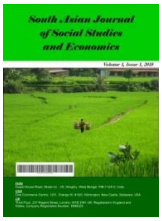

South Asian Journal of Social Studies and Economics

1(4): 1-9, 2018; Article no.SAJSSE.42080

The Factors of Declining Agricultural Growth in Bangladesh and Its Impact on Food Security

Minhazur Rahman Rezvi[1*]

[1]Institution: Bachelor in Social Sciences (BBS) in Development Studies at University of Dhaka, Bangladesh.

Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/SAJSSE/2018/v1i425810
Editor(s):
(1) Mehmood Ali Noor, Chinese Academy of Agricultural Sciences, Key Laboratory of Crop Physiology and Ecology, Ministry of Agriculture, Institute of Crop Science, Beijing 100081, China.
Reviewers:
(1) Antipas T. S. Massawe, University of Dar es Salaam, Tanzania.
(2) Doris Fiasorgbor, Presbyterian University College, Ghana.
Complete Peer review History: http://prh.sdiarticle3.com/review-history/25844

Original research Article

Received 12th May 2018
Accepted 24th July 2018
Published 10th August 2018

ABSTRACT

Agriculture is an important sector of Bangladesh economy because it has a positive role in food security, employment and livelihoods. Around 84 percent of rural people rely on agriculture sector directly or indirectly for their livelihood. However, in last 17 years, the shares of agriculture in GDP are steadily declining. However, Bangladesh is the most vulnerable country in the world due to climate change. Based on secondary data, the study intends to describe the impacts of climatic causes on declining agricultural growth in the country. The paper also discusses impact of population growth, urbanization, loss of arable land etc on agriculture production of Bangladesh. The trend of declining agricultural growth has negative effect on food security. As a consequence of declining agricultural growth, food security has emerged a big challenge for Bangladesh. The paper analyses the impacts of declining agriculture growth on food security as well as other causes.

Keywords: Agricultural growth; climate change; anthropogenic causes; food security; Bangladesh.

**Corresponding author: Email: minhazurrahmanrezvi@gmail.com;*

1. INTRODUCTION

Bangladesh is one of the predominantly agro-based developing countries in the world. Agriculture is a largest economic sector of Bangladesh. Around 62 percent people are engaged in agriculture farming and they manage their subsistence from agriculture production. The percentage of dependency on agriculture is higher in a rural area rather than urban area which is 87 per cent population in rural area is relying on agriculture directly and indirectly. Agriculture had played several key roles in the process of economic development. Agriculture had a great contribution in annual national GDP. According to the World Bank, in 1972, agriculture contributed around 52 percent of total GDP. But over a period of time, the rate of contribution in national GDP of agriculture has been decreasing because the growth rate of agriculture has been declining year by year. In recent years, it has fallen further to slightly above 16 percent. In 2016-2017, the contribution of agriculture is 14.79 percent of total national GDP.

Agriculture production is declining as well as its contribution in total national GDP is also declining more sharply. There are several reasons behind of declining agricultural growth in Bangladesh like as high rate of population growth, pressure on agricultural land and climate change.

Declining of agricultural production and food insecurity has a positive correlation between them. In FY 1999-2000, Bangladesh has self-sufficient food production comparing with the proportion of population. As a consequence of climate change, agricultural production is declining year after year. As a result, it reduces food supply in market according to demand of the market. Government imported food from other countries to fill up the demand since last decade. At present, ensuring food for all becomes a big challenge for the government of Bangladesh.

The major focus of this paper is on the trend of agriculture growth rate in national GDP specifically from 2000 to 2017. The study is explained the adverse impacts of climate change on agriculture production. The study also explains other causation of declining agricultural production in Bangladesh. The paper also focuses on food insecurity in the country and its causes of reducing food supply in market.

