



BANGLADESH REVIEW



Green Revolution in 21st Century Wonderland Bangladesh

Biva Mosharraf



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1

Chief Editor
Professor Mizanur Rahman, PhD

Co-Editors
Mohammad Humayun Kabir
Tapas Kanti Baul (Barrister at-Law)
Professor Dr. Md Shahriar Parvez

 **EMPOWERMENT THROUGH LAW OF THE
COMMON PEOPLE (ELCOP)**

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EMPOWERMENT THROUGH LAW OF THE COMMON PEOPLE (ELCOP)

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Foreword

Bangladesh is standing at a crucial crossroads in its history. She has celebrated the birth centenary of the Father of the Nation Bangabandhu Sheikh Mujibur Rahman and the golden jubilee of its independent existence, respectively in 2020 and 2021. Soon she will graduate from the least developed countries (LDCs) group to middle-income countries. A basket case, once called by Henry Kissinger, has recently extended its helping hand to Sri Lanka, struggling in the post-pandemic economic recession. Miracles are taking place in the infrastructural sector and the use of technology is undergoing tremendous change in the last decade or so. However, we have some challenges to overcome, such as climate change, therefugee crisis, etc. We are not overlooking these problems. Nonetheless, we want to celebrate our achievements so that we can reinvigorate ourselves to work further for our motherland.

On November 24, 2026, Bangladesh will graduate from the LDCs list of which she became a member in December 1975. It recognises the fulfillment of all three graduation criteria i.e. gross national income (GNI) per capita, Human Asset Index, and Economic Vulnerability Index. It shows the impressive performance of Bangladesh in the field of the major socio-economic sectors of development. Bangladesh has long ago surpassed Pakistan in terms of GDP and recently left India behind.

The amazing track record of Bangladesh on various social development indicators such as education, healthcare, social safety network, etc has demonstrated its tenacity of purpose. For instance, life expectancy is 72.6 years, a great leap forward from 46.6 in 1972. Moreover, in terms of female literacy, Bangladesh (72 percent) is ahead of India (66 percent) and noticeably more advanced than Pakistan (46 percent). In South Asia, Bangladesh is number one in women's empowerment. In addition to that, the female participation rate in the labor force of Bangladesh is 36 percent which is higher than that of Pakistan (21.9 percent) and India (21.5 percent). Similarly, its infant mortality stands at 26 deaths per 1,000 births, which is lower than India's (28) and Pakistan's (67). In 1971, the infant mortality rate was 158. In this regard, Bangladesh has achieved tremendous progress in the last fifty-two years. Here the fertility rate is also much lower than that of India and Pakistan. World Bank data indicate an astonishing improvement in primary education. Now almost every child goes to school. The dropout rate is also diminishing.

Apart from the worm's eye view i.e. impact on an individual level, if we cast a bird's eye view, that is to say- a broader picture, we will witness a huge leap forward in infrastructure, for instance, Padma bridge, metro rail, highways, etc. No nation could develop economically if its infrastructure is poor. No industrialization is possible without it.

Bangladesh realizes its importance and invests a large amount of the national budget into this sector. Businesses and people, in general, are getting their benefits. A country devastated by the Pakistan Occupation Forces during the Liberation War in 1971 has performed an infrastructure miracle.

The Bangladesh success story has become possible due mainly to the government's policies, incentives, and aid in the past decade and a half to ramp up economic development. On top of that, maintaining political stability for such a long period, creating a business-friendly environment, and extensive diplomatic efforts to bring investment to Bangladesh have come to fruition.

However, Bangladesh is beset with problems that we need to address and solve. That does not mean our situation is as gloomy as it is propagated by certain quarters. We are marching in the right direction- though the pace could be accelerated in some sectors. We could have fared better in health and education which are the backbone of our nation.

Empowerment through Law of the Common People (popularly known as ELCOP) has undertaken a research project titled 'Human Rights Situation in Bangladesh' to evaluate the overall socio-economic development and human rights condition. As a part of this project, we have decided to publish a series of research papers on various socioeconomic issues, the present paper being one of those

Before bidding adieu, we want to emphasize that economic development is a series of wagons of a train, while civil and political freedom is the engine. One is meaningless without the other. Nobel-winning economist and philosopher Amartya Sen discussed it in his germinal book 'Development as Freedom'. He argues that "[d]evelopment consists of the removal of various types of unfreedoms that leave people with little choice and little opportunity of exercising their reasoned agency." It seems to be written to theorize the journey of Bangladesh. Economically Bangladesh is trying hard to remove the obstacles of unfreedoms that hinder the progress of its citizens. Politically speaking, Bangladesh is the most modern nation-state in South Asia and fought for its independence in the hope of attaining civil, political, and economic freedoms. So far, she has done a commendable job.

With these few words, I am delighted to introduce this paper to the readers. I believe it will be of interest to anyone who would drive in the domain of the socio-economic development of Bangladesh. I hope it will give a true picture of the progress in Bangladesh. With the needs of general readers in mind, this paper has deliberately tried to keep it as nontechnical as possible. Lastly, I wish for its wide readership.

Professor Mizanur Rahman, PhD

Chairman, Empowerment through Law of the Common People &
Former Chairman, National Human Rights Commission, Bangladesh

About the Paper

In an exceptional demonstration of transformation, Bangladesh has phenomenally revolutionized its agricultural landscape, catalyzed by the adoption of the Green Revolution principles. Since its emergence as an independent nation in 1971, the country has dedicatedly prioritized achieving food self-sufficiency, positioning it as a pivotal strategy to combat hunger and mitigate poverty. This transformation has been brought about by timely policy changes, strategic measures, and dedicated investment in agricultural research, which have collectively led to the wide-scale adoption of high-yield crop variants, enhanced irrigation facilities, and the establishment of efficient market institutions. In a bid to foster sustainable agricultural practices, Bangladesh has undertaken a suite of initiatives. These range from promoting the use of organic and balanced fertilizers to launching comprehensive food security programs, ultimately with the aim of universal food provision. Furthermore, this paper underscores Bangladesh's continued path towards a sustainable and affluent future, emphasizing a reduction in poverty and unemployment, women empowerment through agricultural endeavors and the embracing of technology and data-intensive farming which serves as a testament to the impressive progress of Bangladesh in the agricultural domain.

