2009-2019

Bangladesh Towards Achieving Food Security



Bangladesh: Towards Achieving Food Security 2009-2019



Introduction

Bangladesh has drawn massive global attention in last decade for its outstanding success and numerous landmark accomplishments in increased agricultural production, attaining food self-sufficiency and ensuring sustainable food security. One of the biggest achievements of Bangladesh's agriculture sector is its ability to secure food for its 160 million people. Under the visionary leadership of Honorable Prime Minister (HPM) Sheikh Hasina, Bangladesh has witnessed a strong headway in agricultural development leading to long term food security. The seasonal starvation in the northern region is now a story of the past. Timely policy reforms, interventions and investments in agricultural research facilitated the progress of green revolution which resulted in the adoption of high-yielding crop varieties combined with better irrigation infrastructure, more efficient market institutions and mechanization in the agriculture sector. Bangladesh is predominantly an agricultural country where agriculture sector plays a contributory role in accelerating economic growth. The broad agriculture sector has been given the highest priority to make Bangladesh self-sufficient in food. The government is determined to develop the overall agriculture sector aligning the goals set out in the Seventh Five Year Plan, National Agriculture Policy 2018, National Food Policy and Sustainable Development Goals (SDGs).

Different programs have been launched to popularize the use of organic and balanced fertilizer. Under the umbrella of food security program; distribution of free food, food for work, food-friendly programs, open market sell, and test relief programs are being implemented by the government over the last decade. Moreover, digital technology based programs have been undertaken to improve the monitoring and data management capacity of the Ministry of Food.

This publication portrays the contribution and accomplishment of the government in achieving food self-sufficiency, and maps Bangladesh's journey towards ensuring food security for all.



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1.1 A Glimpse of Bangladesh's Journey Towards Food Security

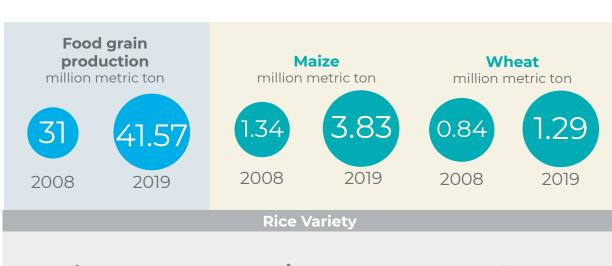
Bangladesh's agriculture sector has been showing sustainable growth over the last decade. Even with the reduction of cultivable land, agricultural production has increased to meet the needs of the population. The average growth of the agriculture sector over the last 10 years stood at 3.8 percent. Government has prioritized the attainment of self-sufficiency in food grain production and achievement of the nutritional requirement by 2021. The Sixth Five Year Plan (2011-2015) aimed at raising agricultural productivity, fostering diversification and boosting rural infrastructure has been superseded by the Seventh Five Year Plan (2016-20) to focusing on developing the crop sub-sector to raise rural income and generate employment opportunities for poor rural people. The Seventh Five Year Plan also aims at ensuring food and nutritional security, sustainable intensification and diversification of climate resilient agricultural production with increased commercialization and livelihood improvement through technological innovation.

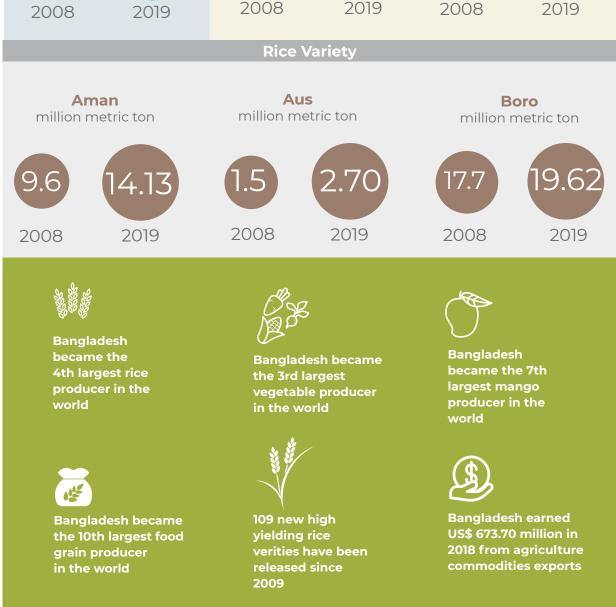
Over the last decade, there has been an increasing trend in food production. In 2019, food grain production stood at 41.57 million metric ton. Currently food grain storage capacity is 2.15 million metric ton at