1.1 Literature Review

There has a great impact on structural change theory or Lewis two-sector theory in the present economic system around the world including Bangladesh. The two-sector model focused on structural transformation from subsistence or traditional sector to the modern sector. Lewis (1954) explained that in his 'two-sector model' is that surplus labor from the traditional sector is transferred to the modern industrial sectors, promotes industrialization [1]. Traditional agriculture could be transformed rapidly into a modern industrial sector [2].

A study named "*On the Decline of Agriculture in Developing Countries: A Reinterpretation of the Evidence"* done by Punyasavatsut and Coxhead in 2002 described that as consequence of a structural change in the economy, many developing-country government tax agriculture not only directly, through pricing policies, but also indirectly for promoting industrialization [3]. The study showed that as increasing effective agricultural taxes by Thai governments in the late 1980s—a decade in which manufacturing income grew far faster than agricultural income—slowed the agricultural decline. Promotion of industrialization, agriculture growth in the economy has been declining around the world.

In a paper on "Agricultural Crisis in India: The Root Cause and Consequences" by Albert Christopher Dhas in (2009) explained that around 52% people in India are directly depended on the agriculture sector [4]. But Agriculture in India is undergoing a structural change leading to a crisis situation. "The relative contribution of agriculture to the GDP has been declining over time steadily". Dhas (2009) also identified other causes of declining agriculture growth in India that pressure on arable land, population pressure, climate change and shortage of public investment in agriculture sector [4].

Agriculture had a major contribution in national GDP in Bangladesh. Ghose et al. (2014) described that the modern economy of Bangladesh is largely dependent on industrialization [5]. As a result of industrialization, agricultural production has declined more steadily. The share of agriculture in GDP has significantly declined in Bangladesh [6]. In early of 1970s, the contribution of agriculture in the economy around 60 percent but it went down to 48 percent at the end of 1990s

[7]. Without a structural change of economy, there are others factors of declining agricultural production in Bangladesh.

A study named "Crop agriculture of Bangladesh: challenges and opportunities" done by Mondal (2010) identified challenges or reasons of declining agricultural production whose are Loss of Arable Land, Population Growth, Climate Changes, Inadequate Management Practices (Fertilizer, Water, and Pests & Diseases), Lack of Quality Seeds, and Inadequate Credit Support to Farmers, Unfair Price of Produces, and Insufficient Investment in Research [8]. Mondal (2010) also noted that crop agriculture in Bangladesh has become regularly vulnerable to the hazards of climate change–flood, drought, and salinity in particular [8].

Besides, natural disaster, man-made disaster and climate change is also responsible for the declining agricultural growth.

Habiba et al. (2015) *in their book "Food Security and Risk Reduction in Bangladesh"* described that Agriculture is important for food security in two ways: it produces the food people to eat and, it provides the primary source of livelihood for 36 percent of the world's total workforce [9]. Climate change increases the food crisis for most of the developing countries by affecting the production and Supply process [10]. The book also explained that there are not only climatic causes hamper to produce crop and impede to attain food security but also anthropogenic causes are related to the severe food crisis. There are several number of anthropogenic factors that hamper to produce a crop and impede to attain food security like population growth, urbanization, loss of arable land, inadequate credit support to the farmers, unfair pricing, insufficient investment in agricultural research and irrigation etc.

2. A TREND OF AGRICULTURE GROWTH OF LAST DECADE

One of the dominant aspects of the Bangladeshi economy is agriculture. In 1972, agriculture had contributed around 52 percent of total GDP. The share of agriculture has declined from about half of total GDP during the 1970s to about one-third during the 1980s. The share of agriculture declined further – from about 30% in 1989/90 to 25% in 1999/00 [11]. Due to structural change, the economy has mostly focused on the development of industries rather than agriculture growth since last few decades. As a consequence of the negligence of agricultural development, the contribution of agriculture in total nation GDP has been declining over the last four decades. Bangladesh economy has faced a great transformation in the industrial sector to agriculture sector. As a result, industrial growth in Bangladesh is soaring rather than agriculture. There have other causes that industrial sectors get a large allotment of the national budget; the industrial sector has gotten the more priority in case of foreign and private investment rather than the agriculture sector.

