that only rice intake has continuously increased. This contrasts with falling rice consumption for overall expenditure groups. Thus, it appears that while the richer sections of the society are being able to gradually reduce their cereal intake and diversify their diet, the poor are still spending their incremental income on rice. For all the other food items, consumption for all income groups either stagnated or declined. From the nutritional point of view, this implies that the intake of an unbalanced diet has worsened over the years for the poorest section of the population.

24. The trends in food intake during the past decade shows that consumption of pulses has substantially decreased for the population belonging to upper expenditure quintiles, while for the lower quintiles the decrease has been dramatic. The consumption of fish has also declined between 1991-92 and 2005 for the lowest and the highest quintiles. This reduction in the consumption of protein rich foods may be attributed to a decline in the accessibility. A look at prices of pulses and fish relative to rice show that the prices of these two commodities have soared over the years - an indication of relative scarcity. During the mid-70s, price of pulses was around one and half times that of rice while fish was valued at four times the rice price (Table 3). Prior to the recent rice crisis, the price ratios had soared to 2.6 and 8.8. Another food item for which the growth of production was relatively stagnant was oilseeds, but the consumption has increased at a respectable rate for poor and the rich alike due the rising imports of cheap soybean and palm oil. The price of oils relative to rice has in fact declined over time, indicating the relative abundance of this food item.

**Table 3: Trend in the prices of pulses, fish and oils relative to rice, 1975-2006.**

Commodity	1975-77	1980-82	1998-00	2005-06
Pulses/ Rice	1.5	1.9	2.6	2.8
Fish/ Rice	4.2	4.7	8.8	9.5
Oils / Rice	6.1	4.7	4.3	4.1

Source: Authors' calculations based on BBS (various years).

### Absorption of food for better nutrition

25. The national Nutrition Surveys conducted by the Institute of Nutrition and Food Science of Dhaka University report a consistent decline in the energy intake till the mid-1990s. More recent data is not available. The per capita energy intake for rural people reportedly has declined from 2251 Kcal during 1962-64 to 2094 Kcal in 1975-76, 1943 Kcal during 1981-82, and further to 1892 Kcal in 1995-96 (Table 4). The decline in the protein intake was even sharper. In contrast, the HIES data show that during the early 1980s and 1990s, per capita calorie intake went up steadily for the rural population but declined for the urban population due to the reduction in per capita cereal consumption. Between 1991-92 and 2000, urban per capita calorie intake fell by about 5 percent from 2258 kcal to 2150 kcal. Thus the picture on the trend in nutritional status obtained from different sources is confusing. It remains an issue of great controversy among the elites.

**Table 4. Changes in nutrient intake in Bangladesh: estimates from national nutrition surveys.**

Nutrient	Rural areas				Urban areas	
	1962-64	1975-76	1981-82	1995-96	1962-64	1995-96
Calorie (Kcal)	2251	2094	1943	1892	1777	1779
Protein (gm)	57.5	58.5	48.4	46.4	49.7	49
Fat (gm)	17.7	12.2	9.8	14.1	26.1	22.5
Carbohydrate (gm)	476	439	412	395	327	345

Calcium (mg)	304	305	260	328	239	363
Iron (mg)	9.7	22.2	23.4	11	8.7	12.7
Vitamin A (I.U)	1590	730	763	1571	1875	2017
No. of sample households	1752	674	597	975	588	270

Source: Jahan K. and Hossain Mosharraf, 1998. Nature and Extent of Malnutrition in Bangladesh. Institution of Nutrition and Food Science, University of Dhaka

26. During the last two decades, Bangladesh has made significant progress in several areas such as higher child immunization rates, augmented life expectancy, lower infant mortality, declining total fertility rates and greater people having access to safe water. Despite these gains, the public health scenario is dismal in Bangladesh. Access to adequate healthcare still eludes many. Prevalence of malnutrition, particularly child malnutrition is very high here. More than 50 percent of all children between 6 and 71 months are underweight or low weight-for-age, while nearly 50 percent of them are stunted or low height-for-age (Table 5). In this context, reference may be made of the “Asian enigma”; the ‘enigma being that even sub-Saharan Africa has a lower proportion of malnourished children (32 percent) than South Asia (more than 50 percent) despite the former having lower income and worse environmental health compared to the latter.

**Table 5. Rural - urban difference in child malnutrition (6 - 71 months), Bangladesh, 2000.**

State of malnourishment	(Percent)		
	Wasted	Stunted	Underweight
<b>Moderate / severe</b>			
Rural	11.9	50.7	52.8
Urban	10.8	38.3	42.2
<b>Severe</b>			
Rural	1.0	19.7	13.2
Urban	1.8	15.1	9.6

Source: Child Nutrition Survey of Bangladesh, 2000.

27. Acute and chronic malnourishment is unusually high in Bangladesh with about 20 percent of both boys and girls severely stunted and about 12 to 14 percent boys and girls severely underweight. Rural-urban disparity in child malnutrition is quite stark with the percentage of rural malnourished children being significantly higher than that of urban areas. More than 50 percent of the rural children are stunted or underweight with about 20 percent severely stunted and about 13 percent severely underweight. Bangladesh also has one of the highest prevalence of low birth weight children (less than 2500 grams) in the world.