government level. In the same year, internal food grain procurement target has been set at 2.18 million metric ton. Against this target, 1.61 million metric ton of rice has been procured up to February 2019. Moreover, US\$ 2.56 billion was disbursed up to June 2018, which was 105 percent of the target. Considering the importance of increased productivity of agricultural products, US\$ 1.06 billion was allocated in the budget of fiscal year 2018-19 to provide subsidy on fertilizer and other agricultural inputs.



1.2 Landmark Accomplishments







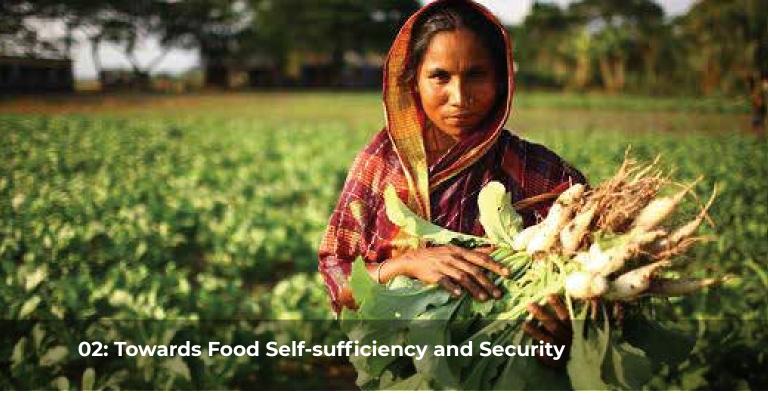


1.3 Factors behind these Successes

- US\$ 2.37 billion allocated for agriculture and food security in fiscal year 2019-20
- US\$ 6.96 billion financial assistance for fertilizers have been provided between 2009 and 2018
- US\$ 27 million financial assistance has been provided to expand agricultural mechanization
- Vegetable production reached 15.95 million metric ton in 2018
- · Food grain storage capacity increased to 2.15 million metric ton
- · 17 crop zoning maps have been prepared to follow proper cropping pattern
- 28 million farmers received Agriculture Input Assistance Card
- 10 Mobile Soil Testing Vans have been launched to prescribe fertilizer doses by instant soil testing
- 584 modern varieties of different crops and 442 production technologies developed since 2009
- Monocropping lands which have been transformed to 4 cropping lands have enhanced cropping intensity by 194%

- · Bangabandhu National Agricultural Award is being awarded to exemplary agro entrepreneurs
- \cdot More than 11 million farmers opened bank accounts at a cost of BDT 10 only
- More than 100,000 farmers were trained on fruit cultivation through horticulture centers
- Government program is installing 2000 solar irrigation pumps, of which 999 are in operation





2.1 Food Grain Production

Despite being one of the most densely populated countries, Bangladesh has achieved self-sufficiency in food grain production. The emphasis on food production from the early years of independence has been a hallmark of public policy in Bangladesh, that has well served the cause of poverty reduction, especially in rural areas. As a first step of graduation from developing to developed country, it is crucial to ensure food security, and a sustainable and environment-friendly agricultural system. With a view to make Bangladesh food self-sufficient. agriculture sector has been given the foremost priority. Various steps were taken by the present pro-people government to sustain Bangladesh's food sufficiency within the stipulated time frame. The food grains production reached around 41.57 million metric ton of which Aus accounted for 2.70 million metric ton, Aman 14.13 million metric ton, Boro 19.62 million metric ton and wheat 1.29 million metric ton. In order to scale up productivity, subsidy in agricultural inputs has been increased, as well as enhanced coverage and increased availability of agricultural credit is ensured.

2.2 Food Grain Import

Till February 2019, the target of food grains import through government was 0.73 million metric ton. Out of this targeted amount total

food grains imported has been 0.27 million metric ton. On the other hand, through the private sector, a total of 3.57 million metric ton food grain was imported during the same period.



