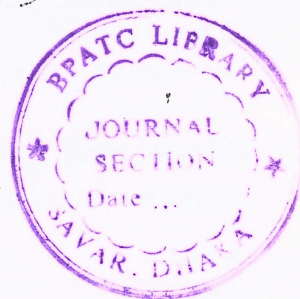


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সম্পাদনা পরিষদ

সৈয়দ মাহবুব হাসান
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কাজী হাসান ইমাম

লোক-প্রশাসন সাময়িকী

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মোঃ আবুল হোসেন

Foodgrain Availability in Bangladesh A Historical Profile

Mohammad Amzad Hossain*

Abstract: *The objective of this paper is to analyze the evolution of the foodgrain availability in Bangladesh. It examines the rice sector policies and impacts of such policies on the availability of foodgrain in Bangladesh. It is evident that rice production has almost doubled over the course of time, which resulted mainly from the adoption and diffusion of new technologies as well as the structural shifts of the rice production from largely weather dependent Aman rice to irrigated Boro crop. The increase in domestic rice and wheat production and the trade liberalization has increased the availability of rice. However, considering the growing population and decreasing land base it is necessary for further effort to increase domestic production and to maintain availability. The paper also suggests some measures to ensure sustainability of foodgrain production in Bangladesh.*

1. Introduction

Food is the most strategic commodity of the economy and it is the highest priority among the basic necessities of life. The issue of food security is thus a burning question of the day. Bangladesh has taken food security as an issue of exigency as it is facing the daunting challenge of feeding its 140 million people, about half of whom are lying below the food-based poverty line and million of others are threatened by natural disasters such as the devastating floods of 1988 and 1989, cyclone of 1991. Unlike many other countries a single foodgrain (rice) dominates Bangladesh's food consumption. The HES survey -2000 of BBS shows that the bottom 40 percent of rural and urban households spends 32% and 25%, respectively of their income on rice (Deb 2004). According to FAO Balance Sheet (1999), rice accounts for 72.8% of calories

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consumed in Bangladesh while the corresponding figure for India is only 33.3%. Consequently increasing foodgrain production and achieving food security to all is one of the major goals of our national policy. Bangladesh has made substantial progress in foodgrain production doubling rice production, from 11.2 million MT in 1972 to 26.19 million MT in 2004. And very recently Bangladesh achieved self-sufficiency in rice production. Thus succeeded to fulfill one of the major dreams of our national war of independence.

The increase of foodgrain production has resulted from the investment in irrigation, increased fertilizer use and the adoption and diffusion of improved seeds. It is important to recognize that despite the increase in foodgrain production millions of people are still threatened by transitory insecurity caused by natural disasters such as the flood, cyclone, draught etc. or by overall insecurity caused by poverty. In this context of chronic poverty and a hazardous natural environment, the government of Bangladesh is firmly committed to achieve food security for all.

Food security is composed of the following components-

- a) **Availability of foodgrain** (determined by domestic production, external trade and the efficiency of distribution through market and non-market channels);
- b) **Access to foodgrain** (determined by households income and government transfers, assistance from relatives and friends, remittance from abroad and assistance from NGOs);
- c) **Utilization of foodgrain** (determined by individual food preferences and health and environmental factors affecting absorption of food).

To achieve food security for all Bangladesh has experienced different policy regimes¹. These policies made it possible to

¹ Bangladesh Agriculture has undergone series of reforms since independence. The major economic reforms in agricultural policy were liberalization of input markets, shrinking the role of government agency in input distribution, deregulation of input prices, reduction of subsidies on agricultural inputs, liberalization of import of agricultural inputs, liberalization of output markets with producers price incentive, gradual elimination of public foodgrain distribution system (PFDS), price stabilization through procurement policy, liberalization of import of foodgrain.

achieve self-sufficiency in foodgrain production, increasing percapita foodgrain availability, increase of wider access and inducing people in diversifying their dietary behavior as well.

Since food is one of the most perceptive items, government policies relating to food occupies a place of considerable importance in the economy of Bangladesh. The study attempts to analyze the policy changes relating to the food economy in Bangladesh as well as the impact of these policies on foodgrain availability. The study also suggests some policy initiatives to increase domestic production to meet the growing demand considering increasing population and decreasing land base.

The study is based on the secondary data published by the Food Planning and Monitoring Unit (FPMU), the Directorate of Food (DG Food), the Food Management and Research Support Project (FMRSP), the Bangladesh Bureau of Statistics (BBS), Centre for Monitoring Indian Economy (CMIE), and Internet.

This paper is divided into five sections. Following introduction in section 1, section 2 analyzes the components of foodgrain availability. The current status of foodgrain availability is discussed in section 3, while section 4 focuses on policies to be taken for sustained foodgrain availability. Section 5 concludes the paper.

2. Foodgrain Availability in Bangladesh

Foodgrain availability is composed of four components as-domestic food production, commercial imports, food aid and Government security stocks. Of these four components domestic food production is very important in sense of supply at markets and household level. Since uncertainty is involved in the provision of these components Government policies play pivotal role in ensuring foodgrain availability in the market.