In Fig. 1, there has a comparison between the industrial sector and agriculture sector in national GDP from 2000 to 2017 is depicted. In Fig. 1, FY 2000-2001, the contribution of both sectors in national income was approximately equal which was 25.07 percent and 26.2 percent respectively. After year by year, the gap of contribution between industry and agriculture is increasing and also the share agricultural production in national income is falling over recent years. For instance, in 2005-06, the share of agriculture and industry in GDP was 19.01 percent and 25.08 percent respectively, whereas in 2010-11, 2014-15 and 2015- 16 the share was 18.01 percent and 27.98 percent, 16 percent and 30.42 percent and 15.35 percent and 31.54 percent respectively. In 2016-17, the share of agricultural productions in national GDP is only 14.79. In 1972, agriculture contribution in national income was 52 percent (World Bank); its contribution in national GDP has decreased around three times in comparing with initial age of Bangladesh.

"A declining trend in the growth of the agricultural sector has recently been noticed, which, in turn, contributed to decelerating growth in GDP in the country" [12].

In Fig. 2, though there was a slowly increasing trend of agriculture growth since 2000 to 2006, in the 2006-07 the growth rate of agriculture has been started falling more sharply and it has continued till 2015-2016. The rate growth of agriculture was 5.24 percent in 2010-11, whereas in 2014-15 and 2015-16 the rate was 4.46 percent, 3.33 percent and 2.79 percent respectively. From 2000 to 2016, the rate of economic growth has been decreasing at a decreasing rate. In 2016-2017, there has raised a little hope that the rate is increased a little bit by changing of decreasing mode but there has uncertainty about how many years it will be continued.

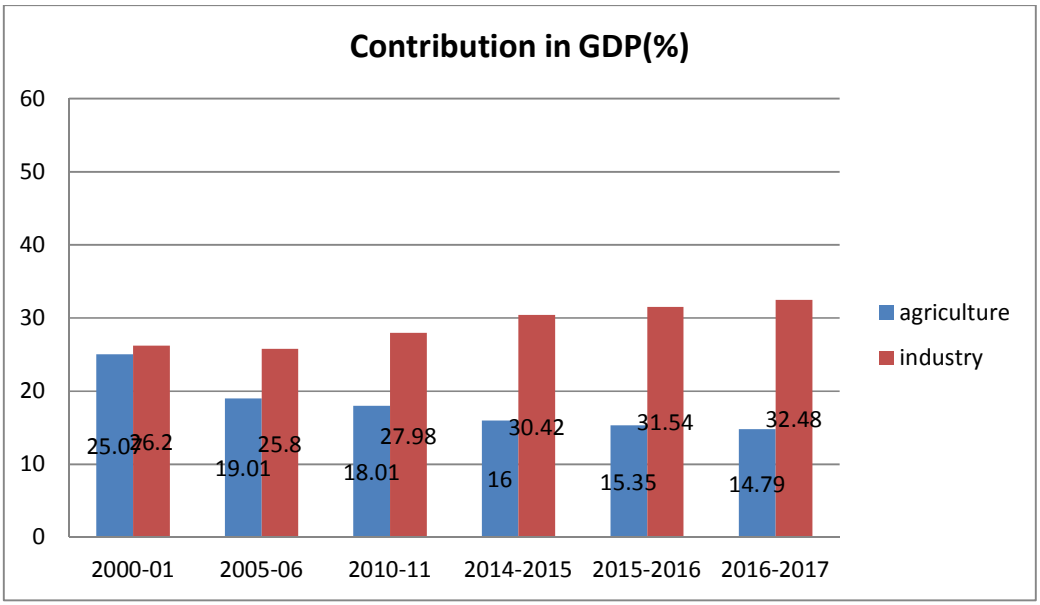

Fig. 1. Contribution of industrial and agriculture sector in national GDP
Source: Ministry of Finance – 2017, Government of Bangladesh.