Food Storage Construction Projects Underway All Facility Food Storage Mangla Port ■ Modern Food Storage Concrete Grain Silo Construction with construction project in northern Bangladesh Construction with total 0.54 million with 0.11 million metric 50.000 metric ton metric ton capacity ton capacity capacity Countrywide Food Distribution of 0.5 Multistoried Storage Construction million Household Warehouse with 0.14 million metric Silos with 100 Construction at ton capacity Santahar Silo Campus kilogram capacity is underway with 25,000 metric ton capacity Chattogram Food Storage Construction ■ Countrywide 162 with 84,000 metric Food Storage ton capacity Construction with capacity of 0.150 million metric ton

2.3 Food Grain Storage Capacity

The Awami League led government is expanding the countrywide food storage network. The domestic food storage capacity is also being increased. Before 2009, the food storage capacity was 1.45 million metric ton. Between 2009 and 2019, the food storage capacity has been increased to 2.15 million metric ton. Recently, a flour mill has been constructed in Dhaka with 200 metric ton crushing capacity per day. Till June 2018, public food storage capacity stood at around 2.15 million metric ton. Targets have been set to gradually increase the capacity up to 2.7 million metric ton by 2020.

2.4 Domestic Food Grain Procurement

In 2018, the internal food grain procurement target was 1.73 million metric ton. Against this target, 1.67 million metric ton was procured. The current agriculture friendly government ensured stable agriculture production growth and took initiatives to increase food grain production. This ensured self-sufficiency in rice production. Government is incentivizing the farmers to boost increased food productions. Other than subsidizing the food grain production, the government

is incentivizing food grain produces. To implement the initiative to buy food grains directly from the farmer, the government has initiated locating the vulnerable farmers and rice mill owners. In last 10 years, the government collected 16 million metric ton of rice from the farmers. Additionally, during wheat harvesting season, the government bought 0.87 million metric ton of wheat. Price of the paddy was directly deposited to the farmers account so that the middlemen do not benefit from the government program and cannot deprive the farmers of getting fair price for their produces.

2.5 Vegetable Production

Significant growth has been recorded in the vegetable production sector due to policy support, farmers' adoption of hybrid seeds, gardening, homestead and vegetable cultivation in all seosons. In 2009, vegetable production was 2.9 million metric ton and in 2018 vegetable production reached 15.95 million metric ton. Some of the most grown vegetables in Bangladesh include aubergines, cabbages, cauliflowers. tomatoes. gourds, pointed gourds, ridge gourds, bitter gourds, ash gourds, snake gourds, teasel



gourds, sponge gourds, pumpkins, lady's fingers, cucumbers, radishes, beans, carrots, spinach, red amaranth, stem amaranth, yard long beans, drumsticks, and arums. The farmers are seeing dramatic improvement in their crop output, land productivity, profitability, and net income. Bangladesh has secured 3rd position around the world for vegetable production.

In the Southern part of Bangladesh, vegetables are being produced by floating agriculture method. Food and Agriculture Organization (FAO) recognized these floating agriculture practices of Bangladesh as a global heritage in 2015.

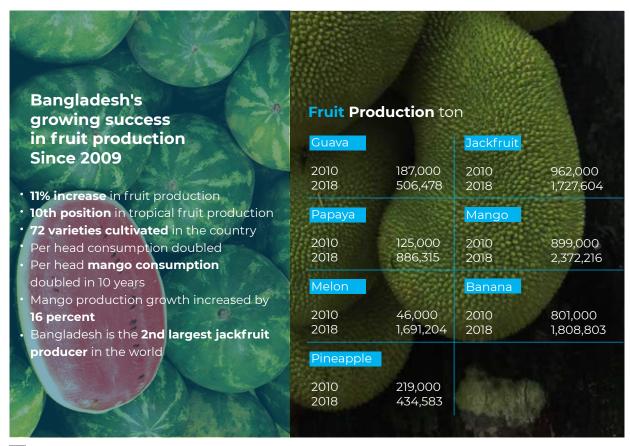


2.6 Fruit Production

Bangladesh recorded the highest rate of increase in fruit production among the world's fruit producing countries. It is the 10th largest tropical fruit producer, according to the Food and Agriculture Organization (FAO). It has also been among the top 10 countries to yield certain fruits, mentionworthy ones being —2nd in jackfruits, 7th in mangoes, and 8th in guavas. In 2018, the average fruit consumption per head rose to 85 gram. Cultivation of nutritious fruits like dragon fruit, avocado, watermelon, musk melon has been largely increased over the last 4 to 5 years. Over the years, more and more fruit trees are being planted along the roadside and in backyards. Commercial cultivation has also increased over last 10 years. Fruits have contributed to the country's success in food security. According to the Agriculture Ministry, around a decade ago 56 varieties of fruit were cultivated and today it stands at 72 varities.