(i) Domestic Food Production

Bangladesh has made substantial progress in foodgrain (rice and wheat) production since independence. Rice production has

almost doubled (from 11.2 million MT in 1972/73 to 26.19 million MT in 2003/04) during the last 34 years. However the production trend of the 1990s is not much encouraging as that of the 1970s and 1980s. The trend growth rate of foodgrain in the 1970s, 1980s and 1990s were 3.32, 2.99 and 2.43 percent respectively though over the years actual production has increased.

The high growth of 1970s might be attributed to the adoption of the so-called 'green revolution' strategy. Bangladesh had adopted the seed water and fertilizer technology –commonly known as green revolution in the late 1960's. The key elements of the green revolution were the use of high yielding seeds, chemical fertilizer, larger scale irrigation and mechanization of production technique. In the initial years this strategy was highly subsidized and supported by cash credit. Government support led to increase in cropping intensity, proportion of net shown area under irrigation, proportion of rice and wheat area under HYV crops, incremental use of chemical fertilizer, prompted the transition from one field crop system to two or even in some extent to three field crop systems and consequently the yield of rice crops (Ahmed, 1995).

Another possible cause of incremental output may lead to recall the farm size productivity relationship. Though there is a debate in the negative relationship between the farm size and productivity, empirically it has established that the higher the farm size the lower the productivity and vice versa. The trend of declining farm size in Bangladesh over time reveals the fact that due to the decline of farm size farmers intensively use their land, which ultimately results higher foodgrain production.

Bangladesh Water Development Board played crucial role in increasing rice production by managing water resources properly through constructing dam, flood control barrage and embankments. Increase crop yield also resulted from the structural shift of the cropping patterns from local Aus rice varieties to modern varieties of Boro rice and the shift from local to modern varieties in the aman season. Again, over the years research and development has gone in a very quicker pace, which led to the

development of new rice varieties easily adaptable to the ecology of Bangladesh.

The success story of the 1970s has become bleak and policy failure came in the middle. In the 1980s Bangladesh adopted market reform and trade liberalization program as a part of structural adjustment program under the conditionality set by World Bank, IMF and other donor agencies. The basic premises of these programs were to reduce government intervention from the agricultural input and output markets and allowing market forces to work in agriculture. The effect of Government's policy change is very much evident. There is a lively and contentious debate in the literature whether reform program has had positive or negative impact on agricultural performance. One study conducted by Sharif and Dar (1996) using survey data from a village in Mymensing region of the country found that despite higher yields HYV technology displayed lower technical efficiency and greater variability in efficiency than traditional variety cultivation. Wadud and White (2000) have reached to the similar conclusion from the survey data of Rajshahi region. A large-scale study (over sixteen regions of Bangladesh) undertaken by Coelli, *et al* demonstrated that technical efficiency declined consistently over the period 1960/61 to 1990/91. However Rahman (2003) found that there is high level of profit efficiency among the HYV farmers. A very recent study conducted by Salim and Hossain (2005) using random coefficient frontier production approach concluded that there is a wide variability in efficiency across farms and regions of the country and farm specific efficiency increased from 0.577 in 1977 to 0.645 in 1997 implying that there is still potential for further increase in output just by increasing the efficiency at the farm level.

It is evident from the empirical studies that reform measures positively contributed to the output growth while variability of the efficiency at the farm level tends to lower growth rate. The trend growth of rice output during the 1970's and the 1980's were 2.79 and 2.32 percent respectively. However during the early 1990's the trend rate of growth exhibited drastic declination approaching to 0.37 percent implying a virtual stagnation (Shahabuddin, 1995)

in the rice sector. However late 1990s shows reverse trend compared to the early 1990s. The growth trend in the rice production from the period 1994/95 to 1999/2000 is 6.45 percent. Regarding government policy decision these reversing trend growth has important implications.

There are various explanations of reversed rice production trends in the first and second half of the 1990s. The declining trend of the rice yield in the first half of the 1990s is attributable to unfavorable climate. In this time period production has fluctuated widely around a slower growth rate. Besides unfavorable climate another factor must come into account that is the gradual removal of subsidy from the agriculture sector under the policy package of the structural adjustment. Another implicit factor that is no less important is over and unbalanced use of chemical fertilizer. Under the strategy of green revolution farmers ignored or avoided the traditional agricultural practices and used chemical fertilizer without maintaining a balanced approach. Maintenance of soil quality requires a balanced use of chemical fertilizer under specified cropping pattern. However under chemical agriculture farmers didn't follow the cropping pattern and they compelled to rely largely on mono cropping of rice. Today rice is grown on about 79 percent of the cultivable land in Bangladesh. This led to deterioration of soil and water quality that could be one major cause of diminishing productivity of rice yield. Again overuse of a particular fertilizer and pesticides led to turn down soil fertility dramatically. According to Bangladesh Agricultural Research Council (BARC) application of excessive Urea fertilizer instead of balanced composition of fertilizer contributes to the decline of Nitrogen, Phosphorus and Potassium in the soil. IFDC (1998) data shows that the urea fertilizer amounts to 72 percent of total fertilizer use in Bangladesh in 1996/97.