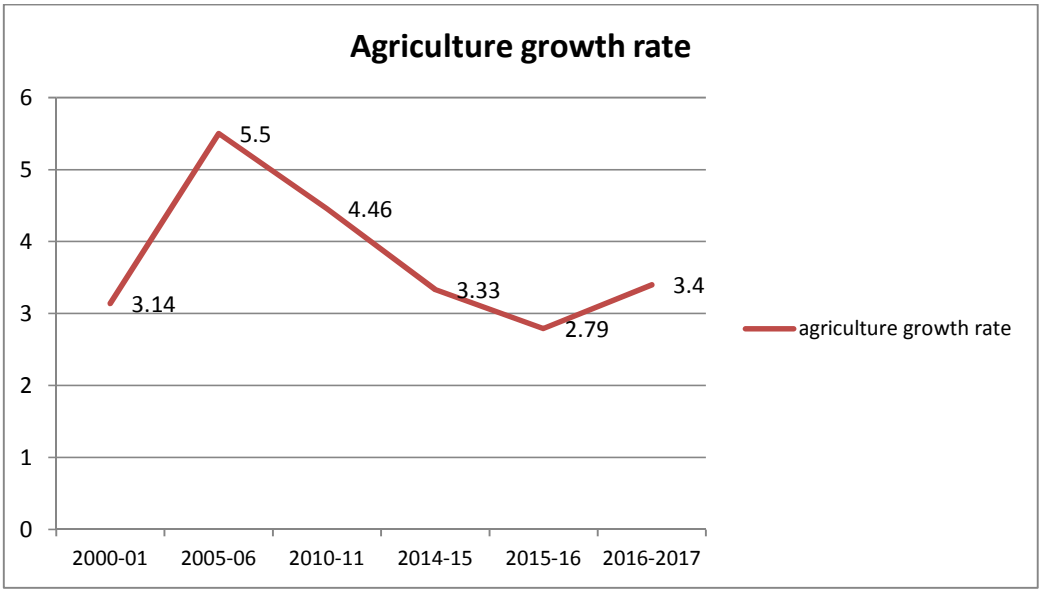

Fig. 2. A trend of agriculture growth from 2000-01 to 2016-17
Source: Ministry of Finance – 2017, Government of Bangladesh

3. REASONS FOR DECLINING AGRICULTURE GROWTH

3.1 Structural Transformation of the Economy

In long-term, economic growth of Bangladesh has generally been associated with changes in structural contributions to economic output. The movement of labor from traditional agriculture to the manufacturing and service sectors are the great impact on agriculture growth. Because a lion share of capital goes to industrial sector and foreign investment also targeted area is modern sectors (manufacturing sectors) but the agriculture sector did not get priority of capital investment. As a result, the shift of capital allocation to modern industrial sector from

agriculture has reduced the productivity of agrarian. Low production of agriculture has a little contribution on national income. In 2000-2001, the share agriculture in GDP was 25.01 percent. Within 17 year, there has been great change in the share of agriculture in national GDP; it has declined almost half of 2000-01. The share is only 14.79 percent in GDP [13].

3.2 Pressure on Land

Bangladesh is a small country, but the population of the country is around 165.28 million. But the rate of population growth is increasing very fast but land area always remains static. Due to high pressure on farm land, the country is losing nearly 82,000 hectares of land annually on an average, of which 55 per cent is used for housing followed by industrial and other commercial sectors. About three million acres of agricultural land have gone to other sectors including housing, infrastructure and industrial sector over the last three decades [14].

In each day, the country is losing roughly 225 hectares of land due to unplanned urbanization. There were around 21 million acres of net-crop cultivable land in the country in 1980, and after gradually declining, it stood at 18 million acres in 2007 [15]. If the trend of losing land will be going on, the country will face a severe reduction of agricultural production and also face food crisis within a couple of decades due to overexploitation and rapid decline of agricultural land.