2.7 Year-Round Fruit Production for Nutrition Improvement

The goal of Year-Round Fruit Production for Nutrition Improvement project is to make fruits available all over the year and meet the nutrition demand of the population. Department of Agricultural Extension (DAE) has been implementing the project since 2014. A decade ago, local fruits were limited to Bangladesh's hot and humid summer. The scenario has since been changing. Certain fruits are now found almost all year round. Since inception of the project, more than 100,000 farmers were trained on fruit cultivation through the horticulture centers. Moreover, 2.1 million fruit trees were planted across the country during the period. The project has started to show remarkable success in fruit yields. The project aims to reach to the local and foreign markets. High-vielding varieties have been developed over the years, so there is an abundance of fruits in the market. The government plans to ensure round-the-year availability of fruits by





2.8 Fish Production

Bangladesh has made substantial progress in expansion of the fishery sector and fish production in the last decade. Bangladesh is one of the world's leading fish producing countries with a total production of 4.27 million metric ton against 4.03 million metric ton of domestic demand. Despite shrinking water bodies for fish cultivation, sustained growth has been possible due to the use of better technical inputs and modern technology. In 2018, the fishery sector contributed 3.6 percent to the GDP.

The fishery sector strives to increase the supply of animal protein through boosting fish production. With an outlook to achieve the set targets, the government has been initiating and implementing several programs. Some of the most significant programs are: expansion and strengthening of community-based fish culture, entry of fishermen in the public water bodies, implementing fry releasing programs in open water, establishment of fish sanctuary, expansion of cage culture, restoration of fish habitat by excavating filled rivers, and innovation of new technology through research. Besides, the Department of Fisheries (DoF) has been implementing open water fish resources management programs for the socio-economic development of the poor fish farmers and fishermen. The government is also continuing its effort to increasing open water fish production, preserving endangered species of fishes, creating sanctuaries for breeding and pursuing environment-friendly

shrimp culture. Furthermore, the fishery sector in Bangladesh has been earning a significant amount of foreign exchange. The government also strengthened the quality control activities to expand the exports for fish and fish products.

About 17 million people are directly or indirectly involved in the fishery sector for their livelihood through fishing, farming, fish handling, and processing. In other words, 11 percent of the total population earn their livelihood from the fishery sector.

Bangladesh ranked 3rd in inland fish production in the world



2.9 Livestock

The livestock subsector makes enormous contribution towards meeting requirements of daily animal protein for human consumption, reduction of poverty, production and exports of leather and leather goods. A number of initiatives have been taken by the government for livestock development. The most important initiative taken for livestock development is the up-gradation through artificial insemination using superior quality frozen and liquid semen. Other initiatives include production and distribution of vaccine for poultry and livestock, supply of duckling and chicks at a subsidized price, increased production of semen, artificial fetus transfer technology, prevention, and control of anthrax, foot and mouth diseases and avian influenza. The population of livestock and poultry rose to 55.40 million and 344 million respectively in 2019. The production of animal protein like milk, meat (beef, mutton, chicken) and eggs have been increasing over past several years. As a result, per capita availability of animal protein is rising.





3.1 Bangladesh Second Country Investment Plan 2016-2020

The Bangladesh Second Country Investment 2016-2020 (CIP2) is an integral multi-sectoral approach to tackle hunger and malnutrition. Moreover, it is crucial to achieving the Sustainable Development Goals (SDGs). The CIP is a tool to mobilize funds and align sectoral and cross-sectoral food and nutrition security-related programs. principal goal of the CIP2 is to achieve improved food security and nutrition by making food systems nutrition-sensitive and sustainable for all. Its strategic objective is to ensure availability, affordability and nutritional quality of foods. It sets forth priority nutrition-sensitive investment programs for each stage of the food value chain - 'from production to plate'- as well as emerging challenges to the food systems that impact diets and nutrition. Consistency of the initiative will be ensured at the national and sub-national levels. Food Planning and Monitoring Committee (FPMC), Bangladesh National Nutrition Council (BNNC) and other relevant stakeholders will provide additional supportive guidance. The CIP2 represents a tool in the hands of the government to assess the needs for additional financial resources to achieve some of the key SDGs and to create a nutrition-sensitive food system that works to ensure food and nutrition security in a coordinated way. It will also help the government integrate and coordinate actions