The content of organic matters in HYV cropped soil is estimated at less than one percent while the critical level is three percent. So the HYV cropped soil becoming hard and harder over the years, which caused to overuse of chemical fertilizer and water to get better harvest. A survey undertaken by BARC (1997) in Tangail district reveals that farmers used to get one maund (approximately

37.32 Kg) of rice from one decimal of land twenty years ago while the corresponding figure now is 20 to 30 kg. Not only the decline production but also the production cost for rice has also increased by 250 percent during the last 10 years. Twenty years ago farmers in Tangail used 200 to 500 grams of fertilizer for one decimal but today they use at least 2 Kg of fertilizer for one decimal field. The incremental input cost implies the deteriorating financial conditions of the medium and small farmers. To mitigate the situation they usually search for bank loans if failed they cannot cultivate their land intensively, which also cause a further decline of foodgrain production.

The lower disbursement of credit to the farmers can also be an important reason for declining trend of rice yield in the first half of the 1990s. Bangladesh Krishi Bank (BKB) data shows that on average over the period of 191/92 to 1993/94 the cash credit to the farmers was far less than that of the rice and paddy traders. The gradual removal of subsidy in the late 1980s and early 1990s has substantially increased the cost of rice production. Thus the medium and small farmers faced serious stumbling block of meeting the demand for fertilizer and other inputs, which also had some important repercussion on the rice yield.

Mismanagement of fertilizer distribution and limited disbursement of cash credit to the farmers is also responsible for lower rice yield in the first half of the 1990s. An artificial shortage of fertilizer has been created which lacked proper distribution of fertilizer in different districts.

The whole scenario started to change since 1996 when the government of Bangladesh has given top priority to the agricultural sector particularly the food sub-sector. In the fiscal year 1999-2000 government has disbursed Tk 3700 crore as agricultural loans, which is Tk. 326 crore higher than the year 1998-1999. The government was also against to reduce subsidy from the agricultural sector by arguing that Bangladesh's current level of support to agriculture is below the stipulated minimum set in the WTO agreement. When the fertilizer subsidy was withdrawn in 1992, many farmers were unable to find fertilizer at fair prices. Thus the government has allocated a lump sum amount

of Tk. 100 crore from the year 1996 for coping shocks in the agricultural sector. The result of the government policy was very much evident. Along with government policies a favorable climate boosted rice production except some shock by the 1998 flood and hidden draught during the aman season in 1997/98 in northern region of Bangladesh. A comparison of production trend in the first half of the 1990s and second half of the 1990s gives some interesting implications that how government policy can work in the way to increase food production. In the year 1999/2000 Bangladesh became self sufficient in foodgrain production in the sense that the net production exceeds the consumption demand requirements. But the question is, whether self-sufficiency in foodgrain production is sustainable or not. The question of sustainability arises because the overall production trend in 1990s is less than that of the 1970s and 1980s.

ii) Commercial Import

Since its independence food markets of Bangladesh were heavily intervened by the government. Any kind of food imports to mitigate food shortage was the responsibility of the state. The most important reason for such public monopoly in foodgrain import was based on the need to protect this sub-sector from the hands of the unscrupulous traders and speculators (Murshid 1999). However in the early 1990s under trade liberalization the government of Bangladesh decided to remove all sorts of restrictions from private rice imports in the ground that private trade may be beneficial for ensuring foodgrain availability and long-term food security. Another justification for private rice imports was to stabilize market price of rice. It is often argued that food price stability led to households to increase investment in productive activities. Again commercial imports may also work as to absorb any kind of natural shocks that that threats people to turn down transitory food insecurity.

Before allowing private trade government of Bangladesh used to purchase foodgrain through open tenders. At that time Thailand was the chief source of supply considering the economies of scale in importing rice from Thailand through ship. For imports from India, a truck can carry 10 tons at a time or 12 tons if is

overloaded, while a ship from Thailand can bring 15000 tons at a time. But after trade liberalization India became the chief source of supply for the private traders because of its cost effectiveness and less time consuming than that of other sources.

In India private sector export was liberalized in 1994. Since then private traders of Bangladesh imported bulk amount of rice from India.

Table 2.1: Estimated volume of India's Non-Basmati Rice Exports by Destination, 1992/93-1998/99

	'92/93	'93/94	'94/95	'95/96	'96/97	'97/98	'98/99	(Average '95/96 - '98/99)
World	256	243	448	4541	1989	1796	4340	3166
Bangladesh	0	0	117	1160	150	383	2213	977
Share of Total Export (%) to Bangladesh	0.0	0.0	26.0	25.6	7.5	21.4	51.0	26.4

Source: CMIE, 1999.