3.3 Climate Change

Bangladesh is frequently a most vulnerable country due to climate change. “Weather and climate are important factors, which play a significant role to agricultural productivity”[16]. The impact of climate change is a challenging issue for Bangladesh, where lives and livelihoods depend mainly on agriculture which is been in a great danger. Agriculture is one of the most sensitive sectors to climate change [17], particularly changes in temperature, changes of rainfall patterns, and increases the likelihood of extreme natural climatic events such as droughts [18]. Bangladesh is facing the terrible effects of climate change due to global warming like other parts of the planet.

The increase of Temperature and irregular and heavy rainfall have already affected crop production in many parts of Bangladesh [19]. An increase of 4°C in temperature would have a severe impact on food production in Bangladesh as resulting in a 28 per cent reduction for rice and a 68 percent reduction for wheat [20]. “The production of rice and wheat could fall by eight per cent and 32 per cent respectively by 2050” [18].

On the other hand, salinity intrusion inland also is increasing in the country. According to the Bangladesh National Adaptation Program of Action, the sea level along the Bangladesh coastal is rising at about 3 millimeters a year. As a consequence of rising sea level, every year a large area in coast (south-east region) many farmlands are affected by saline water. Salinity intrusion increased by 27 percent from 1973 to 2009. Salinity affected 1.1 million hectares of land in these coastal areas [14]. Because of salinity intrusion, water logging and drought, around 30-50 percent of net cropped areas are still not eligible for crop production. A study predicted that if this rate of salinity intrusion is continuing, rice production will fall by 8 percent and also wheat will reduce by 32 percent until 2050.

Bangladesh is disaster prone country because of its conical shape. The country is affected frequently by flood, drought, cyclone, and salinity due to climate change [8]. The climatic change has increased intensity and frequency of cyclones, flash flood, tornados in Bangladesh. Droughts, floods, salinity and cyclones as the major extreme climatic events make agricultural production as most vulnerable. As consequence of cyclone like as SIDR and Aila, a vast damage occurred in agriculture production. In November 2007, SIDR hint Southern parts of Bangladesh. As a consequence of SIDR, According to Department of Agricultural Extension of Bangladesh, the loss in rice equivalent is found at 1.23 million tons, with 535,707 tons in the 4 severely affected districts, 555,997 tons in badly affected 9 districts and 203,600 tons in moderately affected 17 districts in Bangladesh.

3.4 Inadequate Credit Support to Farmers

Agricultural Credit also has a positive impact on household income and GDP growth rate. In Bangladesh, almost 90 percent famers are small and marginal. In Bangladesh, a large proportion of farmers are confined in the poverty cycle. They have not enough resources and capital to invest in land. The institutional credit is of prime importance

for enhancing agricultural production and graduating from poverty. "The adequate supply of credit has a positive influence on the growth of agricultural output and farms incomes which had proved in case of many countries" [21]. The farmers have limited access to institutional credit because of formal collateral of agencies. A timely flow of agricultural credit can meet farmers demand to ensure agricultural productivity [22] but it is not happened as usual. At present, only 27% of farmers receive institutional credit [15]. Due to the insufficiency of agriculture credit, marginal farmers cannot produce more agriculture production without their subsistence.

4. IMPACT OF DECLINING AGRICULTURAL PRODUCTION ON FOOD SECURITY

In Bangladesh around 45 percent labor force employed in agriculture sector [23]. Around 84 percent rural people depend on agriculture directly and indirectly [24].

In a few decades ago, Bangladesh did well in ensuring food security and it achieved self-sufficiency in food production. "This country attained self-sufficiency in food production in 1999–2000 with a gross production of rice and wheat of 24.9 million metric tons, which marginally met the country's requirement of 21.4 million metric tons (MT) for the population" [9]. Bangladesh has managed a healthy progress in rice production, tripling from 11 million metric tons in 1971 to 33 million metric tons in 2012.