across sectors and ministries for better effectiveness, to mobilize resources as required and foster alignment of all sources of financing, including budget resources and contributions from Development Partners (DPs) behind a single, inclusive but evolving investment plan which will prevent needs not being fulfilled and avoid duplication of any government plans. The CIP2 proposes 13 investment programs to improve food and nutrition security in an integrated way. The total cost of the CIP2 is estimated at US\$ 9.25 billion. To ensure food safety and security and nutrition development under Bangladesh Country Investment Plan, up to June 2016, US\$ 10.12 billion investment program has been implemented through the 6th Five Year Plan (2011-2015). 'Nutrition Sensitive Food Systems' is the theme of Bangladesh Country Investment Plan (2016-2020).

3.2 Bangladesh Safe Food and Nutrition Program 2015

Bangladesh Safe Food and Nutrition Program 2015 is a six-year long donor driven program with an allocation of US\$ 144.5 million. Through this program, in Sylhet and Chattogram Hill Tracts, for the first time at grassroots level, mother, children, adolescent girl and boy's overall nutrition management and nutrition problem solution program is being implemented. Policy and technical supports are being provided with assistance from Food and Agriculture Organization (FAO),



to ensure food safety and nutrition under the 'Meeting Under-Nutrition Challenge' program.

3.3 National Food Policy Plan of Action

To provide programmatic guidance in implementing the National Food Policy, the government has formulated the National Food Policy Plan of Action. The Plan identifies 26 strategic areas of intervention and priority actions that cover all dimensions of food security. The Plan of Action adopts a twin-track approach: providing immediate access to food to the most vulnerable households through targeted cash and food transfers, and developing production capacity, income generation, and nutrition through investments. The Plan of Action is a dynamic document that is adjusted based on the results of monitoring activities, the experiences gained in the process of its implementation, as well as possible changes in the key factors impacting the development prospects of Bangladesh.

3.4 Bangladesh Food Safety Authority

Bangladesh Food Safety Authority (BFSA) is one of the food governance agency designated to render support to the entities directly involved in updating and upgrading the food safety standards or guidelines. It also plays a vital role in determining permissible limits at its highest safe level for use of contaminants and residue, additives or preservatives; in determining permissible limits of radiation in food; in formulating and implementing accreditation policies; in formulating procedural guidelines for accrediting food testing laboratories and requesting the government to increase the capacity of safe food controlling agencies and organizations.

BFSA coordinates the activities of the various agencies and organizations engaged in ensuring food safety. It is also engaged in activities relating to food production, import, processing, stockpiling, supplying, marketing and sales, to ensure peoples' right to access to safe food through appropriate application of modern scientific processes and state of the art technology. Nine ministries and divisions and nine other departments and organizations consist of the BFSA team. BFSA's core principles and values are protecting consumers' interests in relation to food; using the best scientific advice available to make informed decisions; acting in an independent, open and transparent manner; ensuring fair and consistent enforcement of safe food regulations; consulting and working in partnership with all relevant stakeholders; being accountable and taking responsibility for actions and being an effective and progressive regulator. Bangladesh Food Safety Authority (BFSA) is the outcome of Food Safety Act 2013. On February 2015, to maintain the food governance activities, 64 Senior Judicial Magistrate Court for 64 districts, 6 Metropolitan

Food security strategy under the 7th Five Year Plan will be in line with the three objectives of the National Food Policy (NFP 2006) and the National Food Policy Plan of Action (2008-2015). 26 key areas of interventions have been identified with more than 300 action agenda.

Magistrate Court for 6 metropolitan areas were determined as the Safe Food Magistracy Court. The public prosecutors are assigned to run cases in those 70 courts. Moreover, 200 Food Inspectors and 3 food analysts are assigned to be part of the food governance process.