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Acronyms

- ADI – Agriculture Digitalization Index
- AI – Artificial Intelligence
- BDP – Bangladesh Delta Plan
- BIID – Bangladesh Institute of ICT in Development
- DAE – Department of Agricultural Extension
- DAM – Department of Agricultural Marketing
- FAO – Food and Agriculture Organization of the United Nations
- FY – Fiscal Year
- GAP – Good Agricultural Practices
- GDP – Gross Domestic Product
- GHI – Global Hunger Index
- G2G – Government to Government
- HYV – High Yielding Variety
- IFPRI – International Food Policy Research Institute
- MoA – Ministry of Agriculture
- NAEP – National Agricultural Extension Policy
- MT – Metric Ton
- NAEP – National Agricultural Extension Policy
- NWDP – National Women Development Policy
- SRI – System of Rice Intensification

Green Revolution in 21st Century Wonderland Bangladesh

Biva Mosharraf*

Abstract

Bangladesh has made astounding progress in revolutionizing its agricultural sector through the embrace of the Green Revolution. Since gaining independence in 1971, the country has placed great emphasis on achieving food self-sufficiency as a means of alleviating hunger and reducing poverty. Through timely policy reforms, strategic interventions and targeted investments in agricultural research, Bangladesh has seen the widespread adoption of high-yielding crop varieties, improved irrigation infrastructure and more efficient market institutions. The country has implemented a range of initiatives to promote sustainable farming practices, including the use of organic and balanced fertilizers and has launched comprehensive food security programs to ensure food for all. The paper also highlights the ongoing journey of Bangladesh towards a sustainable, prosperous future with a focus on reducing poverty and unemployment, empowering women through agricultural initiatives and embracing technology and data-driven agriculture. Overall, this paper demonstrates the incredible strides made by Bangladesh in the agricultural sector and the critical importance of food self-sufficiency as a means of promoting sustainable development in economy.

* Research Officer, ELCOP

1

Introduction

“It is only through agriculture revolution that Bangladesh would become self-reliant in food.”

- **Bangabandhu Sheikh Mujibur Rahman**

Bangladesh, a small South Asian country, has made tremendous strides in the agricultural sector since its independence. One of the key achievements has been the Green Revolution, which has transformed the agricultural sector and contributed significantly to the country’s food self-sufficiency. Upon gaining independence in 1971, Bangladesh faced the daunting challenge of being one of the most hunger-stricken nations globally. Its visionary founding father, Bangabandhu

The visionary founding father of Bangladesh, Bangabandhu Sheikh Mujibur Rahman firmly believed that the key to alleviating hunger lay in achieving food self-sufficiency.

Sheikh Mujibur Rahman firmly believed that the key to alleviating hunger lay in achieving food self-sufficiency and it can only be achieved through agriculture revolution. This belief has been wholeheartedly embraced by the country’s current Prime Minister who continues to uphold this vital policy. Although it may appear simple, this approach has

successfully transformed Bangladesh from a food-deficient nation into one that is self-sufficient. In particular, achieving self-sufficiency in the cultivation of rice, the country’s staple sustenance, stands as an extraordinary milestone within this broader triumph.

After the birth of the nation, Bangladesh's agriculture industry has flourished due to the extensive adoption of the Green Revolution, paving the way for its present-day success. The term “Green Revolution” gained global prominence in the 1960s as a result of research technology transfer that resulted in the development of high yielding variety (HYV) seeds, chemical pesticides, fertilizers, insecticides, and controlled methods of irrigation and cultivation, all contributing to increased agricultural production. In Bangladesh, prior to the flourishing of the Green Revolution, local rice production was sluggish. The country faced financial incapacitation and worked with a weakened infrastructure after gaining independence from Pakistan. These challenges, combined with the destructive Bhola cyclone, caused rice production to decline throughout the 1970s. However, the magnificent Green Revolution gracefully swept across the country, bringing with it a wave of transformation during the 1970s and 1980s. The introduction of

cutting-edge technology enabled the rapid expansion of irrigated land from a mere 0.9 million acres to an astounding 5 million acres. Simultaneously, by harnessing the power of High-Yielding Variety (HYV) seeds, the production of food grains experienced a remarkable surge, soaring from 8 million tons to an impressive 13 million tons between the years 1950 and 1970.¹

Timely policy reforms, strategic interventions, and targeted investments in agricultural research have been the driving forces behind the Green Revolution.

This transformative movement has led to the widespread adoption of high-yielding crop varieties, improved irrigation infrastructure, more efficient market institutions, and increased mechanization within the agricultural sector. As a predominantly agricultural nation, Bangladesh relies heavily on this sector to stimulate economic growth and foster self-sufficiency in food production.

The introduction of cutting-edge technology enabled the rapid expansion of irrigated land from a mere 0.9 million acres to an astounding 5 million acres.

Recognizing the importance of agriculture, Bangladesh has placed the sector at the forefront of its development agenda as outlined in the Eighth-Five Year Plan², National Agriculture Policy 2018³, National Food Policy 2006⁴ and Sustainable Development Goals (SDGs). A range of initiatives has been launched to promote the use of organic and balanced fertilizers, contributing to sustainable farming practices.

Under the comprehensive food security program, our country has implemented a variety of measures over the past decade including the distribution of free food, food-for-work initiatives, food-friendly programs, open market sales and test relief programs. In addition, digital technology-based projects have been introduced to enhance the monitoring and data management capabilities of the Ministry of Food. This paper highlights the country's achievements in attaining food self-sufficiency and charts Bangladesh's ongoing journey towards ensuring food security for all. By reducing poverty and unemployment, embracing technology and data-driven agriculture, and empowering women through agricultural initiatives, Bangladesh is poised for a prosperous, sustainable future.

¹ Krishna Kumar Saha, *Green Revolution and Crops Diversity in Bangladesh* (originally published 2017).

² The Eighth-Five Year Plan, General Economics Division (GED), Planning Commission, Government of the People's Republic of Bangladesh <<https://oldweb.lged.gov.bd/UploadedDocument/UnitPublication/1/1166/8FYP.pdf>> accessed 8 May 2023.

³ National Agricultural Policy 2018 <https://bangladeshbiosafety.org/wp-content/uploads/2021/03/National-Agriculture-Policy_2018_English.pdf> accessed 10 May 2023.

⁴ National Food Policy 2006 <<http://fpmu.gov.bd/agridrupal/national-food-policy#:~:text=The%20National%20Food%20Policy%20of,utilization%20dimension%20of%20food%20security>> accessed 7 May 2023.