Due to impacts of climate change, Bangladesh has floods, flash floods, cyclone and tornado in recent years. This phenomenon has adverse effects in food production. The decline of agricultural production caused a big challenge of food insecurity for people.

"Rice in Bangladesh is the main staple food that accounts for 92 percent of the total food production, is disastrously affected by the climate change impacts" [9]. World Bank (2009) predicts that national rice production will decline under all of the Climate Change Scenarios and that the annual growth rate will reduce from 2.71 % to 2.55 % under the Average Climate Change Scenario during the period of 2005–2050 [25]. High increased of temperature has reduced the production of high yielding varieties aman,aus & boro rice in all areas of Bangladesh. An increased 4°C in temperature would have a severe impact on food production in Bangladesh, resulting in a 28 per cent reduction for rice and a 68 per cent reduction for wheat. Farmers say one of the most Obvious fallouts of climate change is the gradual drifting of rain-fed rice season (aman) due to drought and delayed monsoon. The production of rice and wheat could fall by eight per cent and 32 per cent respectively by 2050.

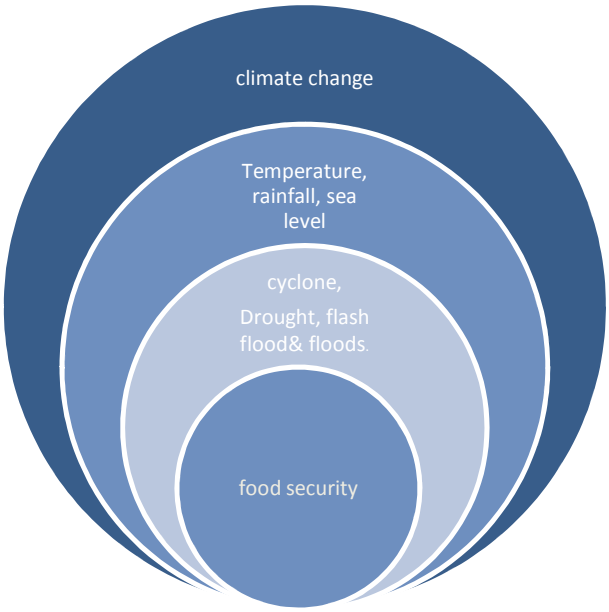

Fig. 3. The effects climate change on food security of Bangladesh

Besides, climate change causes irregular rainfall and heavy rainfall which has taken place in each year in country. Because of changing climate change and world temperature, the intensity and frequency of flood and flash flood have increased a recent year. In last year, flood and flash flood has occurred in several places which caused large devastations of agricultural crops (rice, wheat). Starting in March 2017, the hoar areas of the country have experienced severe flash flood that caused devastation of standing crops, infrastructure damage and human sufferings. According to Department of Agriculture Extension (DAE), the flash flood has submerged 1, 41,000 hectares of farmland in six northeastern districts, affecting around 423,000 farmers. The devastation of crops and submerged of farmland in flash flood affected areas was caused by decreasing the agriculture production last year. Flash flood is not only liable alone for decreasing the proportion of agriculture production but also irregular monsoon floods caused devastation of crops and submerge of farmland.

On the other hand, increased of salinity intrusion inland of Bangladesh is caused by changing climate change in the world. Salinity intrusion on farmland in the coastal area is increasing due to increased sea level. "The rise in sea level would induce salinity into the mainland as salinity-affected arable lands rose from 0.83 million hectares in 1990 to 1.2 million hectares in recent years" [26]. Due to salinity, waterlogging and drought about 30-50% of net cropped area are still not eligible for crop production. Salinity affected 1.1 million hectares of land in these coastal areas. Due to this salinity, rice production will fall by 8% and wheat by 32% until 2050. It also stated that increased of the proportion of salinity, both in coastal and inland areas, may result in significant reduction in rice production as much as 15.6 percent in next 30 years. The increasing rate of salinity will lead to a significant shortage of irrigation for rice production.

