

Increasing Rice Production Eliminating the Vicious Chain of Food Gap: The Review of Long-Term Outlook of Rice Sector in Bangladesh



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Abstract

Rice is the main cash crop and staple food for people of Bangladesh. Per capita consumption of rice is about 170 kg per year. After independence, rice production gradually increases in Bangladesh, however due to population pressure; a sharp gap exists between production and consumption during the period of 1972 to 2008. Despite pressure from overpopulation, Bangladesh has reached self-sufficiency in rice production and secured fourth position among the highest rice producing countries in the world.

Keywords: Rice production; Food gap; Long-term outlook

Introduction

Bangladesh is an agriculture-based country in the world. Many cash crops are producing by the farmers of this country such as, rice, wheat, potato, jute etc. However, rice is the most important and number one crop according to production and staple food for people of Bangladesh. After liberation war in 1971, this country faced lots of crisis due to war that were infrastructural damage, food shortage, lack of resource person etc. This country overcome the great famine in 1974 due to shortage of food. However, after that period the country runback to food production and increased the rice production.

Rice grown throughout the country except some of hilly areas. Agro climatic condition of the country are suitable for growing different agricultural crops in year-round of this country. In Bangladesh, Agriculture contributes 15.35% of the gross domestic product (GDP); in addition, rice and other crops contributes 8.35% [1].

The population of Bangladesh increasing over the period, land and other natural resources facing the high pressure however, Bangladesh has made significant advancement in food production over the last three and a half decades [2]. Rice is the main crop of Bangladesh and staple food, reflected in the high per capita rice consumption in this country. For getting

the nutritional demand people of this country used rice. Due to cultivation techniques and cropping patterns rice production in Bangladesh has gradually changed in terms of yield potentials. Despite pressure from overpopulation, the country has reached self-sufficiency in rice production [3].

There has been quite improvement in terms of food grain availability over the years. In fact, per capita availability of rice has increased 137 kg in 1972 to 172 kg in 2013. Even though population has increased tremendously by this period implying an overall increase in food demand. Despite the significant increase in rice production Bangladesh is still one of the largest food grain importers in the world [4]. However, assessment of long-term rice supply scenario in Bangladesh could be of enormous use for the research managers, planners to take decision for the improvement of this sector.

Methodology

This study used secondary data for the analysis of rice scenario in Bangladesh. A time series data regarding area, production, yield etc. of rice from 1972 to 2013 (42 years) collected from International Rice Research Institute (IRRI), FAOSTAT, Bangladesh Bureau of Statistics (BBS), and other different published and unpublished reports of related studies.

The present study employed in analyzing the data mainly for descriptive statistics. In descriptive analysis, to derive meaningful findings, the tabular technique and graphs used to classify the generated data [5].

Results and Discussion

World rice production

Rice is the most important foods in the world, and it contains many priceless health benefits. The production of rice has

increased steadily over the decade. World’s most consumed staple food is cultivated mainly in Asian countries. These countries produce rice to meet their own demand as well as export to other countries.

According to the statistics of world rice production in 2016, China is highest rice producing country in the world. According to the USDA estimates in 2016, the world rice production is 480.02 million metric ton where Bangladesh achieved the fourth position shows red colored in Figure 1.

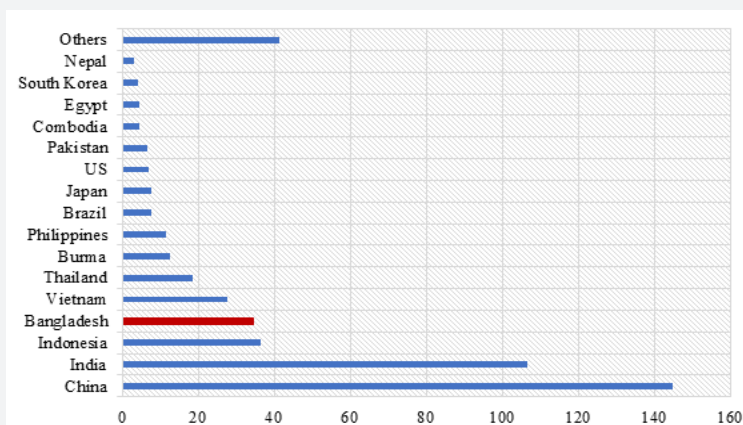


Figure 1: World rice production in 2016 (million tons). Source: World Rice Production, USDA [6,7].