2

A Glimpse of Bangladesh's Agriculture Over the Years

Gazing into the past, the verdant lands of Bangladesh have been primarily characterized by their agricultural essence. Once plagued by food-related issues, this flourishing nation has overcome the seasonal starvation phenomenon, known as 'monga', which once gripped its northern regions. Today, Bangladesh proudly showcases its robust progress in agricultural development, ensuring long-term food security for its burgeoning population of nearly 170 million.

A momentous milestone was reached in 2015 when the World Bank reclassified Bangladesh as a middle-income country, elevating it from the low-income bracket.

A momentous milestone was reached in 2015 when the World Bank reclassified Bangladesh as a middle-income country, elevating it from the low-income bracket. Buoyed by this achievement, the nation embarked on an ambitious journey to attain the status of a high-income, advanced country by 2041.

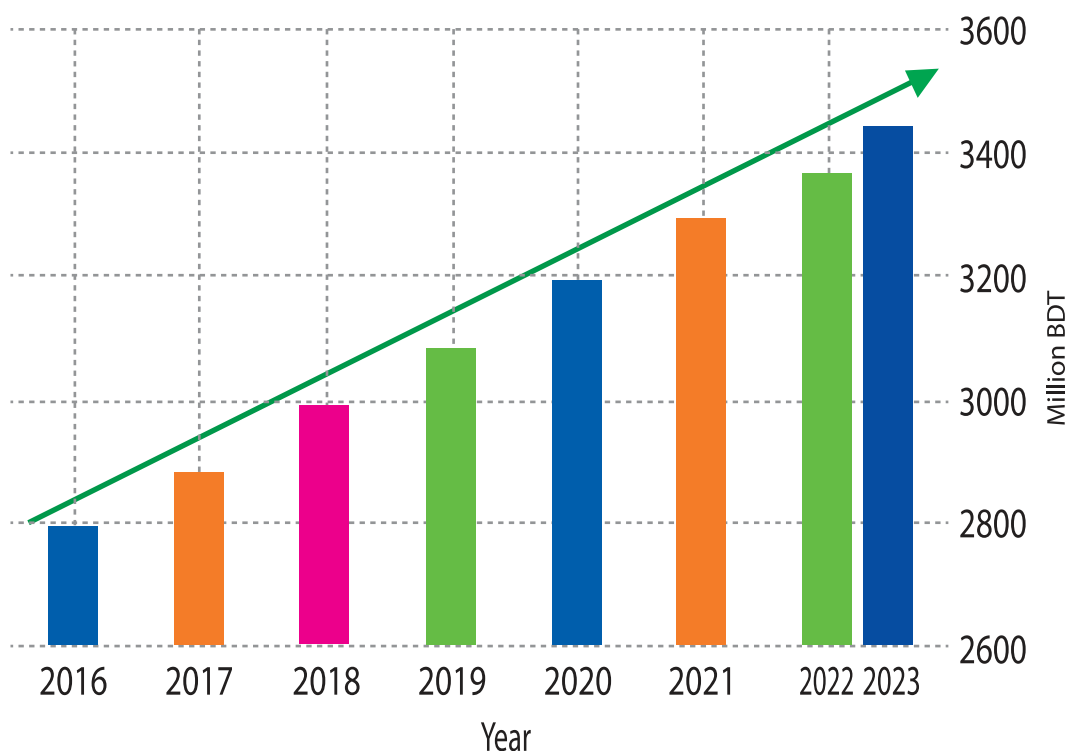
Buoyed by this achievement, the nation embarked on an ambitious journey to attain the status of a high-income, advanced country by 2041. One of Bangladesh's most remarkable accomplishments is its transformation from a food-dependent nation into one that has achieved self-sufficiency in

agricultural production. This metamorphosis required unwavering political commitment which has been amply demonstrated by the steadfast leadership of Honorable Prime Minister Sheikh Hasina.

Over the past few decades, Bangladesh economy has also experienced a structural shift out of the agriculture sector towards the services and industrial sectors. Despite the structural transformation, agriculture continues to operate as the engine within the economy while contributing nearly 13.65% to the GDP and employing about 40% of the labor force.⁵ Moreover, GDP from Agriculture in Bangladesh increased to 3363.20 Million BDT in 2022 from 3290.80 Million BDT in 2021.⁶

⁵ Fahmida Khatun, 'Getting the best out of a changing rural economy', *Daily Star* (26 October 2020) <<https://www.thedailystar.net/opinion/macro-mirror/news/getting-the-best-out-changing-rural-economy-1984169>> accessed 6 May 2023.

⁶ Bangladesh Bureau of Statistics (BBS).