From the table it is clear that Bangladesh is the single large importer of Indian rice. In the years of climatic shocks Bangladesh imports large amount of rice from India. In the shock years usually the domestic price tends to be higher than the import parity price, which led to higher import. For instance, severe drought reduced the size of aman harvest in 1994/95 and bad weather reduced the 1995/96-aman crop. Given these shocks private traders imported 1.127 million Metric tons of rice in addition to 704 thousand metric tons imported by the public sector. Another poor aman harvest in 1997/98 causes the domestic market price exceeds the import parity price, which led to an increase in import of 917 thousand metric tons of rice by private traders from December 1997 to May 1998 (Dorosh 1999). Bangladesh faces serious setback in rice production due the worst flood of the century in 1998. From July to September floods in Bangladesh destroyed 300 metric tons of the aus crops and caused damage of the seedbeds for the aman crop. At the time of flood private importer imported 200 thousand metric tons rice per

month from August 1998 to March 1999. Bangladesh imported huge amount of rice from India not only in the worst flood affected year but also in the very normal production year (for instance, Bangladesh imported 1.56 million MT in 2002/03, which was mainly due to low tariff rate in Bangladesh and high export subsidy provided by the Indian Government). Thus after liberalization India appeared as the chief source of supply of rice in Bangladesh. In the period of poor harvest and flood damage Bangladesh rice prices (wholesale Dhaka) remained close to ex-India import parity price for the whole year of 1998. The national average wholesales prices of coarse rice also remained stable in the range of 14.14 to 14.83 Tk/kg from September 1998 through mid April 1999 (DAM, 1999). Though India appeared as the chief source of supply for private and public rice import and has succeeded to stabilize the rice prices in Bangladesh at the time of natural shocks it is necessary to analyze the reliability of this source. For the short and medium term though India may be a favorable source of supply, however we have to consider India's exchange rate policy, natural shock in the rice production, public buffer stocks in India etc. If the depreciation rate of Indian rupee against the US dollar is less than the depreciation of Bangladesh Taka against US dollar then India will not be a cost-effective source of supply. In that case Thailand can be a cheaper source of supply.

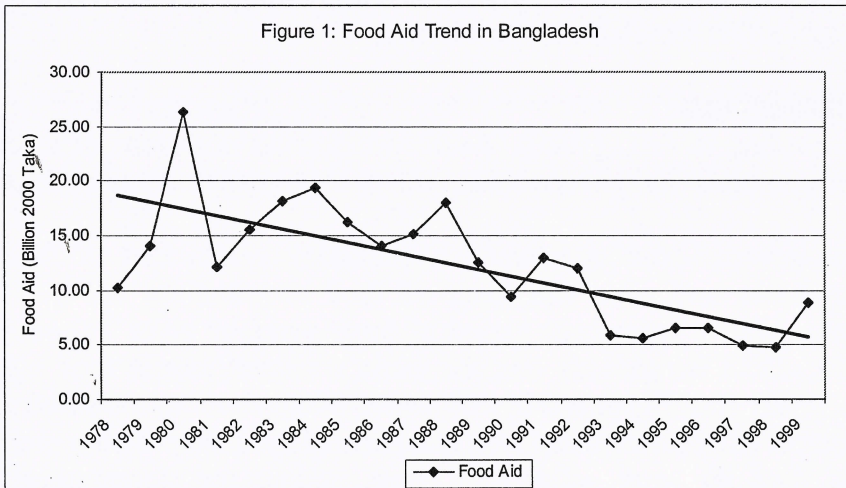
To absorb the natural shock of 1998 flood Bangladesh has succeeded to import huge amount of rice from India. This was possible because the Food Corporation of India's rice stock in October 1998 was 8.7 million metric tons, which was about 3 million metric tons above the buffer stock. But any poor harvest in India may reduce the amount of buffer stock. A poor harvest in Bangladesh at the same time as in India may cause serious fluctuations in the Bangladesh rice market if it relies heavily in Indian rice markets. Hence Bangladesh need to look at the third source of supply (the second source is obviously Thailand) which may be China or other rice producing country that has comparative advantage of rice production vis-à-vis Bangladesh. This is important because after liberalization policies and structural adjustments Bangladesh agriculture enjoying less

comparative advantage (due to the reduction and removal of subsidies) than other countries where agriculture sector is still enjoying a substantial amount of subsidy. Historically it has seen that there is low or no correlation between India's poor harvests with that of Bangladesh. India still has competitive advantage in rice production vis-à-vis Bangladesh because of public goods (infrastructure facilities) offered to the Indian farmers. Again, India always has an incentive to export rice because unlike Bangladesh only 33.3 percent of calorie share in India come from rice while the corresponding figure for Bangladesh was 72.8 percent in 1997/98. The rice consumption (kg/cap/year) in Bangladesh and India were 152.3 and 83.9 respectively in 1997/98 (FAO, 2000). Food Corporation of India's rice stock as a percentage of production was almost 8 times higher than that of Bangladesh in 1997/98. Despite all these Bangladesh must look for the third source of supply because any change in Indian policy might affect Bangladesh rice markets.

iii) Food Aid

According to FAO (1980) "Food Aid includes donations of food commodities by governments, intergovernmental organizations such as the World Food Program (WFP) and private voluntary and non-governmental organizations, monetary grants tied to food purchases and sales and loans of food commodities on credit terms with a repayment period of three years or more." During 1975-1992 Bangladesh was the world's second largest food aid recipient after Egypt and in that period Bangladesh has operated a number of innovative and well documented food aid program such as- food for work, vulnerable group feeding and development, rural maintenance program etc. All these programs have dual implications. At the national level food aid has increased national availability and at the household level it increased per capita availability and increased access to food by the people who are under both transient and permanent poverty.