There are a number of anthropogenic factors that affect agriculture production; are population pressure, urbanization & loss of arable land etc. population growth is one the major problems of challenges of food security. Bangladesh is most densely populated countries in the world with a population 160 million and annual growth rate is 1.6%. Population growth rate is increasing highly but food production is not increasing as the same proportion according to the food demand of population in Bangladesh. it is reported by Unnayan Onneshan (2014), if the present trend of population growth of two million people per year continues, Bangladesh will undoubtedly face far severe food shortage in the next few years reaching a critical level by 2050 [27]. The growth of the country in farm sector has slowed down over the last five years [26].

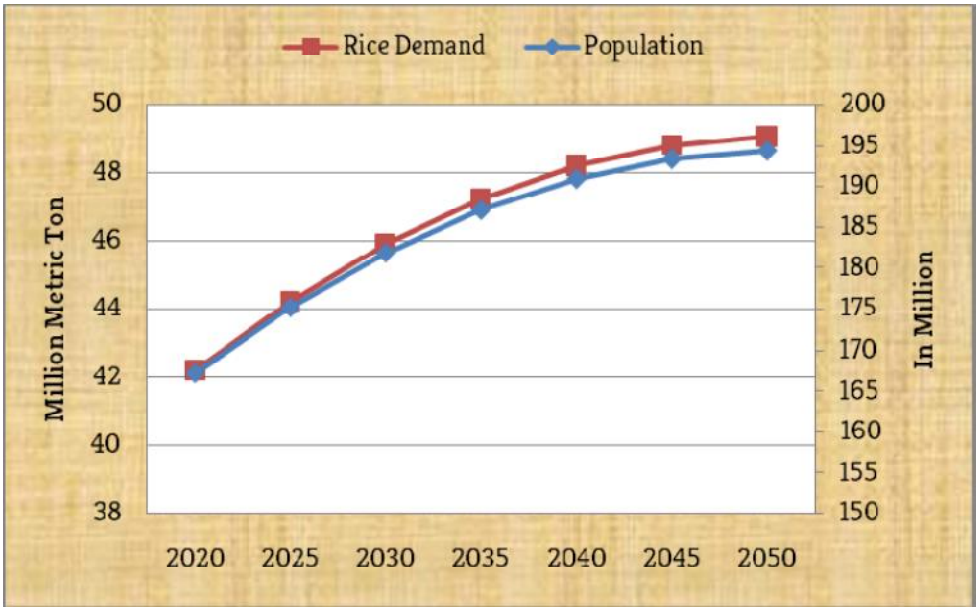

Fig. 4. The Projected amount of population and demand for rice
Source: Projected amount of population and demand for rice. (Unnayan Onneshan' 2014)

Population Division of United Nation has estimated that the total population of Bangladesh will be 194.353 million in 2050 when the total rice demand will be 49.07 million (Fig. 4). It is a tremendous challenge for providing food to the increasing population.

Due to the reduction of food production in the country, Bangladesh government has imported food from neighbouring countries to fill up the demand of food in the country for few years. In the last year 2017, Bangladesh government planned to import 600,000 tons of rice from Thailand &Vietnam for reducing food shortage in the country.