### Access to food

28. Sen (1982) introduced the concept of “food entitlement” as a key element in the study of food insecurity and famine. In a private ownership market economy, food entitlement depends on four elements: a) production- based elements which depends on ownership of productive assets, b) trade-based entitlement which depends on market prices of food, c) own-labour entitlement which depends on the productivity and the opportunity cost of labour power owned by an individual, and d) inheritance and transfer entitlements which includes relief and subsidies obtained from the government. The distribution of income and an individual’s ability to access food is the outcome of the complex operation and interactions of all those elements.

29. The dominant determinant of food entitlement of a household is obviously the level of income. In Bangladesh, the per capita income remained almost stagnant till the end of 1980s due to slow growth of GNP and high population growth. The income growth has accelerated since 1990, reaching 6 to 6.5 percent in years. Bangladesh has also achieved respectable progress in population control. As a result the per capita income has been growing at a faster rate of about 4.5 percent in recent years, which if sustained will help Bangladesh double the income within the next 14 years. But the available evidence

from HIES surveys shows growing urban-rural disparity in incomes. The ratio of the expenditure for the urban households relative to rural households increased from 1.40 in 1983 to 1.74 in 2000 and further to 1.94 in 2005. The incomes also highly unequally distributed. The concentration of income as measured by Gini index was estimated at 0.30 for rural areas and 0.38 for urban areas. The increase in income inequality was moderate in the 1980s, but was very fast in the 1990s, both for rural and urban areas. As a result the effect of the recent acceleration in the growth of income on reduction of poverty has remained relatively moderate.

30. The HIES conducted by the Bangladesh Bureau of Statistics indicate considerable progress in poverty reduction in Bangladesh over the last three decades. Between 1991-92 and 2000 the incidence of poverty declined from 53 to 44% for rural areas and from 34 to 26% for the urban areas, indicating a reduction rate of one percent per year. A recent World Bank study based on the 2005 HIES show that due to acceleration of economic growth poverty has declined almost two percent per year during 2000-2005. But the escalation in food prices over the 2007-08 had reserved the trend in poverty reduction. The proportion of the poor population might have increased by about five percent, from 37 percent in 2006 to 42 percent in 2008, as a result of the abnormal increase in food prices.

31. An alternative indicator often used to assess the changes in the living conditions of the poor is the trend in the real wage rate of the agricultural labor. It should however be noted that wage rate may reflect the changes in income of the extreme poor and not necessarily the moderate poor. The latter group may earn their livelihood more as marginal and small farmers while the former may get the major portion of their income from participation in the labor market. Also, the use of the deflator for measuring the real wage rate is problematic. The use of the cost of living index for deflating the nominal wage rate may not be appropriate in view of the substantially larger share of foodgrains in the consumption bundle of the poor as compared to the general population. The rice prices increased at a much slower rate than the prices of the food bundle, indicating a favourable trend in prices for those who spend a larger fraction of their income on staple grains (the poorer among the poor). The measures of real wage deflated by the price of rice show a sustained increase in real wages since the mid 1990s (Table 6). The trend in real wages is consistent with the trend in the reduction of poverty. The increase in the real wage is due to growing scarcity of labor in agriculture which has been caused by a) movement of labor to rural non-farm activities due to expansion of trade and transport operations and the rapidly expanding supply of micro-credit, and b) the rapid rural to urban migration. The scarcity of agricultural labor is being reflected by rapid expansion of mechanization in tillage and threshing operations.

32. The recent food price inflation has however had a negative impact on the real wages. Although the agricultural wages responded positively to the increase in paddy prices, the adjustment was only partial. It is estimated that during 1987-88 the food prices increased by 65 percent while the agricultural wages increased by 35 percent. As a result there was a substantial downward movement in real wages for agricultural laborers over the last two years. Workers engaged in the urban informal sector such as rickshaw pullers and petty traders were also able to adjust their real income somewhat by asking for higher fares and marketing margin. The worst affected were the workers in the urban labor markets, such as those engaged in the low-wage garment industry and the low-paid employees in the services sector, as their wages remained fixed. The recent downturn in the price of coarse quality rice has improved the situation considerable.