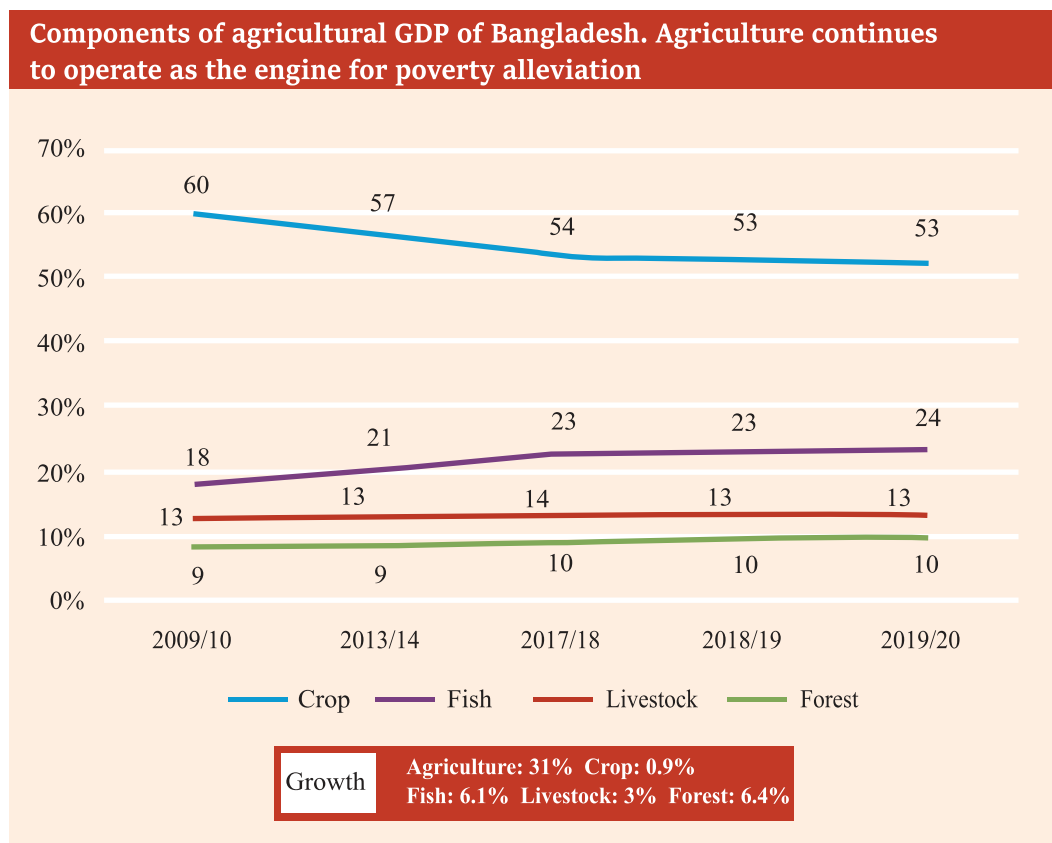


Source: GDP from Agriculture in Bangladesh (2016-2022)⁷, Bangladesh Bureau of Statistics

The intricate tapestry of the agriculture sector unfurls through four fundamental components: crops, livestock, fisheries, and forests (Figure 2), each playing a vital role. In a remarkable turn of events, Bangladesh has emerged as the new frontrunner on the global stage, surpassing India, in the production of jute, kenaf, and fiber products, as recently revealed in the report by the esteemed Food and Agriculture Organization of the United Nations (FAO). While India's jute production experienced a downward trend, dwindling by 37% over the past four fiscal years, Bangladesh's production has remained resolute and unwavering. Presently, Bangladesh stands as the colossal pillar, commanding a staggering 58% share of the global jute production and an impressive 53% share of jute, kenaf, and fiber products.⁸

⁷ 'Bangladesh GDP from Agriculture', *Trading Economics*, <<https://tradingeconomics.com/bangladesh/gdp-from-agriculture>> accessed 6 May 2023.

⁸ Saeed Shaheen, 'Bangladesh retains world's leading jute producer country despite lower production', *Kaler Kontho* (6 March 2023)



Source: Four main components of Agricultural GDP of Bangladesh⁹

The United Nations Food and Agriculture Organization (FAO) unveiled in their report, “Food Outlook-June 2022,” a remarkable accomplishment for Bangladesh. The nation has surpassed Indonesia to become the world’s third-largest rice producer for the fourth consecutive time, thanks to a boost in rice production. Despite grappling with numerous disasters, Bangladesh generated 36.5 million tons of rice in 2019, surpassing Indonesia for the first time and claiming the third spot. In 2020, Bangladesh maintained its ranking, demonstrating resilience and continuity in production amidst various natural disasters, resulting in a yield of 37.4

⁹ <<https://www.kalerkantho.com/english/online/national/2023/03/06/50394>> accessed 5 May 2023.

⁹ M.A. Razzaque, ‘Bangladesh’s Agro-Revolution’ (WhiteBoard, 18 September 2021)

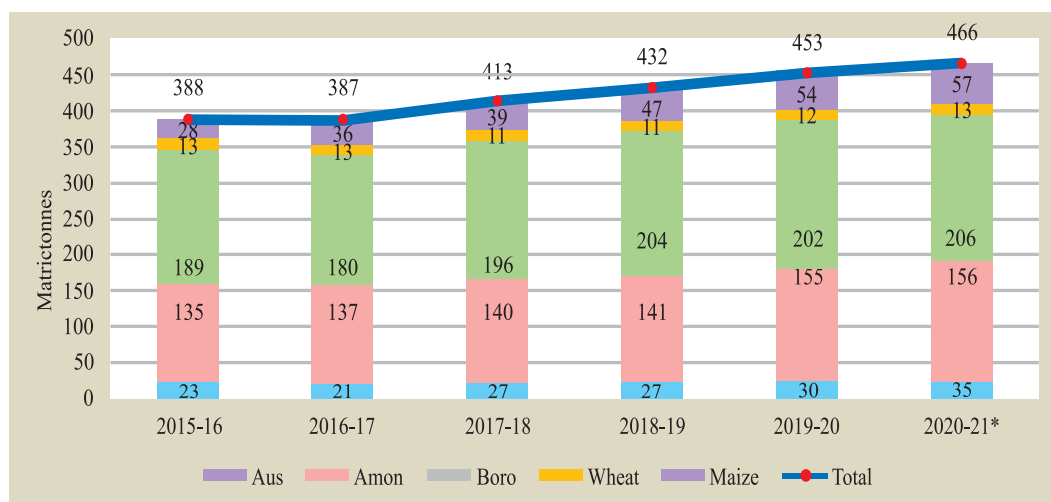
<https://whiteboardmagazine.com/2514/bangladeshs-agro-revolution/#_ftnref1> accessed 10 May 2023.

million tons. The country retained its third position in 2021 as well, with rice production climbing to 37.8 million tons. Consequently, Bangladesh experienced a 0.4% increase in rice production compared to the previous year, showcasing its remarkable ability to adapt and thrive even in the face of the Covid-19 crisis.¹⁰

The food grain production target for FY 2020-21 reached an impressive 46.635 million metric tons (MT), surpassing the 45.34 million MT produced in FY 2019-20. In the revised budget, domestic food grain procurement aimed for 1.40 million MT. By February 2021, the country had imported 0.31 million MT of food grains under government management. Additionally, the private sector imported a substantial 3.5 million MT, comprising of 0.22 million MT of rice and 3.27 million MT of wheat. During FY 2020-21, a significant amount of 16,180.82 crore BDT was disbursed, reaching approximately 61.54% of the target amount of 26,292 crore BDT by February 2021. To counteract the impact of the pandemic, efforts were made to enhance agricultural productivity. This included increasing subsidies on agricultural inputs, ensuring availability of agricultural resources, and facilitating agricultural credit. In recognition of the boost in domestic agricultural production, the budget of FY 2020-21 allocated 9,500 crore BDT for subsidizing fertilizers and supporting other agricultural activities, ultimately benefiting farmers. In FY 2019-20, a total of 4.50 million MT of fish was harvested from inland water bodies and marine sources. The target for FY 2020-21 was set at 4.55 million MT. Furthermore, in the same fiscal year, the production of cattle and poultry vaccines stood at 1.04 crore and 26.71 crore doses respectively.¹¹

¹⁰ 'Bangladesh ranks 3rd in global rice production', *Daily Bangladesh* (12 June 2022) <<https://www.daily-bangladesh.com/english/national/73784>> accessed 8 May 2023.