Over the years the food aid trend is gloomy. This is mainly due to the increase of domestic production after adoption of the green revolution strategy, supply condition of the donor countries after gradual removal of subsidies from the food sector under WTO agreement, and the attitude of politicians and common people of the donor countries. Like common people many politician treats the aid as throwing money into the 'rat hole'. Rather food aid is not determined by the needs of the recipient countries but is based on the existing economic and political conditions of the donor countries. The total food aid to Bangladesh reached its peak in 1987/88 to 1.8 million metric tons then it gradually declined. The average food aid to Bangladesh in the 1970s and 1980s was 1.2 million metric tons while the figure declined to only 600 thousand metric tons by the end of the 1990s and by the year 2003/04 the food aid to Bangladesh has declined to only 4000 metric tons.



Note: Real 2000 prices computed non-food consumer price index .

Source: GOB, FMRSP

The use of food aid in Bangladesh has also changed with the progress of time. In the 1970s and 1980s food aid were used for smooth running of the public food grain distribution system (PFDS), food for work (FFW), vulnerable group feeding (VGF) and rural maintenance programs while in the 1990s it is being used in coordinated project like food for education etc. That is over the time food aid has transformed into project aid.

iv) Government's Security Stock

Agricultural production is a function of nature, so there is always some degree of uncertainty to achieve the target level of production. As a result government maintain certain buffer stock of food so as to combat any unavoidable situation resulting from the natural calamity such as flood, drought etc. To ensure smooth operation of food distribution system and to stabilize market prices government of Bangladesh maintains substantial amount of food stocks. International donor agencies suggest that the government should maintain a smaller amount of food stock since world and domestic markets are operating effectively and are more integrated, signifying that large stocks of foodgrain are unnecessary. It has been argued that shortage of any country can be immediately met by other countries since transportation facilities are now highly developed. But in a country like Bangladesh there is always a need to maintain a substantial amount of foodgrain stock to cope with the natural disasters. Bangladesh government has succeeded to handle the food situation in the aftermath of the 1998 flood through the foodgrain stock that it had maintained. Government usually increases the amount of stock from the bumper production of any of the aus, aman or boro season. Government does so by internal procurement program or importing rice through open tender if there is no bumper production. Internal procurement program has dual implications. In one hand through the program government tries to maintain its security stock, which helps to smooth operation of the public foodgrain distribution system. On the other hand it gives a price support to the farmers in the harvest period when the market price is relatively lower than other periods.

However it has found in several studies (Shahabuddin and Islam 1999, Deb 2004) that in many cases government's procurement price is not as high as the usual market price. This is because domestic procurement by the government has almost always been a small proportion of the domestic production- hardly exceeding 2.5 percent (Appendix Table 3) – which amounts to no more than six to seven percent of the marketed surplus and is therefore unlikely to have significant impact on market prices (Shahabuddin & Islam 1999).

3. Current Status of Foodgrain Availability in Bangladesh

Among the four components of availability domestic foodgrain production is very important. Despite some problems government's policy changes have led to increase the domestic food production up to the self-sufficiency level in the normal climatic conditions. The declining production trend is a major concern to the national agricultural policy. In order to rescue from negative impacts of green revolution strategy the organic farming – called ecofarming² has been adopted by the farmers which in one hand increasing the food production and on the other hand maintain the soil quality so as to achieve long-term sustainability in foodgrain production.

Of the other components of foodgrain availability the commercial import is running very well. Both public and private sectors are engaged with this trade, though the share of the public sector is declining very sharply. In disastrous situations government allow private traders to import as much amount they want without any restrictions. But in the normal condition that is the period of bumper crops government impose restriction in the form of tariff and quota so as to provide support to the domestic growers. Though the trend of food aid is declining over the years it is (exclusively wheat) averaged about 6 lakh metric tons per year in recent non-flood years, equal to about 3 percent of total annual foodgrain production. Distribution of foodgrain from government stock increases market supply.

² Ecological Farming means environment friendly farming. This implies a shift from chemical agriculture to traditional agriculture which is based on the principles of diverse and mixed cropping system instead of monoculture, green manure and compost instead of chemical fertilizer, natural pest management, preservation of seeds at the household level. Ecological farming is a natural process that recovers the fertility of the soil and multicropping system works as a preventive measure against pest. Livestock, poultry and fishery can also be an integrated part of this type of farming system. So the farmers can maximize their benefits from this type of farming. Prosika Manobik Unnayan Kendra (an NGO) has initiated ecological farming in Bangladesh in 1976 with three basic principles – healthy soils, healthy plants, and nature doesn't permit monoculture. The organization has started its ecofarming activities at Manikganj district which also diffused in the neighboring districts of Tangail, Faridpur and Rajbari. This type of farming is becoming popular among the farmers as the disastrous consequences of HYV technologies are evident.

Over the years an increasing trend of national availability is evident. Per capita availability has also increased from 15.05 ounce/day in 1980/81 to 18.63 ounce / day in 1998/99 (Appendix, Table 1).