**Table 6. Trend in real agricultural wages, Bangladesh, 1983-84 to 2003.**

Year	Nominal wage rate (Tk/day)	Poverty line deflator (2003=100)	Rice price deflator (2003=100)	Real wage (Tk/day)	
				With poverty line deflator	With rice price deflator
1983-84	19.58	38.7	54.5	50.59	35.92
1988-89	32.71	55.7	72.6	58.73	45.05
1991-92	41.77	67.8	82.8	61.6	50.45
1995-96	45.58	78.2	103	58.29	44.25
2000	63.6	91.5	96.8	69.51	65.7
2003	72.23	100	100	72.73	72.73

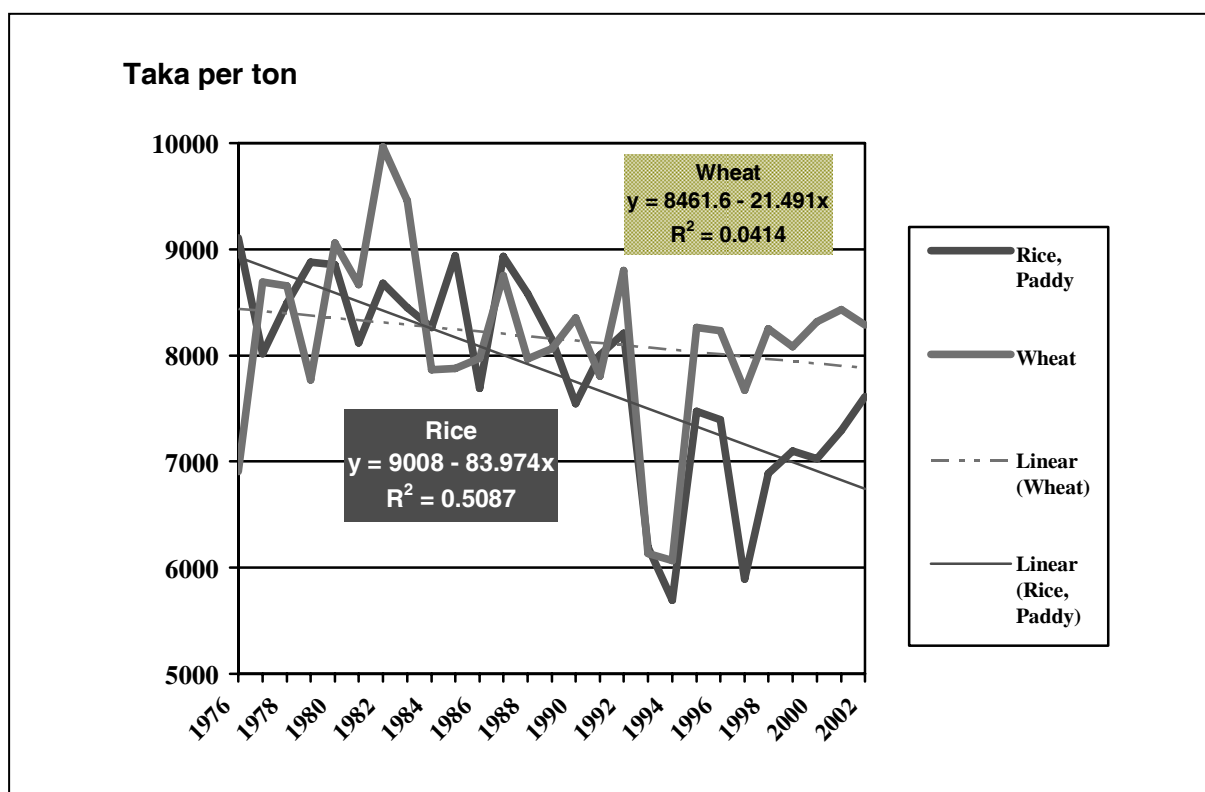
Source: Sen and Hume (2004).

### Vulnerability from fluctuations in prices

33. Maintaining prices of staple food grains within affordable limits of low-income consumers and ensuring stability in prices are important elements of food policy of the government in low-income countries. Given the level of income, the lower the prices, the higher the purchasing capacity of that income. Sharp increase in food grain prices significantly lower the real income of poor households, a large proportion of whose income is spent on staple food. At the same time the instability in producer prices increases risks and uncertainty, and discourages the subsistence farmer to invest in agriculture.

34. Figure 1 shows the long-term trend in the producer price of paddy and wheat deflated by the wholesale price index. There was a substantial downward trend in prices of rice and a moderate decline in the price of wheat, indicating an adverse terms of trade for the farmer but a favourable price regime for the consumer. The downward trend in prices of both crops is partly the result of the technological progress that helped reduce the unit cost of production. There was also a large temporal fluctuation in prices indicating risks in cultivation of these crops that subsistence farmers cannot afford.

**Figure 1. Real farm level prices of paddy and wheat, Bangladesh, 1976-2001 at 2001**



Source: Author's own calculation from BBS, various issues.

35. Prior to the liberalisation of food grain trade in 1994, the government influenced prices through its "food grain stock maintenance policy" that involves public procurement, public distribution, and imports. During this period, the domestic market was largely insulated from the world market. As a result, the domestic prices were often divergent from the world market prices. The opening up of the economy saw a gush of imports into the country that have brought about a structural change in the determination of food grain prices in Bangladesh. During times of production shortages, timely imports of rice by private sector helped avoid transitory food insecurity. This has prevented wild price fluctuations in the economy and has resulted in a more stable price regime. But the recent escalation in food prices show that a liberalized trade regime is no guarantee to establishing stable food prices. When the international market for food becomes tight, the low-income food exporting countries impose restrictions on exports to give priority to their own nationals contributing to the volatility in the

market. So, government intervention through participation in the food market is essential for protecting the interest of the low-income consumers.