5. CONCLUSION

Bangladesh still dependent on agriculture and a large proportion of people rely on agriculture for their subsistence. But the trend of agriculture growth is declining due to adverse impacts of climate change (salinity intrusion, high temperature and high frequency of natural disasters) in the country. As a result, the growth of agriculture is decreasing which has made vulnerable around 42 percent labor force whose are employed in the sector. It also increases the uncertainty of food security. Agriculture production is not increasing as demand of food supply. Unplanned urbanization and population growth are engulfed around 82,000 hectares agricultural land which affects agriculture production. Besides, Structural transformation, the increasing rate of industrialization is also high. As a result, agricultural growth in the economy not only are falling but also increasing food insecurity.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Lewis WA. Economic development with unlimited supplies of labor. Manchester School. 1954;139-191.
2. Hayami Y, Ruttan V. Agricultural development: An international perspective. Baltimore, Maryland: Johns Hopkins University Press; 1971.
3. Punyasavatsut C, Coxhead I. On the decline of agriculture in developing countries: A reinterpretation of the evidence. Journal of Development economics; 2002.
4. Dhas AC. Agricultural crisis in India: The root cause and consequences. Munich Personal RePEc Archive (MPRA); 2009.
5. Ghose Bishwajit, Barmon R, Ghosh S. Reviewing the status of agricultural production in Bangladesh from a Food Security Perspective. Russian Journal of Agricultural and Socio-Economic Sciences. 2014;1(25):19-27.
6. Rahman T. Role of agriculture in bangladesh economy: Uncovering the problems and challenges. International Journal of Business and Management Invention (IJBMI). 2017;7:36-46.
7. Asaduzzaman M. Agriculture: Future Challenges. The daily star; 2015.
8. Mondal HMD. Crop agriculture of Bangladesh: Challenges and opportunities. Bangladesh Journal of Agriculture. 2010; 35(2):235-245.
9. Habiba U et al. Food security and risk reduction in Bangladesh. Tokyo, Japan: Springer; 2015.
10. Tandon N. Food security, women smallholders and climate change in Caribbean SIDS. International Policy Centre for Inclusive Growth, Cape Town; 2012.
11. Shahabuddin Q. Structural transformation of agriculture. The daily star; 2016.
12. Rana AE. Recent trends of growth in agriculture, industry and power. Bangladesh Economic Update. 2014; 5(3).
13. Bangladesh Economic Review (BER). Economic Division, Ministry of Finance; 2017.
14. Haque N. Shrinking of Arable Land. Daily Sun; 2017.
15. Statistical Yearbook of Bangladesh. Bangladesh Bureau of Statistics (BBS); 2007.
16. Basak JK. Real sector: Agriculture, growth or contraction. Dhaka: Sharabon Prokashani; 2012.
17. Cline WR. Global warming and agriculture. Impact Estimates by Country. Washington DC: Centre for Global Development and the Peterson Institute for International Economics; 2007.
18. Easterling WE et al. Food, fibre and forest products, in Climate Change; 2007: Impacts, Adaptation and Vulnerability,

Cambridge: Cambridge University Press. 2007;273-313.

19. Zafar et al. Temperature extremes in cotton production and mitigation strategies, past, present and future trends in cotton breeding. Journal of Integrative Agriculture. 2018;17(4):726–738.
20. Rahman A, Alam M. Mainstreaming adaptation to climate change in least developed countries (LDCs): Bangladesh country case study. IIED Working Paper. 2003;2.
21. Saha N, Dutta PL. The HYV programme and problems of finance for small farmers in Assam. 1971;26(4).
22. Alauddin, Biswas J. Agricultural credit in Bangladesh: Trends, patterns, problems and growth impacts. The Jahangirnagar Economic Review. 2014;25.
23. Statistical Yearbook of Bangladesh. Bangladesh Bureau of Statistics (BBS); 2016.
24. Mirza, Uddin M. Causal relationship between agriculture, industry and services sector for GDP growth in Bangladesh: An econometric investigation. Journal of Poverty, Investment and Development. 2015;8:124-129.
25. World Bank. Implication of climate change risks on food security in Bangladesh. South Asian Region; 2009.
26. Ahmad R. Farming in the days of climate change. The daily star; 2016.
27. Unnayan Onneshan. Recent trends of growth in agriculture, industry and power. Bangladesh Economic 2014;5:3.

Peer-review history:
The peer review history for this paper can be accessed here:
http://prh.sdiarticle3.com/review-history/25844