4. Future Direction of Food Policy in Bangladesh: Policies to Promote Foodgrain Availability

In the backdrop of food's top priority among the basic necessities of the people the government has rightly given the high priority to food security. There are various aspects of food security including issues of availability, access and utilization. Availability of foodgrain has four components. Among them domestic production plays the central role since uncertainty involved to other components. Hence more emphasis should be given to increase in domestic production. Over the years Bangladesh has made substantial progress in increasing foodgrain production. Empirical studies show that there is still potential for further increase in output by increasing efficiency at region and farm level. However the specific policies need to be formulated and implemented to ensure sustained foodgrain availability given existing conditions of the agricultural and social and economic conditions of the country.

Among the various components of foodgrain availability increment of domestic production is very important. The alternative is to promote private trade or increased flow of food aid. Food aid is determined externally given the domestic production condition and policy of the donor countries but not the needs of the receiving country. Over the years food aid in Bangladesh has been showing a declining trend (Appendix Table 2). Foreign currency is involved in foodgrain import the opportunity cost of which is very high for an agricultural country Bangladesh. Hence in terms of availability the best alternative for Bangladesh is to increase domestic production. Though Bangladesh has made substantial progress in domestic foodgrain production the Production trend is declining from 1970s to 1980s to 1990s. There are various reasons that attributed to the declining trend but the most obvious reason may be the negative effects of

monoculture under the strategy of green revolution. The alternative of this may be the organic farming commonly described in the literature as the “ecological farming”. So efforts must be given on extensive research and development on the wide application of ecological farming which in one hand may increase the net benefit to the farmers from land use and on the other hand it may conserve bio-diversity.

In order to encourage intensive farming government can give price support to the domestic producers. It has widely observed that in the harvest season foodgrain price become lower than the other season, which directly poses negative pressure on primary producers of foodgrain who needs cash immediately after the harvest become financially looser. So the government should extend its domestic procurement program which in one hand will work as price support to the farmers and on the other hand, will lead to smooth flow of foodgrain availability in the market in the lean season and in the period of natural shock.

Government must give some incentives to the private sector trader who plays prominent role in maintaining availability of foodgrain in the period of natural shock. For instance the private traders along with the government combat in food crises in the 1998 flood. Thus for the smooth private sector trade government must provide facilities for storage and marketing, allows free flow of foodgrain all over the country, enforcing lower rate of import tariff, private stock holdings of foodgrain, maintaining less bureaucratic formalities, support in L/C opening and severe action against any kind of rent seeking.

If the current rate of population growth rate continues the total foodgrain demand in Bangladesh estimated to be 27 million metric ton by the year 2020. To meet the huge foodgrain demand actions must be taken immediately. Keeping this in mind national agricultural policy should include the following strategies:

- 1) Increasing the efficiency of input supply systems for seed, fertilizers and minor irrigation;

- 2) Strengthening research and extension systems;
- 3) Promoting Integrated Pest Management;
- 4) Encouraging agricultural mechanization;
- 5) Developing the agricultural marketing network;
- 6) Optimizing land use;
- 7) Expanding agricultural education and training;
- 8) Streamlining and increasing agricultural credit facilities;
- 9) Following a food based nutrition approach;
- 10) Conserving the bio-diversity and protecting the environment;
- 11) Ensuring increased participation of women;
- 12) Coordination among the government, NGOs and private sector;
- 13) Building up a reliable database.

The new agricultural policy of 1999 also put focus on integrated farming where livestock, fishery and forestry will also be practice along with the crop sub-sector.

5. Conclusion

Bangladesh has made significant progress in foodgrain production over the last three decades and has succeeded to keep the famine at bay. Despite that massive poverty and food insecurity still persist. In case of availability government policy change was very much successful so that the country has improved its status from subsistence food production to self-sufficiency. Adoption of seed water and fertilizer technology and liberalization of domestic input markets have increased the domestic rice production and private trade has also increased under the government policy of trade liberalization. Food aid and government buffer stock of foodgrain was also substantial in the initial years so that the government successfully challenges the natural shocks. As a result of improved infrastructure and allowing private import in foodgrain availability is no longer a problem for Bangladesh.

Availability of foodgrain is one aspect of food security. The other aspects are access and utilization. The present paper discusses only the availability aspect. Through different monetized and nonmonetized channel government of Bangladesh is giving substantial support to the rural and urban households and different occupational group. The result of government's programs is very much evident. Access to food has increase over the years and poverty situation has come down (though the declining rate is very slow). Government's programs are working as safety nets to the rural and urban households in both transient and permanent insecurity.

Though both availability and access aspect of food security has improved over the years the realization of utilization of food is still the major constraint in achieving food security. It consists of qualitative aspects, which implies to increase awareness of the people to take care about consuming items. Pushing up of the huge mass of the people above the poverty line will be helpful in creation of awareness to the people.

It is widely recognized that since land, capital, productive resources and economic opportunities are fairly unequally distributed; unemployment and underemployment are widely spread, trickle down and spread effect of economic growth on low income groups are very low in Bangladesh government's effort can only ensure short term food security. For long term food security a broad based employment and income generating programs need to be undertaken. For this dynamization and diversification of rural economy assumes special significance. Planned development of rural farm and non-farm sector and sensible policy based on resource based on each particular agro-ecological zone can ensure long-term food security.