### **Safety Nets**

36. Bangladesh is a disaster prone country. By virtue of its geographical location, the country is often at the mercy of natural calamities such as floods and cyclones. Riverine Bangladesh also witnesses frequent land erosion causing thousands to lose their land every year. Against such a backdrop, despite the gains achieved by Bangladesh in augmenting food availability, safety net programs are a must to insulate the poor from systematic and idiosyncratic shocks and help them to be food secure.

37. There are a number of food assistance programs in operation, each with its own specific objectives and target population. Some are relief programs that aim primarily at relieving immediate distress, generally due to natural disasters – these interventions are typically mobilized for a limited period and are targeted at the directly affected households. Other programs have explicit development objectives such as rural infrastructure development, boosting primary school enrolment rates and human capital development. Although relief provision remains an important objective, most targeted programs have gradually shifted in emphasis from relief to development.

38. A welcome improvement in targeting came in the early nineties when, in an effort to reorient food transfers to the poor, the Government abolished the poorly targeted urban and rural ration channels. A number of the safety net programs have evolved from being purely relief measures to having a development and growth dimension. These include the Food-for-Work, Food-for-Education and Vulnerable Group Development. Since 1993-94, about 1 million metric tons of food grains are being allocated every year to the various food-assisted programs. In the aftermath of the 1998 floods, this quota had gone up to 1.8 million metric tons. The share of resources allocated to targeted food-assistance programs has increased through the nineties; almost 80 per cent of the total foodgrains channelled through the PFDS is now directed towards these programs. The remaining 20 per cent passes through the so-called untargeted, “monetized” channels of the PFDS: Essential Priorities (subsidized foodgrain sales to defense and paramilitary forces, hospital and jail inmates), Other Priorities (subsidized sales to workers of government institutions, fire and civil defense departments) and Open Market Sales (to stabilize domestic prices).

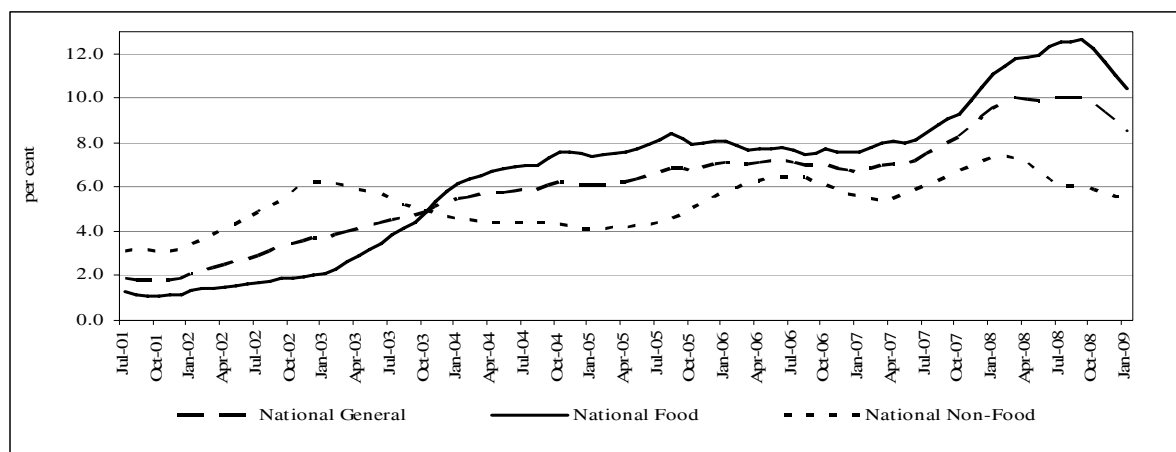
39. VGD, FFE and VGF programs appear to be reasonably well targeted to the poor. The poorest-fifth of the population, for instance, was nearly 5 times as likely to participate as the richest-fifth. Targeting outcomes can be improved by using geographic targeting to concentrate resources in areas with a greater share of the poor or of the target population. Of the various government food assisted programs, only the VGD and FFW attempt regional targeting. Under the VGF and GR – the two main disaster-coping programs – food is distributed only among areas that are affected by a disaster.

### **Recent hike in food prices**

40. Bangladesh was enjoying lower inflation rates of below 6 per cent during the early years of the 2000s. Inflation rate started to rise since the beginning of 2004. High growth in consumer prices continued in 2007 and maintained steep and rising trend during the first half of 2008 due to the hike in the price of rice, edible oil and diesel fuel. General inflation in Bangladesh increased from 1.90 in July 2001 to 10.00 in March 2008. After March 2008, it started to decline (but fluctuated) and decreased to 8.46 percent in January 2009 (Figure 2).