3.5 Food Planning and Monitoring Unit

Food Planning and Monitoring Unit (FPMU) of the Ministry of Food is responsible for monitoring the food security situation in Bangladesh, and for implementating food related policies. The activities include collecting, analyzing and disseminating information for food security situational analysis and policy formulation, and delivering evidence-based policy advice to government. The Unit provides secretarial support to the Food Planning and Monitoring Committee (FPMC) at the cabinet and contributes to other government committees relevant to food security, such as the Early Warning Technical Committee or the Safety Net Technical Committee. As the lead office on food security issues in Bangladesh, FPMU is responsible for enhancing inter-ministerial collaboration for the implementation of the National Food Policy and monitoring its Plan of Action. The agency

Oversight of food security

Directorate of Food Availability: deals with all issues related to the domestic supply component of the availability dimension of food security.

Directorate of Food Access: deals with the physical, economic and social access dimensions of food security

Directorate of Food Utilization: deals with all issues related to the food utilization dimension of food security.

Directorate of Management, Information, and Communication: deals with all functions that need to be centralized for the overall operation of FPMU. also has a pivotal role in coordinating, monitoring and evaluating interventions under the Country Investment Plan. Activities of FPMU are divided into four directorates, three of which represent one specific dimension of food security (availability, access, and utilization) and the other one facilitates information exchange between FPMU and data providers.

3.6 Food Planning and Monitoring Committee

The Food Planning and Monitoring Committee (FPMC) is a cabinet level committee headed by the Minister of Food. Drawing on the work of the Food Planning and Monitoring Unit, it provides overall leadership and oversight in the formulation of food security and nutrition policies. The committee monitors overall food security situation on a continuous basis. The committee also advises the government to take appropriate decisions on issues of food production, stock, demand information and issues relating to all other aspects of food security including overall food management food and nutrition security. FPMU extends the secretarial support to the committee.

3.7 Food Policy Working Group

The Food Policy Working Group (FPWG) is an inter-ministerial coordination body to support the Food Planning and Monitoring Committee. It focuses on strategic issues related to food security and coordinates the work of the thematic teams. For more efficient, integrated and analytical support to the FPMC, the agency has established an inter-ministerial coordination mechanism through Food Policy Working Group and thematic teams.

3.8 Publishing Food Composition Table

Under Ministry of Food, Food and Agriculture Organization (FAO) implemented National Food Policy Capacity Strengthening Programme (NFPCSP) project, Department of Nutrition and Food Science Institute of University of Dhaka and Center for Advanced Research in Science's joint research published Food Composition Table. Besides, initiatives have been taken to conduct large-scale promotion of this food composition Table.

3.9 Food Security and Safety Policy Measures

The government enacted a number of policies, acts laws and regulation to promote producer-oriented policy decisions, implement trade measures on rice and wheat to ensure price stability, diversification of exports and increasing incentives, sustained price stabilization and domestic procurement, public food grain distribution system, consumer-oriented policy decisions. The food self-sufficiency of Bangladesh, despite rapid population growth, is a testimony to the success of the government's policies. In order to ensure food safety for the people, the government has started implementing the 'Food Safety Act, 2013' from 2015. Eventually, 'Bangladesh Food Safety Authority' was activated in February 2015. The Government has also taken steps to raise people's awareness of food safety along with awareness of the fundamental rights of the consumers. The government has also taken efforts to increase the capabilities of the key organizations and concerned people so that the law is implemented properly. Moreover, the

government's goal is to ensure an adequate supply of safe and nutritious food and maintain adequate stock of food grain during emergencies. Steps have been taken to ensure food security by undertaking capacity development projects and by establishing testing laboratories for 'Bangladesh Safe Food Authority'.



Government declared 2nd March as National Food Safety Day and celebrated for the first time in 2019







4.1 Budget Allocation

In fiscal year 2018-19, total budget allocation for agriculture and food security stood at US\$ 2.37 billion which is 4.29 percent of the total budget allocation. In fiscal year 2019-20 the allocation increased to US\$ 2.58 billion. Such lion's share of the budget highlights the importance of the sector for the current government.

4.2 Public Food Distribution System

The government provides food support to the fixed-income government employees and low-income people through different channels of Public Food Distribution System (PFDS). Under this program, food grains are distributed through monetized channel via subsidized distribution programs such as Open Market Sale, Fair Price Card, Essential Priority, Food for Work, Test Relief, Vulnerable Group Feeding, and Vulnerable Group Development and Gratuitous Relief.