Rice production in different season

In Bangladesh, three kinds of rice are producing by farmers, which are *aus*, *aman*, and *boro* (Table 1). *Aman* area covered most of the Bangladesh, but the yield rate is lower than the *boro* production. The *boro* production increases over the periods due to the increasing rate of yield. Moreover, farmers are using modern variety for all kinds of rice production. However, area of *aus* production increases but not the significant increases of yield. It appears that during the last two decades the *boro* crop has had a higher share in total production than the *aman* rice, which was the major rice crop in Bangladesh. High yielding

seeds and irrigation helped Bangladesh attain faster growth in expansion of cultivation of *boro* rice.

Due to the population pressure, Bangladesh faced the food insecurity on the beginning years of independence and high yielding variety of *boro* rice production meet up the demand of food in Bangladesh. Now a day’s *boro* is main rice, which are cultivated by farmers in Bangladesh. Table 1 shows the yield of *boro* rice production for the last eras and in 2014-15 season it reached nearly 4.00 ton per hectare while *aman* 2.38, and *aus* 2.24 respectively. Although this yield rate is lower, compare to other rice producing countries in world.

Table 1: Area, production, and yield rate of rice in Bangladesh.

Year	(Area in Million Hectares and Production in Million Metric Tons, and Yield in t/ha)								
	Aus			Aman			Boro		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
2007-08	0.91	1.5	1.64	5.05	9.66	1.91	4.6	17.76	3.86
2008-09	1.07	1.9	1.76	5.5	11.61	2.11	4.71	17.8	3.78
2009-10	0.98	1.71	1.74	5.67	12.2	2.15	4.7	18.05	3.84
2010-11	1.11	2.13	1.91	5.64	12.8	2.26	4.77	18.61	3.9
2011-12	1.14	2.33	2.04	5.58	12.79	2.29	4.81	18.75	3.89
2012-13	1.05	2.15	2.05	5.61	12.89	2.29	4.77	18.77	3.93
2013-14	1.05	2.32	2.2	5.54	13.02	2.35	4.8	19	3.95
2014-15	1.04	2.33	2.24	5.53	13.19	2.38	4.84	19.19	3.96

Source: Bangladesh Bureau of Statistics [8].

Rice production trend in Bangladesh from 1972 to 2013

Food security means rice security in Bangladesh. It provides income, employment, and food directly or indirectly for more than 70% of the peoples. From rice deficit to almost self-sufficient

for some of the years in last decade. The Figure 2 indicates that total rice production area in Bangladesh not increasing over the period and it is about 10 million ha. However, the total production increases during the period and great change of rice production in after the year 2000. Moreover, average yield rate of rice is about 4 tons per hectare.

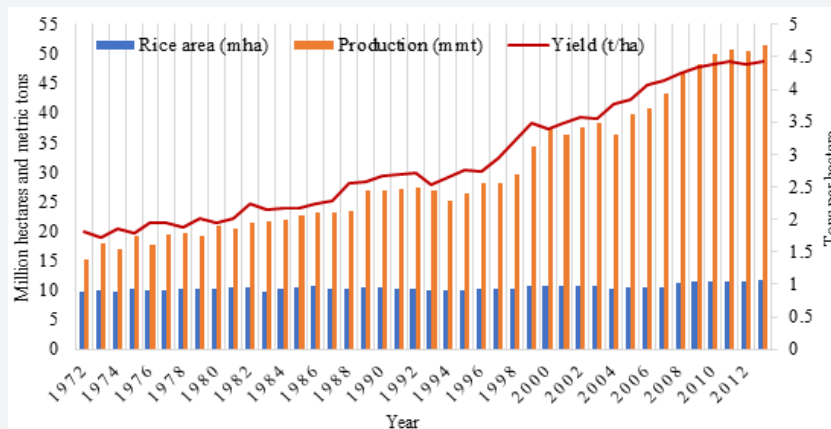


Figure 2: Trend of area, production and yield of rice in Bangladesh. Source: IRRI [7].