41. Until October 2003, food inflation at the national level was lower than non-food inflation. Since November 2003, food inflation has been consistently higher than the non-food inflation. Food inflation has gradually increased from 1.27 per cent in July 2001 to 12.6 per cent in September 2008. After that food inflation started to decline and decreased to 10.4 percent in January 2009. Since June 2005, non-food inflation was on the rise and reached 6.4 per cent in July 2006, and gradually declined to 5.4 per cent in March 2007. Since April 2007, non-food inflation posted a continuing rise and reached its highest level (7.3 per cent) in February 2008. In January 2009, non-food inflation rate was 5.3 per cent.

**Figure 2: Trends in Inflation (Moving Average): July 2001 to January 2009**

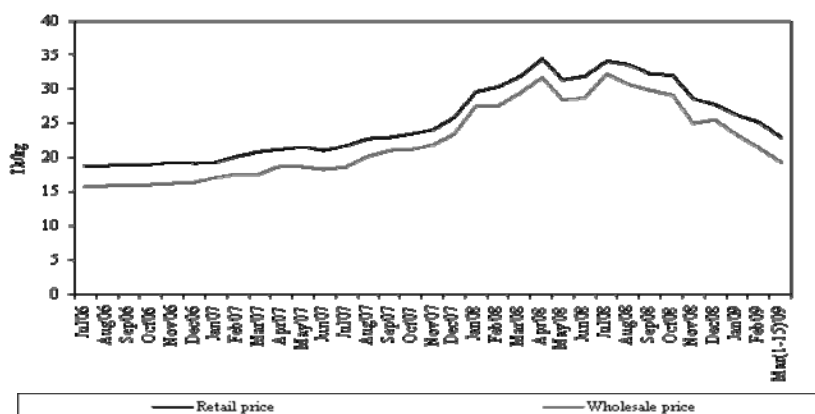


Source: Bangladesh Bureau of Statistics (BBS).

42. Monthly wholesale and retail price of coarse rice in Bangladesh, during July 2000 to January 2009, experienced four different paces of change: (i) low increase, (ii) high increase, and (iii) rapid and very high increase and (iv) rolling back to the normal trend (Figure 3). During July 2000 to January 2003, low increase in rice price was observed and retail prices of rice were lower than Tk 15 per kg. Between February 2003 to January 2007, rice prices increased at a high rate and retail price of coarse rice was lower than Tk 20 per kg. Since February 2008, rice prices started to increase at a rapid and very high rate (exponentially) and retail price of coarse rice reached to the record high (Tk 34.57 per kg) in April 2008. After starting the harvest of Boro rice, increase in price stopped but it really started to decline and return to the normal trend since August 2008. Average wholesale and retail price of coarse rice in March (1-15), 2009 was Tk 19.37/kg and Tk 22.92/kg, respectively.

43. Comparison of wholesale and retail price of coarse rice revealed that there was a general correspondence between the prices indicating effective functioning of the market. At the time of steep rise, difference between wholesale and retail price was comparatively less. On the other hand, difference was relatively high during the downward movement. This indicates the fact that consumers pay higher price immediately when there is any increase in rice price in wholesale market, but they do not get the benefit to the same extent when the price starts declining. The market intermediaries tend to capture the benefits from the low farm level prices. .