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Table 1: Foodgrain Availability and Requirement in Bangladesh, 1972/73-2004/05

Year	1	2	3	4	5	6	7 = 6 - 4	8	9	10	11 = 4 + 8 + 9	12
		Rice	Wheat	Total	Mid-year Population (million)	Foodgrain Consumption Requirement	Food Gap	Private Import	Public Distribution	Internal Procurement	National Availability	Per Capita Availability oz/day
1972/73	8937				74.3	11666	2648		2259	0	11277	10.42
1973/74	10549	98	10647		76.4	11996	1349		2034	0	12681	11.35
1974/75	9997	104	10101		78.0	12247	2146		1718	7	11812	13.25
1975/76	11305	194	11499		79.9	12545	1046		1627	26	13100	12.96
1976/77	10410	230	10640		81.7	12888	1246		1657	85	12212	13.89
1977/78	11487	309	11796		83.7	13142	1346		1701	159	13338	14.25
1978/79	11381	437	11818		85.6	13440	1622		2015	254	13579	14.28
1979/80	11466	741	12207		87.7	14082	1875		2498	355	14350	15.79
1980/81	12495	983	13478		89.9	14419	941		1542	1017	14003	15.05
1981/82	12268	870	13138		91.9	14740	1602		14902	303	14902	15.67
1982/83	12795	966	13781		93.9	15061	1280		1935	192	15524	15.98
1983/84	13057	1090	14147		96.0	15397	1250		2051	266	15932	16.04
1984/85	13159	1318	14477		98.1	15734	1257		2562	349	16690	16.44
1985/86	13537	938	14475		100.3	16006	2131		1541	349	15667	15.09
1986/87	13866	982	14848		102.5	16970	2122		1220	188	16780	15.82
1987/88	13873	943	14816		104.7	17335	2519		2503	375	16944	15.64
1988/89	13990	919	14909		106.8	17682	2773		2241	416	17434	15.77
1989/90	13939	801	16740		108.9	18030	1290		2164	960	17944	15.92
1990/91	16007	904	16911		111.0	18378	1467		2372	783	18500	16.11
1991/92	16427	959	17386		113.0	18709	1323		2345	1016	18715	16.00
1992/93	16507	1058	17565		115.0	19040	1475		1073	233	18760	15.77
1993/94	16238	1018	17256		117.0	19371	2115		1376	166	18778	15.51
1994/95	15150	1121	16271		119.0	19702	3431		1573	277	18580	15.09
1995/96	15919	1232	17151		121.0	20033	2882		1795	422	19374	15.47
1996/97	16992	1309	18301		123.0	20364	2063		1392	616	19314	15.17
1997/98	16976	1623	18599		125.0	20696	2097		1621	616	20739	16.03
1998/99	17915	19632	19632		127.0	21027	1995		2135	751	24484	18.63
1999/00	20761	1710	22416		129.0	21358	1234		1900	967	24583	18.42
2000/01	22577	1506	24083		131.0	21689	1063		1569	987	25728	18.56
2001/02	21870	1446	23316		133.0	22020	1289		1325	726	25204	18.31
2002/03	22670	1357	24027		135.0	22351	2966		1489	816	27666	19.21
2003/04	23571	1128	24699		137.0	22682	2499		1298	828	27686	19.01
2004/05	22518	1180	23698		139.0	23013	2732		1200	759	26871	18.76

Source: FPMU, DG Food, FMRSF and BBS.

Note: Before consumption requirement was calculated @ 15.5oz/day/capita and before 1991/92 private of foodgrain was not allowed.