4.3 Open Market Sale (OMS)

To ensure food security for the low-income population of the country, the government is constantly undertaking and implementing numerous food assistance programs and initiatives. Among the different food assistance initiatives of the government, Open Market Sell (OMS) is a majore one. Under the OMS program, government sells different food products to the low-income people. The

government started selling rice and flour to the low-income people at an affordable price since 2009. The initiative has since been continuing its service to the low-income people. Under this program, the price of rice is BDT 15 per kilogram and the price of flour is BDT 17 per kilogram. The government sold 2.20 million metric ton rice and 1.26 million metric ton wheat at open market where the low-income people availed the service at a very The well-planned minimum cost. implementation of the Open Market Sell (OMS), under the food assistance program of government, contributed incredibly in ensuring long term price stability and availability of the consumer product in the market.

4.4 Food Friendly Program

In 2010, the government initiated to provide food assistance card for the ultra-poor and low-income people for the first time. The people can buy consumer food products at a cheap price using this food assistance card. Initially, 7.7 million families were listed for the initiative from metropolitan areas, district, sub-district, and union level. Till 2018, 233,000 metric ton rice and 121,000 metric ton wheat were distributed under this program. The 4th class government employees, village police and readymade garment workers were also brought under this initiative and 144,000 families were provided 65,550 metric ton of rice food assistance. In 2016, given its success, the



Prime Minister branded the initiative as 'Food Friendly Initiative'. In 2016, the program provided food assistance for 5 months during the seasonal unemployment period of the marginalized groups of people. Priorities have been given to include the widow, elder women, women family head, low-income family and decisions were taken to list 5 million families as the beneficiary of this initiative. Till 2016, 4.9 million families were listed under this initiative. In 2016, Prime Minister inaugurated the 'Food Friendly Initiative' in Kurigram district. Under this 'Food Friendly Initiative', the price of rice determined BDT 10 only per kilogram and at a nominal price of BDT 300. The listed families were provided 30 kilogram of rice. Through this program 5 million people's food security ensured. In 2017, 685,000 metric tons of rice was provided.

4.5 Vulnerable Group Feeding (VGF)

Ministry of Disaster Management and Relief conducted Vulnerable Group Feeding (VGF) program to provide assistance to the affected people after any natural calamity. In fiscal year 2018-19, a total of US\$ 204.61 million has been allocated for this program.

4.6 Vulnerable Group Development (VGD)

An amount of US\$ 199.20 million has been allocated under Vulnerable Group Development (VGD) program. It is expected that around 374,000 metric ton food grain will be distributed among the beneficiaries.

4.7 Gratuitous Relief (GR) Program

Under GR program, food assistance is provided to the disaster vulnerable poor, distressed and helpless people affected by various natural calamities. Moreover, under this program, rice is given to charitable institutions. In fiscal year 2018-19, 125,000 metric ton of rice, amounting to US\$ 63.94 million have been allocated for this program.

4.8 Seed Production and Distribution

Seed production and distribution of quality seed has been recognized as the prime input to increased agricultural production. Quality seed can contribute to the increase of yield by 15-20 percent. At present, quality seed for different crops is being provided from public sectors as per demand of the farmers. A number of seed producing organizations and NGOs are

undertaking quality seed distribution activities of hybrid rice, maize, and vegetables. Bangladesh Agricultural Development Corporation (BADC) produces foundation seeds, jute seeds, vegetable seeds, potato seeds and pulse and oil seeds. In 2007, seed production was 71,000 metric ton and in 2019, seed production reached 144,875 metric ton of which 140,561 metric ton seeds have been distributed among the farmers.

4.9 Fertilizer

Use of High Yielding Variety (HYV) and intensified cultivation is needed to ensure food for all. With increased concern to ensure food for all, the supply of fertilizer is also being ensured. To that end, timely supply of organic and chemical fertilizers to meet the nutritional demand of these varieties is a prerequisite. In 2019, the total quantity of fertilizer used was 5.58 million metric ton. The government significantly increased financial assistance for fertilizer. Financial assistance for the fertilizer sector worth US\$ 6.96 billion has been provided between 2009 and 2018.