**Figure 3. Monthly wholesale and retail price of Rice (coarse): July 2006 to March (1-15) 2009**

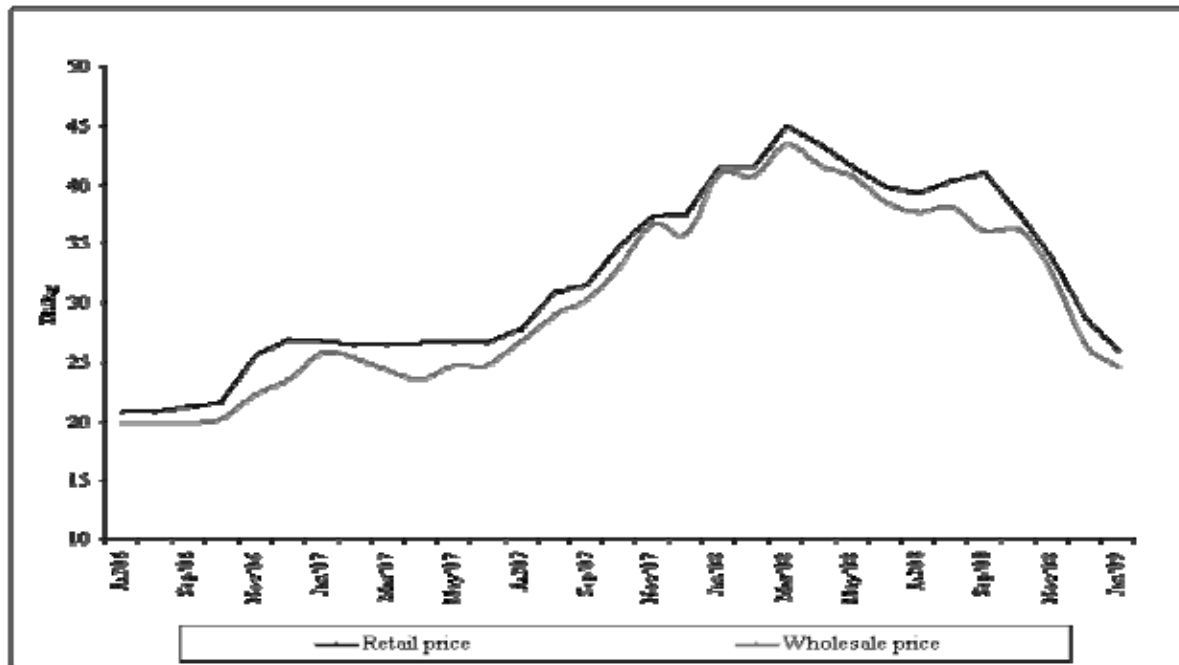


Source: Department of Marketing (DAM), Ministry of Agriculture (MoA).

44. Monthly wholesale and retail price of wheat flour (Atta) also revealed the same trend as for rice (Figure 4). During July 2000 to January 2004, slow increase in price of wheat flour was observed and retail prices of wheat flour varied between Tk 14.04 and Tk 15.81 per kg. Retail price of wheat flour increased from Tk 16.21 per kg in February 2004 to Tk 21.65 per kg in October 2006. Since

November 2006, prices of wheat flour started to escalate rapidly and reached to the record high (Tk 45.00 per kg) in March 2008. Price of wheat flour started to roll back towards the normal trend from April 2008. The price fell to Tk 26.61 per kg in January 2009. Both wholesale and retail price declined further in February and March 2009. There was a general correspondence between wholesale and retail price. However, the lag period was higher when the prices moved downwards; indicating traders try to capture the benefit at the expense of the consumers.

**Figure 4: Monthly wholesale and retail price of Wheat Flour: July 2006 to January 2009**



Source: Department of Marketing (DAM), Ministry of Agriculture (MoA).

#### Challenges for food security and containing price increase

45. Bangladesh is going to face the following major challenges in ensuring food security for all and containing price increase:

- *Meeting the growing demand:* Demand for food is gradually increasing due to increase in population and income.
- *Increase production from shrinking resource base:* The arable land has been shrinking by almost one percent per year due to demand from housing and industries, as well as loss of land from river erosion. With global warming, we may lose more land in coastal areas due to advancing seas. Water availability for irrigation has increasingly becoming scarce. The soil fertility has been declining due to overexploitation of soil nutrient, and imbalanced and inadequate use of fertilizers.
- *Shifting the yield frontier:* Farmers have adopted HYVs in most of the areas suitable for food grains. As a result, yield gap between the farmers' field and experimental stations has narrowed down. Therefore, further increase in yield of food grains at the farm level will depend on making breakthrough in yield frontier through technological improvement through research on hybrids, biotechnology, genetic engineering and so on.
- *Facing the challenges of climate change:* Bangladesh is recognized worldwide as one of the countries most vulnerable to the impacts of climate change. A recent study has predicted that rice production in Bangladesh is likely to be reduced annually by 12.2 lakh metric tons by 2030, as a result of climate change. The study added that this is almost like occurrence of devastating cyclone Sidr which has damaged rice production about 12.95 lakh tons in November 2007.

- *Decline in international support for agriculture:* New technologies were the major source of increased production in Bangladesh agriculture over the years. International financial and technical support to Bangladesh through IRRI, CIMMYT and other research and development organizations played a critical role for technology development and dissemination. Unfortunately, international support for agricultural research and development has declined in the 2000s which might be a limiting factor for making a breakthrough in technology development in Bangladesh.
- *Facing the challenges of volatility in international food market:* Since the 1990s, Bangladesh has been following the strategy of self-reliance (importing from international market to meet the deficit in domestic production) to ensure its food security. This strategy worked well particularly after the floods of 1998 and 2004. However, in 2007 and 2008, Bangladesh had a hard time to import adequate amount of food grains after the floods, Sidr and during the time of high price of foods. It was mainly due to the export restrictions put forward by major rice exporting countries. Experts argue that volatility in international rice market, both in terms of price and availability is likely to continue in the near future. Therefore, it will be a challenge for Bangladesh to ensure food security particularly stability in domestic prices while it will have to depend on international markets particularly in the years of natural disasters like flood and cyclone.
- *Liberalization of global agricultural trade:* Successful conclusion of the Doha Round negotiation on agriculture is likely to increase food prices globally. As a net food importing country, this is a concern for Bangladesh. Some studies have shown that Bangladesh might have the opportunity to export some agricultural commodities like vegetables and fruits where the country has comparative advantage. However, compliance to sanitary and phyto-sanitary (SPS), and technical barriers to trade (TBT) may be a major constraint to materialize the export potentials.
- *Minimizing risk in agricultural production:* Bangladesh agriculture during the last two-and-a-half decades have transformed to responsive to the prices and trade policies. Cropping patterns have changed substantially and it has now been transformed to production of crops and agricultural enterprises with high return as well as with high risks (large variation in prices and yield). Marginal and land-less families are now involved in production of livestock and high value crops with loans obtained from micro-finance institutions. However, they do not have any insurance in case of any loss occurred due factors which are beyond their control such as floods and cyclones.
- *Ensuring the food security of low income group, hard-core poor and provide incentives to the farmers:* Bangladesh has a large number of population living below poverty line. According to FAO/WFP (2008), nearly half (45%) of Bangladesh's 145 million population is food-insecure (< 2122 kcals/person/day), and nearly one-fifth of the population is severely food-insecure (consuming less than 1805 kcals/person/day). Bangladesh has a formidable challenge to provide food for them at affordable prices. On the other hand, farmers need incentives in the form of higher profit margins to generate marketable surplus for the growing urban population. It will be a continuing challenge to strike a balance between ensuring adequate incentives for the numerous small agri-producers on the one hand and keeping food prices low for the poor consumers on the other hand. It will also be a major challenge considering the fact that the country has been facing inequality in income and regional inequality has also been on the rise.