¹¹ 'Agriculture' (Chapter 7), Bangladesh Economic Review 2021 <https://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/f2d8fabb_29c1_423a_9d37_cdb500260002/16.%20Chapter-07%20Eng%20Eng-21.pdf> accessed 4 May 2023.



Source: Food Grains Production¹²

In the fiscal year 2019-20, the revised budget for public food grain procurement was set at 2.26 million metric tons, comprising 2.07 million MT of rice and 0.19 million MT of wheat. Of this target, 1.80 million MT of rice was sourced domestically from the Boro and Aman seasons, while 0.064 million MT of wheat was procured from the previous wheat season.¹³

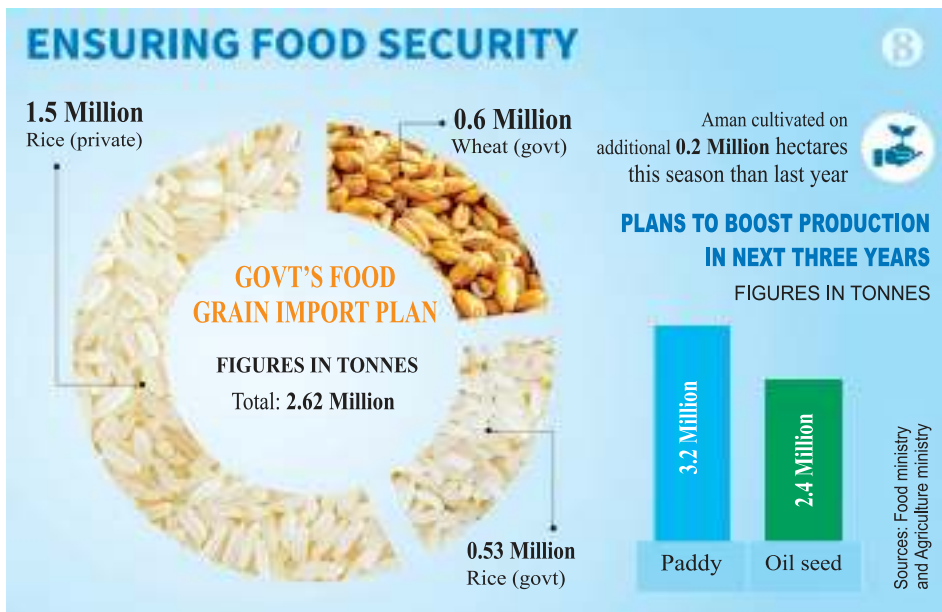
For the fiscal year 2020-21, the revised budget allocated 1.40 million MT for public food grain procurement with 1.30 million MT designated for rice and 0.1 million MT for wheat. Additionally, the revised budget for government food grain imports was established at 1.56 million MT, including 1 million MT of rice and 0.57 million MT of wheat. By February 2021, a total of 0.31 million MT of food grains had been imported, consisting of 0.096 million MT of rice and 0.22 million MT of wheat. Concurrently, the private sector imported 3.5 million MT of food grains during the same period, which encompassed 0.22 million MT of rice and 3.28 million MT of wheat. As a result, the overall food grain import volume reached 3.81 million MT, with 0.32 million MT of rice and 3.5 million MT of wheat.¹⁴

¹² Ibid.

¹³ Supra note 10.

¹⁴ Ibid.

In response to the global food crisis prompted by the Russia-Ukraine conflict and predictions of a famine set for 2023, Bangladesh has taken proactive measures. These involve bolstering its food reserves through escalated food grain imports and production. The Ministry of Food has initiated efforts to enhance the nation’s food security. It has strategized the import of 2.62 million tons of rice and wheat through collaborations between the government and private sectors. As per sources within the food ministry, government-to-government (G2G) accords have been ratified, leading to an agreement to import 0.53 million tons from regional partners such as Vietnam, Myanmar, and India. Thus far, under these arrangements, 38,000 tons of rice have already been transported from India. In addition, an agreement has been established for the import of 0.6 million tons of wheat. This includes 0.5 million tons from Russia, with the remaining portion sourced from Bulgaria. Looking back, in the fiscal year 2021-22, Bangladesh imported a substantial 988,000 metric tons of rice and four million metric tons of wheat. Projected figures for 2022-23 anticipate an import of 1.71 million tons of rice and 3.2 million tons of wheat. Annually, Bangladesh’s cereal import exceeds 10 million tons.



Source: Government’s Food Grain Import Plan, Food and Agriculture Ministry¹⁵

¹⁵ Shawkat Ali, ‘Emphasis on import and production to ensure food security’, *The Business Standard* (16 October 2022) <<https://www.tbsnews.net/bangladesh/emphasis-import-and-production-ensure-food-security-514374>> accessed 10 May 2023.

The fiscal year 2021-22 saw this figure reach 10.4 million tons. Additionally, Bangladesh spends roughly \$5-7 billion each year on food product imports. In the fiscal year 2020-21, the import of wheat accounted for nearly \$1.83 billion, rice for \$850.9 million, milk and cream for \$344.1 million, spices for \$404.4 million, edible oil for \$1.92 billion, pulses for \$681 million, and sugar for \$799.7 million. Therefore, the total expenditure on these food imports in the fiscal year 2021 amounted to approximately \$6.83 billion.¹⁶

The Ministry of Agriculture proudly announces the achievement of this fiscal year's ambitious target for Aman cultivation, covering an impressive 5.9 million hectares of land. The bar for production has been set high, aiming to yield 16 million tons. For context, the prior year, 2021-22, saw cultivation spanning 5.72 million hectares and a robust production of 15 million tons.

Experts in the field suggest that by 2024-25, a remarkable increase in paddy production, approximately 3.2 million tons can be achieved. The strategy is to bolster the cultivation of high-yielding and hybrid varieties, phasing out the conventional varieties of Aman, Aush, and the Bri-28 and Bri-29 strains of the Boro season. In addition, a transformative approach to farming has been proposed to augment the production of oilseeds. By exploiting fallow land and converting conventional crops, an anticipated production boost of 2.4 million tons can be realized during this period. Remarkably, this represents a near tripling of current output. The Department of Agricultural Extension (DAE) has been proactive in this area, already setting wheels in motion for this visionary agricultural plan.¹⁷

¹⁶ Bangladesh Bank Annual Report 2021-22, *ibid.*

¹⁷ *Ibid.*

3

Ensuring Food Self-Sufficiency and Security for All

Nestled in the heart of Asia, Bangladesh is a verdant nation deeply rooted in agricultural traditions. Its economy and the sustenance of its populace are inextricably woven into the rhythm of sowing and harvesting. This sector, so vital to the nation's lifeblood, has experienced a transformative revolution in the past decade, a testament to the diligent and sustainable initiatives implemented by the government.