4.10 Irrigation

A vast area of the country does not get irrigation in dry season because of climate change and unplanned extraction underground water. A well-planned irrigation system is necessary for increasing cropping intensity, yield as well as production. The government has attached more importance on reducing irrigation cost and retaining the balance of environment by increasing the use of surface water and reducing the use of underground water. Investment in irrigation and rice technology has yielded huge dividends. The government implements different activities through the efficient minor irrigation system. Rubber dam project has been taken in small and medium rivers of prospective areas for using surface water. Removal of waterlogged, re-excavation of canals, construction of surface irrigation channel and underground irrigation channel, embankment, irrigation structure, installation of power pump, Deep Tube Well (DTW), construction of Jhiribadh in hilly areas and installation of artisan well are being implemented.





4.11 Solar Irrigation

For rice cultivation, timely irrigation is vital and irregularities can severely affect crop quality and yield. Farmers are dependent on expensive diesel generators for irrigation. Installation of solar irrigations pumps is improving the quality of life of the farmers in Bangladesh. The solar pump covers around 12 hectares of land and provides 500 thousand liters of water daily. Following Bangladesh's success in expanding solar home systems to provide electricity in rural areas, the government initiated to install 2000 solar-powered irrigation pumps of which 999 are in operation.

4.12 Financial Assistance

The government has provided US\$ 7.74 billion financial assistance in the form of subsidy, agricultural credit, rehabilitation, mechanization, incentive, seeds, and fertilizer in the last ten years. The government has increased the subsidy for fertilizer by reducing its price. The farmers are able to produce crop at minimum cost due to subsidies to the electricity sector. In 2010, the government introduced the Agriculture Input Assistance Card Program. Through this program, farmers

are given a smart card that allows them to open a bank account through which they directly receive cash to buy inputs. Agricultural and rural credits are important for ensuring food security as well as the overall socio-economic development in the country. Extended Agricultural and Rural Credit Policy and Program have been formulated by Bangladesh Bank to make disbursement of agricultural and rural credit easier and hassle-free. Considering the increase of agricultural production and to provide subsidy to the farmers for fertilizer an amount of US\$ 1.06 billion was allocated in the budget of fiscal year 2018-19.

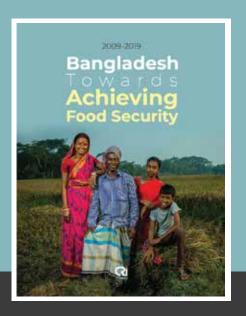
4.13 E-agriculture Service

Digital Agriculture thus 'e-Agriculture' has been introduced to improve efficiency and transparency in the sector. 499 AICCs, Krishi Call Centre-16123, Krishi Community Radio, 'Krishi Tathya Batayan', Krishok Bondhu Phone-3331, E-book, Online Fertilizer recommendation, e-irrigation service, Rice Knowledge Bank, Agricultural Knowledge Bank, E-pesticides prescription are some e-services introduced by the government to facilitate farmers to catalyze increased production.

Conclusion

The achievement of food self-sufficiency is a major milestone reached by Bangladesh. Bangladesh's agricultural sector contributes 14.2% in GDP and employs 47% of the working population. The farmers have now acquired the knowledge to utilize every available inch of land to produce quality agricultural products. Bangladesh's agricultural sector has highly benefited from a sound and consistent policy framework backed up by substantial public investments in technology, rural infrastructure, and human capital. Bangladesh's rural economy focused on agriculture, has been a powerful driver of poverty reduction since the Awami League government took office. Growth of agriculture has the potential to further reduce rural poverty. A shift in production from rice to high-value and higher-nutrition crops significantly will reduce malnutrition, trigger more rapid growth in incomes, and create more and better jobs in the production and distribution sector. Investment in expanding the rural non-farm enterprises is a parallel priority for Bangladesh.

Bangladesh is on a path to boost its agriculture sector in a bid to overcome mounting challenges in an increasingly globalized world. The successful course of the rapid increase in agricultural production and self-sufficiency in food in a bid to reduce poverty, enhance food security, increasing nutritional awareness and women's participation in agriculture, enhance agricultural productivity through diversification and intensification, sustainable management natural resources, use of quality inputs mechanization, safety of the food system, further improve technology generation and adaptation through better producer extension-research linkages. The agricultural extension programs are being strengthened even further. Moreover, budget allocation for research on agriculture has been increased. Lastly, retaining the current course, capacities of the agricultural research institutes will be a priority.



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