## Policy implications

46. Ensuring food security (physical availability and economic access to food) along with containing inflation would continue to be a major challenge for Bangladesh in the coming years. To meet this challenge, the government may consider adopting an integrated strategy encompassing the following: (a) increased domestic production, (b) ensuring minimum price for the farmers that provides adequate margin over the unit cost of production, (c) expanded social safety net programmes, (d) adjust trade policies in accordance with the domestic food production situation and in consideration of trade policies of major exporting countries particularly that of India; and (e) negotiation at the WTO.

*47. Increase Domestic Production:* Considering the hurdles of rice import faced in FY2007/08 and sudden export bans imposed by rice exporting countries to protect their consumers at times of scarcity in the world market, Bangladesh must consider achieving self-sufficiency in rice production. Strategy for increased production complemented by action plans for meeting deficits at times of shortfalls is essential. For increased rice production, priority should be given to development and diffusion of technologies for unfavorable ecologies, and promotion of hybrid rice for further shift in yield for the irrigated environment. Continuation of subsidies and monitoring of market situation for timely availability of essential inputs such as improved seeds, fertilizers, diesel for irrigation at affordable prices is needed. With proper support for tillage and irrigation, additional one million hectare of land in coastal areas could be brought under cultivation during the dry season (late boro and aus). It is also possible to increase area under high yielding Aman rice particularly in the coastal belt. Aman rice has lower unit cost of production and higher profitability compared to boro rice, and is competitive internationally. Therefore, adequate importance for increase in rice production in the Aman season would be required. Promotion of improved crop husbandry practices such as alternate wet and dry (AWD) irrigation technology, introduction of System of Rice Intensification (SRI), promotion of leaf color chart (LCC) for better management of urea fertilize, and direct seeding of rice with Drum Seeders for cost reduction will be needed. In addition, continuity of policies for agricultural diversification will be needed. To this end, adequate support for adaptive agricultural research, farmer-participatory technology validation, and more effective extension service would be required. to achieve higher production. Training and research supports for frontier science particularly for biotechnology and hybrid should get priority. Training of extension workers particularly for agricultural officers and assistant officers working at the Upazila and Block level are essential. Use of ICT and electronic media for dissemination of agricultural technologies should be promoted. Agricultural extension services may be provided through mobile phones with toll-free numbers or low charge.

*48. Ensuring minimum price to the farmers with adequate incentive:* Prices of foodgrains (rice and wheat) and many agricultural commodities has declined in recent months. However, the cost of production of these commodities has gone up due to higher prices of fertilizers, diesel, labour and other inputs. If the price drops further, it may create the reverse problem of how to provide incentives to farmers to sustain growth in production in future. The familiar cobweb problem points out to the role of government in following a fine balance in protecting the interests of low-income consumers and commercial farmers. To this end, linking up government procurement programmes with social safety net programmes particularly with Public Foodgrain Distribution System (PFDS) will be needed.

*49. Promote diversification through necessary public support:* Recent studies conducted by BIDS have shown that Bangladesh enjoys comparative advantage in the production of wide-ranging crops. To achieve the desired diversification along the lines suggested by the comparative advantage, there is a need for critical public support measures. Under the dictates of Structural Adjustment Program, Bangladesh has brought down its level of public support to agriculture to an absolute minimum. Bangladesh also provides very little support for the elements under the green box and blue box that are admissible under WTO regulation.

*50. Social Safety Net Programmes:* Increased production alone would not be sufficient to ensure food security for the lower income group, particularly when farmers need an incentive price to sustain the growth in production. Increased distribution of subsidised food grains to the targeted vulnerable community under PFDS and an expanded social safety net programme will be needed. The Safety Nets Programme needs to be designed in such a way so that hard core poor families are covered. Effective implementation of the programmes to reduce mis-targeting and reduction in leakages must be ensured.