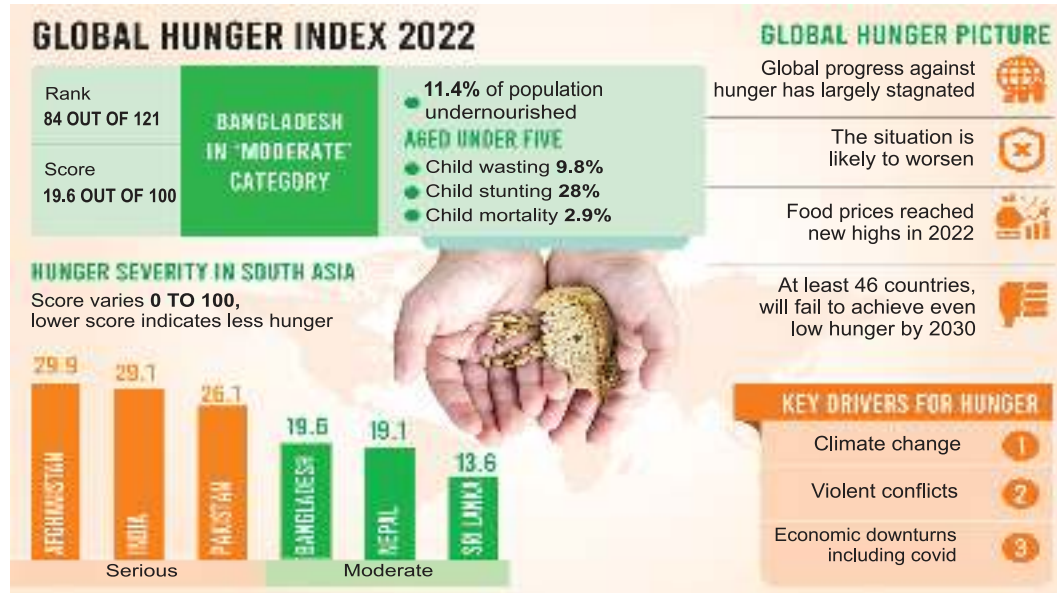
The nation's agricultural landscape has been reborn, blossoming into a self-sustaining powerhouse. Bangladesh now stands tall, having attained self-sufficiency in food production, a feat truly remarkable in its grandeur. This accomplishment carries even greater weight considering the nation's dense population, teeming with 17 million souls packed into a landscape where over 1,252 individuals share each square kilometer.¹⁸

Despite the formidable challenges of the Covid-19 pandemic and relentless natural disasters, the production of essential food grains such as rice, wheat and maize, has impressively surged to approximately 4.53 crore metric tons in FY20. Even amid such adversity, Bangladesh has admirably risen to the occasion, establishing itself as a global exemplar in agricultural development.¹⁹

Despite the formidable challenges of the Covid-19 pandemic and relentless natural disasters, the production of essential food grains such as rice, wheat and maize, has impressively surged to approximately 4.53 crore metric tons in FY20.

¹⁸ 'Govt to continue subsidies to ensure food security', *Bangladesh Post* (12 February 2023) <<https://bangladeshpost.net/posts/govt-to-continue-subsidies-to-ensure-food-security-105777>> accessed 7 May 2023.

¹⁹ 'In last 10 years, nation has achieved self-sufficiency in food: agriculture minister', *Daily Star* (8 October 2020) <<https://www.thedailystar.net/daily-star-books/news/gyantapas-abdur-razzaqs-phd-thesis-political-parties-india-2949906>> accessed 7 May 2023.



Source: Bangladesh ahead of India, Pakistan and Afghanistan in Global Hunger Index (GHI) 2022²⁰, (The Business Standard)

This achievement speaks volumes not only about the country’s agricultural potential, but also the resilience and ingenuity of its people. Bangladesh’s stride towards self-reliance in food production is indeed a beacon of hope, a testament to the power of sustainable development and the undeniable strength of a nation committed to feeding its own.

The Global Hunger Index serves as a comprehensive tool to assess and monitor hunger levels on a global, regional, and national scale, igniting proactive measures to alleviate hunger worldwide. This index utilizes a scoring system based on four key components: undernourishment, child wasting, child stunting, and child mortality. Over the past two decades, Bangladesh has exhibited an impressive 40% improvement, as its GHI score decreased from 34.1 in 2000. The GHI categorizes severity into five levels: low (9.9 or less), moderate (10.0-19.9), serious (20.0-34.9), alarming (35.0-49.9), and extremely alarming (50 or higher). Encouragingly, Bangladesh witnessed a decline in child wasting, or acute undernutrition, from 14.4% during 2012-2016 to 9.8% during 2017-2021, as reported. Notably, the country’s most significant progress has been in combating child stunting, as it successfully reduced chronic undernutrition by 8.2% between 2012 and 2021. The

²⁰ Ibid.

latest edition of this global ranking, jointly published on October 13, 2022, by Concern Worldwide, an international humanitarian organization, and Welthungerhilfe, Germany's prominent private aid organization, showcased Bangladesh's advancements. Surpassing neighboring countries India (107th), Pakistan (99th), and Afghanistan (109th), Bangladesh secured the 84th position out of 121 countries, achieving a commendable score of 19.6.²¹

In the last edition of the global ranking published in 2022, Bangladesh ranked 84th out of 121 countries with a score of 19.6 surpassing neighboring countries India (107th), Pakistan (99th) and Afghanistan (109th).

This remarkable accomplishment paves the way for the nation to make significant strides towards zero hunger, one of the pivotal objectives outlined in the Sustainable Development Goals (SDGs). As Bangladesh continues to harness its agricultural prowess, the country stands poised to make a substantial impact on the global stage, propelling it ever closer to a future free from hunger. Zero hunger aims at

By 2030, the goals are to end hunger, malnutrition, and improve access to nutritious food for vulnerable groups. This includes increasing agricultural productivity and income for small-scale food producers and implementing sustainable practices to enhance climate resilience.

eradicating hunger, achieve food security and improved nutrition alongside promoting sustainable agriculture. By 2030, the goals are to end hunger, malnutrition, and improve access to nutritious food for vulnerable groups.