Bangladesh is the leading country to produce rice all over world. The trend of paddy (with husk rice) production tremendously increasing after 1995. The dramatic increase of paddy production in last decade and reached more than 50 million metric tons, which followed for milled rice production. There is a certain gap between production and consumption of milled rice in Bangladesh (Figure 3). This situation influences to

import milled rice or other food grain from different countries. In the very beginning of Bangladesh, there is no big gap; however, after 1985 to 2000, there was a big gap in total production and consumption. However, in the year of 2000 the production and consumption made a balance between consumption and production. Furthermore, from 2001 to 2007 shows the national gap between the production and consumption of milled rice.

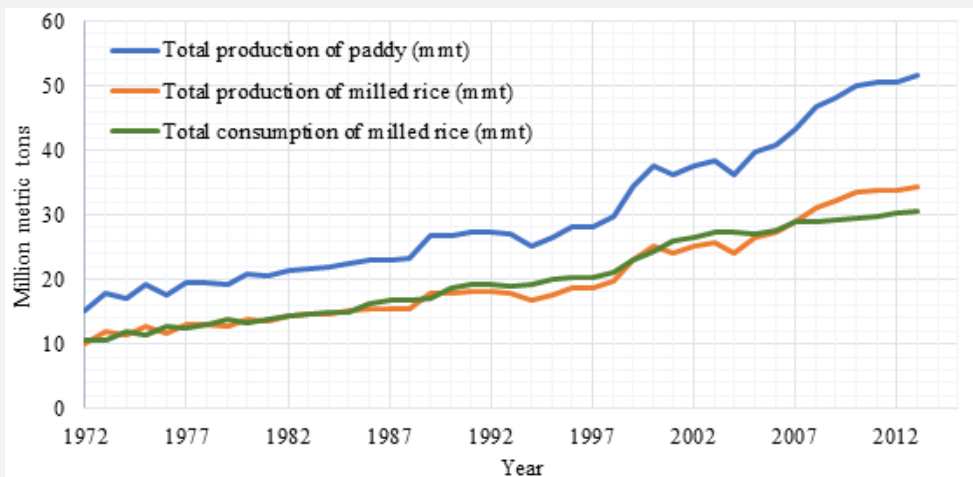


Figure 3: Production and consumption of rice over the years. Source: IRRI [7].

Remarkably, after 2007 the country overcome the negative situation and change to surplus situation of rice production. Now Bangladesh enjoy the surplus rice production and fully rice secured country. This result indicates the self-sufficiency of rice production in Bangladesh.

Per capita consumption of rice

Population is a key factor in rice consumption. Generally, the people of Bangladesh consume different kinds of food items however, rice is the staple dietary item, and per capita consumption of rice is about 171kg/year [8]. The Figure 4

shows the increasing trend of per capita consumption of rice in Bangladesh. Although in the year of 1997 is slight decrease however after that period again increase and reached to 170kg/year.

The Figure 4 shows the increasing trend of per capita of rice consumption in Bangladesh during the period of 1972-2013. In addition, after the year 2000, it was dramatically increased and reached more than 170kg/year. The accomplishment of the

Green Revolution in the early 1960s witnessed a steady rise in Asia's per capita rice consumption from 85 kilograms per year in the early '60s to nearly 103 kilograms in the early'90s. On the other hand, global per capita consumption rose from 50 to 65 kilograms per annum during the same period. The rising per capita consumption plus the growing population more than doubled global rice consumption during this period from 150 to 350 million tons [9].