*51. Stabilization of prices of essential commodities within a band:* Although stabilization of prices constitute an important element of production incentives and consumer welfare, price stabilization (especially upswing of prices) is also important politically. High rice prices in Bangladesh are treated as crisis situations and are often interpreted by critics as the government failure to ensure food security. As such, high prices point to the need for government intervention, even though this intervention can sometimes be costly and ineffective. Typically, in Bangladesh, high rice prices create pressure for high public stocks regardless of the fact that high stocks are no guarantee that food security of the poor will be addressed. In case of retail price of coarse rice, the government may fix a transparent target of maintaining the price level in the range of Tk 20 to Tk 25. If the market price goes above this, then the government will have to sell in the market from the public stock so that

market price of coarse rice declines. On the other hand, if the market price falls below Tk 20, then government will buy from that market so that price stability is achieved.

*52. Collaboration with South Asian Countries:* At the SAARC, collaboration for agricultural development is always considered as one priority area though actual progress is very limited. Collaboration with South Asian countries for setting up of SAARC Food Bank and for increased agricultural production would be beneficial to reduce the food security risks particularly after natural disasters (floods, cyclones, etc.). Other areas of cooperation in the SAARC region from which Bangladesh can benefit tremendously for ensuring sustainable food security are related to: (i) agricultural research and technology development (development of new varieties, hybrids and breeds, and water and natural resources management techniques; cooperation in new sciences such as remote sensing and GIS, biotechnology, weather and flood forecasting and disaster management; common data standard for GIS, etc; (ii) technology exchange (exchange of germplasm; exchange of variety and breed, crop and animal husbandry practices, water and natural resources management techniques, etc; (iii) capacity building through development of human resources and development of regional facilities (SPS compliant facilities and certification system for organic farming and promotion of environmental goods with a view to ensure food quality and safety); (iv) regional programs for plant and animal trans-boundary pests and diseases control; (v) harmonization of policies and acts such as protection of plant variety, bio-safety protocols, biodiversity and indigenous knowledge..

*53. Flexible trade policies:* Rice production drastically falls in Bangladesh during periods of natural disasters and the supply of rice becomes scarce leading to abnormal rise in prices, which affects the livelihood of the poor. The government allows import by the private sector to cope with the situation. Government should follow a policy of variable tariff rate in the annual budget on the basis of the assessment of the previous Aman and Boro harvest, and the prevailing world market prices. Regular monitoring of agricultural trade policies of Bangladesh's trading partners particularly that of India will provide opportunity to the government for informed trade policy formulation and modification.

*54. Fiscal and monetary measures to contain inflation:* To contain inflation, government will need to judiciously use both fiscal and monetary tools. This might include continuation of zero tariff on import of rice and wheat (which was initiated on 8 March 2007) and other essential items, continuity of accommodative monetary policy to encourage production oriented credit and investment. The Bangladesh Bank should encourage the banks to provide credit facilities on softer terms to new importers, ease LC margin for food items, and extend the time limit for customer facility.

*55. Strengthening of marketing infrastructure and Institutional measures:* Government needs to establish New Krishi Bazars for farmers, particularly in the higher production areas of Bangladesh. Strengthening marketing services for agricultural products is necessary through more allocation in these areas for such activities. Establishment of more wholesale markets in big cities and towns would also be required. The government has taken an initiative to introduce Consumers' Rights Protection Ordinance. It is expected that this will help safeguard consumer's interests which were being severely undermined due to lax supervision.

## **Concluding remarks**

56. Despite impressive achievements in increasing food grain and reducing instability in prices, long-term food and nutrition problems remain. Bangladesh has yet to achieve comprehensive food security that resolves the problems of inadequate food intake and chronic malnutrition among poor people. Solving these problems will require decisive action by the government, the private sector and individual households. A more efficient PFDS can play a central role in government's food policy and make a significant contribution to the food security of households who receive transfers. Several steps could be taken to increase efficiency of food grain procurement and distribution. Increasing flexibility in setting (and revising) procurement prices is one option.

57. A better understanding of poverty dynamics and linkages between adverse shocks (such as massive floods and droughts), rural income, credit markets and nutrition is important. Appropriately targeted income transfers, credit programs and insurance mechanisms in times of crisis may have very high payoffs in reducing poverty and improving food security in the medium terms through minimizing debt and the effects of large decline in income in both the short and the medium term.

These interventions should be part of a broader social protection strategy of safety nets that is both cost-efficient and achieves maximum coverage.

58. In view of extreme pressure of population on limited natural resources, development and dissemination of improved production technology must continue to sustain the growth in food production. Among crops, the research strategy must accord higher priority to high-valued, non-food grain products. Continued facilitation of the import of new seeds and production technologies will be necessary for Bangladesh to capitalize on technological advancement made in international research centers. Public investment in agricultural research in Bangladesh has remained low compared to India, Pakistan, Sri Lanka and other East Asian countries. Increased spending on agricultural research appears to be necessary given the importance of agriculture to income growth and poverty reduction.

59. Major efforts are still needed to address nutritional issues more directly. Coordinated programs involving nutrition education, food fortification, improvements in water quality and public health are needed. Increases in food availability and household access to food alone will not be adequate to address the malnutrition problems in Bangladesh.