This includes increasing agricultural productivity and income for small-scale food producers and implementing sustainable practices to enhance climate resilience. Additionally, efforts will be made to maintain genetic diversity and promote fair sharing of genetic resources. Increased investment in rural infrastructure and agricultural research will support developing countries. Lastly, proper functioning of food commodity markets and the elimination of trade restrictions will be prioritized to limit food price volatility.²²

²¹ Noshin Tasnim Zaman, 'Bangladesh ahead of India, Pakistan and Afghanistan in reducing hunger', *The Business Standard* (13 October 2022)

<<https://www.tbsnews.net/bangladesh/bangladesh-ranks-84th-global-hunger-index-513006#lg=1&slide=0>> accessed 14 May 2023.

²² 'Sustainable Development Goals in Bangladesh', United Nations in Bangladesh <<https://bangladesh.un.org/en/sdgs/2>> accessed 8 May 2023.

Furthermore, the Eighth-Five Year Plan²³ emphasizes on the adoption of Good Agricultural Practices (GAP) in pursuit of bolstering economic viability and fortifying food security. In addition, the plan fosters environmental sustainability by advocating for farm mechanization and the expansion of value chains. The System of Rice Intensification (SRI) plays a critical role in augmenting agricultural mechanisms and technologies, while also enhancing market access, distribution, and storage capabilities.

Concurrently, the Bangladesh Delta Plan (BDP) 2100²⁴ envisions a comprehensive, integrated approach for the development of sectoral plans that encompass agriculture, water resources, food security

Bangladesh Delta Plan (BDP) 2100 aims at a Delta Vision for an integrated approach for sector plans incorporating agriculture, water resources, support to food security and mitigating climate change risks. Efficient implementation of BDP can ensure effective and sustainable development of these sectors.

support, and climate change risk mitigation. The diligent execution of the BDP holds the promise of fostering effective and sustainable growth across these vital sectors.

There are certain key factors that play a vital role in enhancing the country's food security, farmers' livelihoods and overall agricultural productivity. The key factors are mentioned in the following:

Agricultural Funding: The allocation of billions in financial aid for agriculture, food security, and fertilizers is indicative of a government committed to agricultural development. This funding is critical for providing farmers with resources, supporting research and development, and expanding food security measures.

Agricultural Mechanization: Financial assistance for expanding agricultural mechanization could help improve efficiency in farming, leading to increased productivity and potentially better incomes for farmers.

Production Increases: The growth in vegetable production and increased food grain storage capacity suggest progress in meeting domestic food demands and possibly supporting export markets.

²³ Supra note 2.

²⁴ Bangladesh Delta Plan (BDP) 2100, General Economics Division (GED), Bangladesh Planning Commission, Ministry of Planning, Government of the People's Republic of Bangladesh <<https://oldweb.lged.gov.bd/UploadedDocument/UnitPublication/1/756/BDP%202100%20Abridged%20Version%20English.pdf>> accessed 8 May 2023.

Crop Zoning and Soil Testing: Crop zoning maps and mobile soil testing vans are likely aimed at optimizing agricultural outputs by guiding farmers on what crops to grow where and helping them determine the right fertilizer use. This approach aligns with sustainable farming practices.

Support for Farmers: The distribution of Agriculture Input Assistance Cards, the opening of bank accounts for farmers at a minimal cost and the training of farmers on fruit cultivation demonstrate initiatives aimed at strengthening the farming community.

Innovation and Sustainability: The development of modern crop varieties and production technologies, the transformation of monocropping lands to increase cropping intensity and the installation of solar irrigation pumps are steps towards innovation and sustainability in agriculture.

Recognition of Agro Entrepreneurs: The Bangabandhu National Agricultural Award could serve as an incentive for innovation and entrepreneurship in agriculture, fostering further growth and development in the sector.

This investment and focus on agriculture are significant given the sector's crucial role in food security, employment and economic stability. The specifics may vary depending on the particular country, but these are generally positive steps for any nation's agricultural development.

4

Agriculture: A Key Driver to Reduce Poverty and Unemployment

The rural economy of Bangladesh, with a primary focus on agriculture, has been an influential catalyst in the alleviation of poverty since 2000. The agricultural sector, indeed, has been a significant contributor, accounting for a staggering 90 percent of poverty reduction between 2005 and 2010.²⁵ Our nation is well known for its progress in human development. But its achievements in agriculture remain an untold story despite being key to reducing poverty and unemployment since 2000.

The rural population of Bangladesh constitutes more than 70 percent of the total populace, with 77 percent of the country's workforce residing in these areas. Nearly

A 1 percent rise in agricultural income has the potential to reduce poverty by 0.39 percent when keeping other factors constant.

half of the total workforce in Bangladesh and two-thirds in the countryside are directly engaged in agricultural activities. Additionally, about 87 percent of rural households depend on agriculture, at least partially, for their income. A 1 percent rise in agricultural income has the potential to reduce poverty by 0.39 percent when

keeping other factors constant. This is compared to the 0.11 percent reduction contributed by non-agricultural income.²⁶

In the midst of recurrent natural calamities and rapid population expansion, Bangladesh has showcased an astonishing advancement over the last ten years in its endeavor to ensure food security. A shining example of this progress can be seen in the remarkable threefold increase in food grain production, surging from 9.8 million tons in 1972 to an impressive 34.4 million tons in 2014.²⁷ Bangladesh's agricultural sector has thrived with one of the highest productivity growth rates globally since 1995, averaging an annual rate of 2.7 percent, second only to China.²⁸

²⁵ Fariyah Tasneem, 'Understanding the role of agriculture in Bangladesh poverty reduction', (*The Borgen Project*, 2017) <<https://borgenproject.org/role-of-agriculture-in-bangladesh-poverty-reduction/#:~:text=Between%202005%20and%202010%2C%20farm,percent%20in%20the%20late%202000s.>> accessed 10 May 2023.