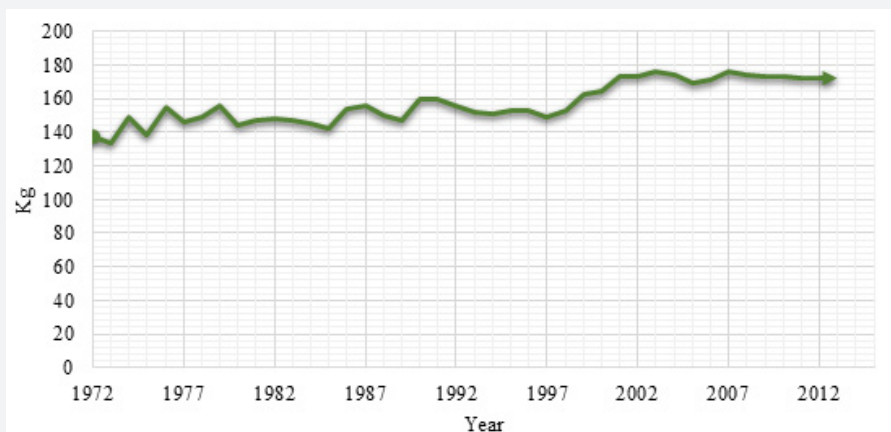


Figure 4: Per capita consumption of rice (kg/yr). Source: IRRI [7].

Import and export of rice in Bangladesh

Many studies indicate that Bangladesh achieving near self-sufficiency in food grain production; however, this country is still one of the largest food grain importers in the world (Figure 5). To keep dive with the increasing demand emanating from population growth, government kept on continuing the import of food grains. From the figure, after liberation war of Bangladesh in 1971 started to import rice and continue to till date. The trend of rice import fluctuating over the years and highest import was

in the year of 1999 and it was more than 2 million metric tons, which followed to the rest of the years. It is worth mentioning that the volume of food grain import was more than doubled compare to the amount of 1992 with the amount imported in 1999, which followed rest of the years. Rice production fully damaged due to long-term flood in 1998 and influenced the import of rice in 1999. Private imports (Imports from India) contributed a lot in 1998 and 2002 when there were production shocks but during the price, hikes in 2007-08 it did not work because of the export restrictions of India.

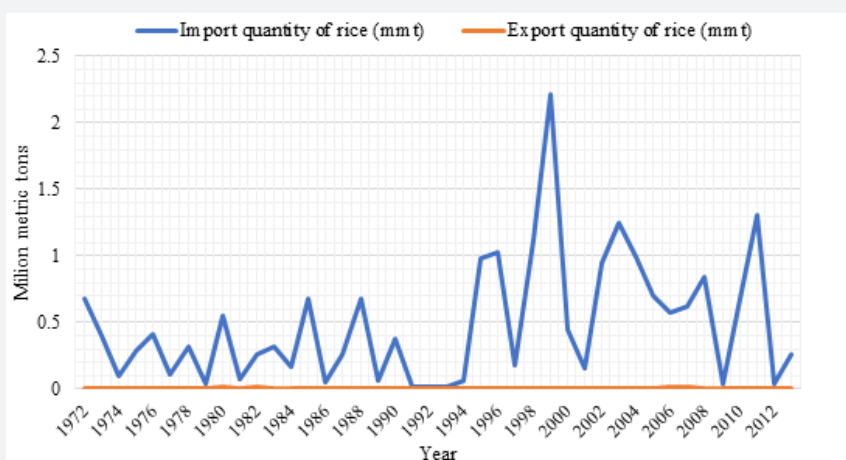


Figure 5: Import and export of rice over the years. Source: IRRI [7].

Food grain production in Bangladesh

After independence to till now during the last three decades Bangladesh, achieved a tremendous progress in agriculture [10]. Modern technology has made a remarkable impact on output growth. The rapid growth of modern inputs has had a positive impact on food-grain production.

Bangladesh has achieved significant improvement in food production particularly in rice production since the independence of Bangladesh. Since independence rice, production has increased from 11 million metric tons to 34 million metric tons [1]. This significant improvement in agriculture can largely be attributed

to rapid expansion of modern technology in Bangladesh over the last few decades. It is evident from the Table 2 that food grains production in FY 2002 – 03 was only 26.87 million metric tons of which *Aus* accounted for 1.85 million metric tons, *Aman* 11.11 million metric tons, wheat 1.50 million metric tons and *Boro* 12.22 million metric tons.

Table 2 also shows that total food grains production in the year of 2015-16 stood at 38.69 million metric tons of which *aus* accounted for 2.29 million metric tons, *aman* 13.48 million metric tons, *boro* 18.94 million metric tons, wheat 1.35 million metric tons and maize 2.64 million metric tons.