Appendix

Table 1: Foodgrain Availability and Requirement in Bangladesh, 1972/73-2004/05

											(‘000 metric tons)
Year	Net Domestic Production (deduction of 10% of gross prod-uction for seed, feed & wastage)			Mid-year Population (million)	Foodgrain Consumption Requirement	Food Gap	Private Import	Public Distri- bution	Internal Procure- ment	National Availability	Per Capita Avail- ability oz/day
	Rice	Wheat	Total		16oz/day/cap						
1	2	3	4	5	6	7 = 6 - 4	8	9	10	11 = 4 + 8 + 9 - 10	12
1972/73	8937	81	9018	74.3	11666	2648		2259	0	11277	10.42
1973/74	10549	98	10647	76.4	11996	1349		2034	0	12681	11.35
1974/75	9997	104	10101	78.0	12247	2146		1718	7	11812	13.25
1975/76	11305	194	11499	79.9	12545	1046		1627	26	13100	12.96
1976/77	10410	230	10640	81.7	12828	2188		1657	85	12212	13.89
1977/78	11487	309	11796	83.7	13142	1346		1701	159	13338	14.25
1978/79	11381	437	11818	85.6	13440	1622		2015	254	13579	14.28
1979/80	11466	741	12207	87.7	14082	1875		2498	355	14350	15.79
1980/81	12495	983	13478	89.9	14419	941		1542	1017	14003	15.05
1981/82	12268	870	13138	91.9	14740	1602		2067	303	14902	15.67
1982/83	12795	986	13781	93.9	15061	1280		1935	192	15524	15.98
1983/84	13057	1090	14147	96.0	15397	1250		2051	266	15932	16.04
1984/85	13159	1318	14477	98.1	15734	1257		2562	349	16690	16.44
1985/86	13537	938	14475	100.3	16606	2131		1541	349	15667	15.09
1986/87	13866	982	14848	102.5	16970	2122		2120	188	16780	15.82
1987/88	13873	943	14816	104.7	17335	2519		2503	375	16944	15.64
1988/89	13990	919	14909	106.8	17682	2773		2941	416	17434	15.77
1989/90	15939	801	16740	108.9	18030	1290		2164	960	17944	15.92
1990/91	16007	904	16911	111.0	18378	1467		2372	783	18500	16.11
1991/92	16427	959	17386	113.0	18709	1323		2345	1016	18715	16.00
1992/93	16507	1058	17565	115.0	19040	1475	355	1073	233	18760	15.77
1993/94	16238	1018	17256	117.0	19371	2115	312	1376	166	18778	15.51
1994/95	15150	1121	16271	119.0	19702	3431	1013	1573	277	18580	15.09
1995/96	15919	1232	17151	121.0	20033	2882	850	1795	422	19374	15.47
1996/97	16992	1309	18301	123.0	20364	2063	237	1392	616	19314	15.17
1997/98	16976	1623	18599	125.0	20696	2097	1135	1621	616	20739	16.03
1998/99	17915	1717	19632	127.0	21027	1395	3468	2135	751	24484	18.63
1999/00	20761	1710	22471	129.0	21358	-1058	1234	1900	967	24583	18.42
2000/01	22577	1506	24083	131.0	21689	-2394	1063	1569	987	25728	18.56
2001/02	21870	1446	23316	133.0	22020	-1296	1289	1325	726	25204	18.31
2002/03	22670	1357	24027	135.0	22351	-1676	2966	1489	816	27666	19.21
2003/04	23571	1128	24699	137.0	22682	-2017	2499	1298	828	27668	19.01
2004/05	22518	1180	23698	139.0	23013	-685	2732	1200	759	26871	18.76

Source: FPMU, DG Food, FMRSP and BBS.

Note: Before consumption requirement was calculated @15.5oz/day/capita and before 1991/92 private of foodgrain was not allowed.

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Table 2: Foreign Aid Scenario in Bangladesh 1977/78-2003/04

(Billion 2000 Taka)			
Year	Food Aid	Total Aid	Food Aid as a % of Total Aid
1978	10.20	72.20	14.1
1979	14.10	81.20	17.4
1980	26.30	85.70	30.7
1981	12.10	71.30	17.0
1982	15.50	83.40	18.6
1983	18.20	83.80	21.7
1984	19.40	89.20	21.7
1985	16.20	83.50	19.4
1986	14.10	91.00	15.5
1987	15.10	106.60	14.2
1988	18.00	98.50	18.3
1989	12.50	92.10	13.6
1990	9.40	90.80	10.4
1991	12.90	83.50	15.4
1992	12.00	80.00	15.0
1993	5.90	81.40	7.2
1994	5.60	74.60	7.5
1995	6.50	82.20	7.9
1996	6.50	68.30	9.5
1997	4.90	71.50	6.9
1998	4.80	61.00	7.9
1999	8.80	76.20	11.5
2000	8.70	70.26	12.4
2001	4.91	68.35	7.2
2002	5.09	52.01	9.8
2003	2.54	64.23	4.0
2004	2.89	61.25	4.7

Note: Real 2000 prices computed using the non-food consumer price index.

Source: GOB data, FMRSP

Table 3: Domestic Procurement of Food grain during 1980/81-2004/05

Year	Rice	Wheat	Total Foodgrain Procurement	('000 metric tons)	
				Net Domestic Production	Procurement as a % of Net Production
1980/81	854	179	1033	13478	7.66
1981/82	289	13	302	13138	2.30
1982/83	168	24	192	13781	1.39
1983/84	148	122	270	14147	1.91
1984/85	134	210	344	14477	2.38
1985/86	219	130	349	14475	2.41
1986/87	128	53	181	14848	1.22
1987/88	289	86	375	14816	2.53
1988/89	359	52	411	14909	2.76
1989/90	919	43	962	16740	5.75
1990/91	727	56	783	16910	4.63
1991/92	940	77	1017	17385	5.85
1992/93	278	5	283	17565	1.61
1993/94	149	17	166	17256	0.96
1994/95	123	41	164	16270	1.01
1995/96	272	69	341	17151	1.99
1996/97	581	103	684	18380	3.72
1997/98	393	217	610	18599	3.28
1998/99	751	0	751	19632	3.83
1999/00	967	0	967	22416	4.31
2000/01	987	0	987	24083	4.10
2001/02	726	0	726	23316	3.11
2002/03	816	0	816	24027	3.40
2003/04	828	0	828	24699	3.35
2004/05	759	0	759	23698	3.20

Source: FPMU, DG Food, Government of Bangladesh.