Table 2: Food grains production in Bangladesh.

Food Grains	2000-01	2002-03	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Aus	1.91	1.85	2.29	2.1	2.22	2.13	2.33	2.16	2.33	2.33	2.29
Aman	11.25	11.11	11.01	12.23	12.66	12.79	12.8	12.9	13.02	13.19	13.48
Boro	11.92	12.22	18.68	18.29	18.53	18.62	18.76	18.78	19.01	19.19	18.94
Total Rice	25.08	25.18	31.98	32.61	33.4	33.54	33.89	33.83	34.36	34.71	34.71
Wheat	1.67	1.5	0.96	0.96	1.04	0.97	1	1.26	1.3	1.35	1.35
Maize	0.149	0.175	2.36	1.14	1.37	1.55	1.95	2.18	2.52	2.36	2.64
Total	26.9	26.87	35.29	34.71	35.81	36.07	36.84	37.27	38.17	38.42	38.69

Source: BER [1].

Nutritional status from rice over the period

Most of the developing countries like Bangladesh; rice is the primary source of nutrition. Rice has generally been considered as the main food to improve the food insecurity. It is currently food grain production has more than doubled since independence in 1971. However, until now food insecurity is a big issue in Bangladesh. Table 3 shows that, percentage of total

calorie intake per day decreases while per capita calorie intake increased compare to the post independent of Bangladesh. In addition to that, percentage of total fat and protein intake decreases per day in recent years. However, total consumption per capita (kg/year) increased last two decades. With the importance and relevance of nutritional components, rice plays the vital role for the food nutritional status in Bangladesh [11].

Table 3: Calorie intake from rice in Bangladesh.

Year	Consumption per Capita (kg/yr)	Calorie Intake (%total/day)	Calorie Intake per Capita (kcal/day)	Fat Intake (%total/day)	Protein Intake (%total/day)
1972	137.65	73.04	1371	20.84	61.36
1981	147.38	73.47	1468	21.47	63.48
1991	159.94	75.28	1593	18.39	66.09
1992	156.09	73.66	1555	15.77	65.13
1993	151.41	75.02	1508	16.8	66.01
1994	151.05	75.14	1505	17.55	65.05
1995	153.22	74.79	1528	16.51	65.33
1996	152.85	74.41	1524	16.08	64.8
1997	148.56	70.61	1480	12.7	62.03
1998	153	70.57	1525	10.89	63.25
1999	162.73	71.54	1621	14.94	61.23
2000	163.94	72.32	1633	13.18	63.31
2001	172.9	73.92	1723	13.97	65.03
2002	172.94	74.49	1723	16.06	63.58
2003	175.95	74.6	1753	14.99	64.3
2004	174.21	72.88	1736	14.26	62.19

2005	169.41	71.16	1688	13.61	60.92
2006	171.11	71.88	1705	12.93	61.74
2007	176.07	72.57	1754	13.56	61.28
2008	174.27	72.76	1736	13.89	62.52
2009	173.13	71.13	1725	12.95	58.66
2010	172.79	70.56	1721	13.22	57.91
2011	172.62	70.81	1720	12.83	59.2
2012	172.47	70.55	1718	12.56	59.08
2013	171.73	69.84	1711	12.63	57.56

Source: International Rice Research Institute (IRRI), 2017.

Conclusion

This study has presented detailed of the rice production, consumption, and import-export scenarios of Bangladesh. In this paper, our main effort was to find out the yield of production, and consumption trend of rice in Bangladesh. We compared the world rice production among the rice producing countries including Bangladesh as well as the area, yield, and total production of Bangladesh over the last 42 years. About 80% of people in Bangladesh depend directly on agriculture for their food and livelihood, and rice being the first most vital crop. Natural calamity and climate change influenced strongly on rice production. However, our study found that, the rice production gradually increased after independence of Bangladesh and now a days Bangladesh become the leading position of rice growing countries in the world. This increasing trend of rice production have direct implications for food security in Bangladesh as well as South Asia.

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