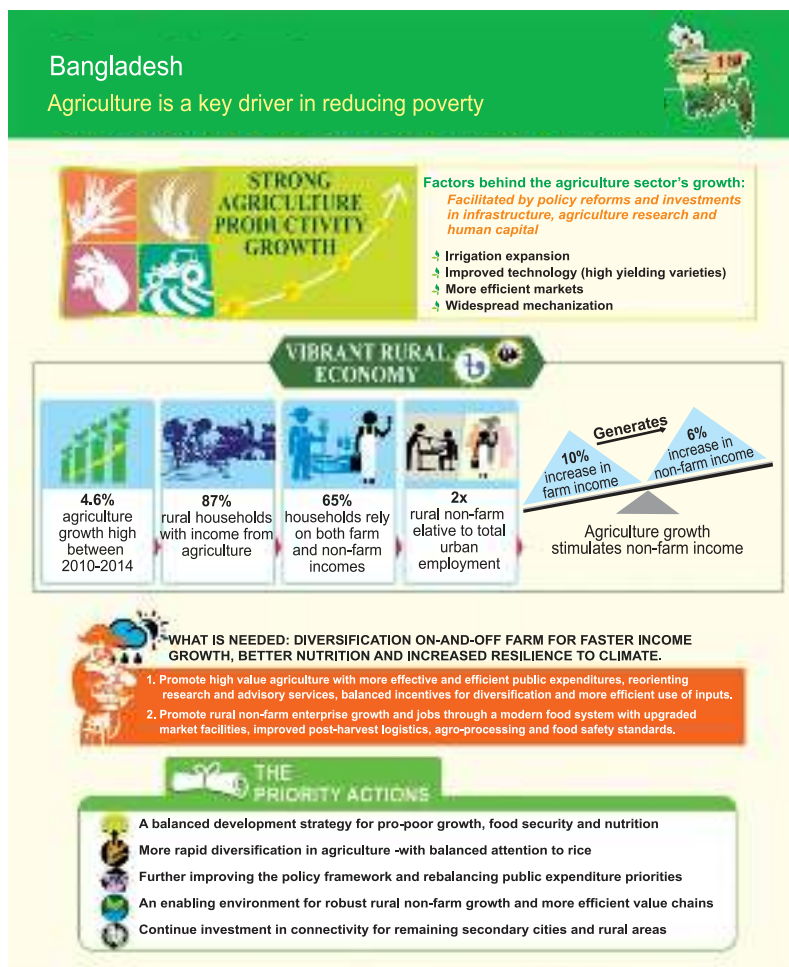
²⁶ Dr. Mahbub Hossain, Prof. Abdul Bayes and Prof. Dr. SM Fakhru Islam, 'A Diagnostic Study on Bangladesh Agriculture' (Agricultural Economics, Working Paper) <<http://blog.brac.net/wp-content/uploads/2018/11/Agriculture-Report.pdf>> accessed 8 May 2023.

²⁷ Ibid.

²⁸ 'Bangladesh: Growing the Economy through Advances in Agriculture,' The World Bank (IBRD-IDA) Blog <<https://www.worldbank.org/en/results/2016/10/07/bangladesh-growing-economy-through-advances-in-agriculture>> accessed 8 May 2023.

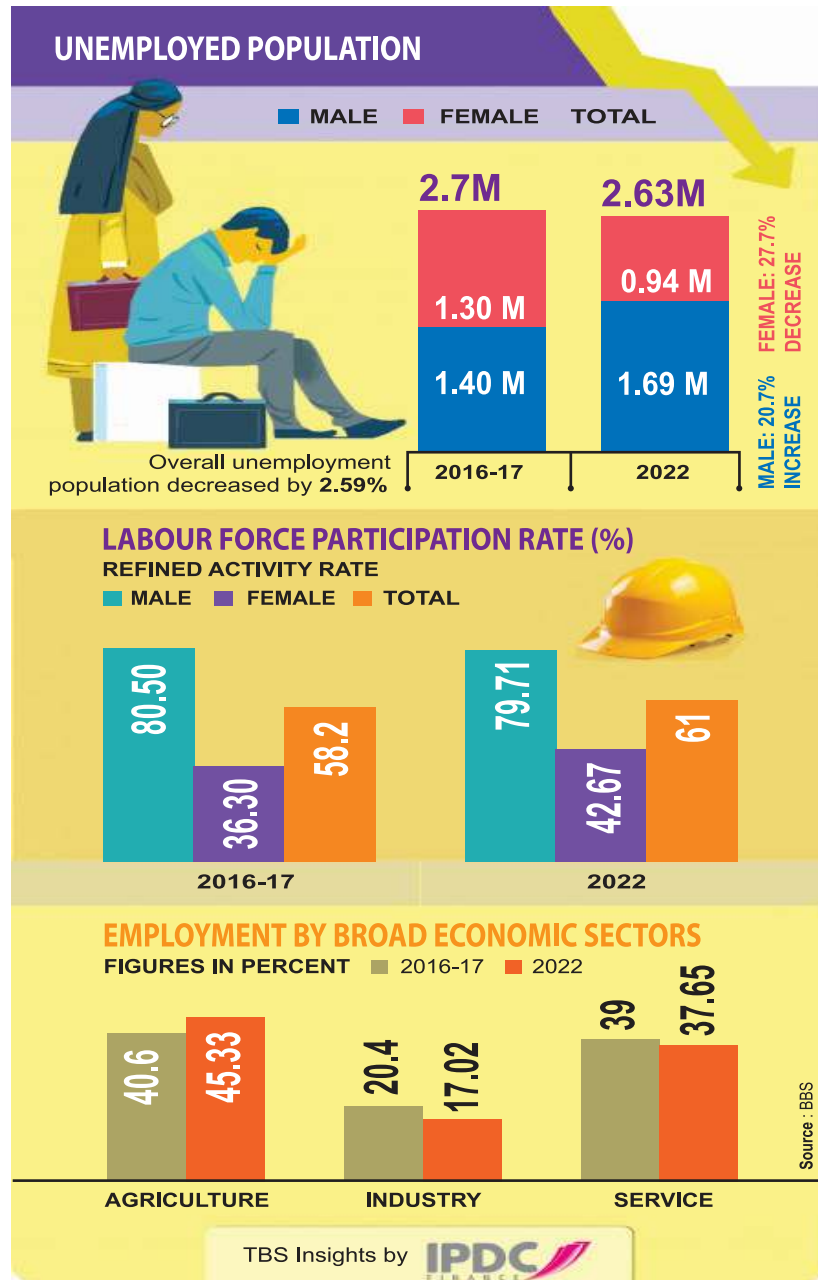
This flourishing can be attributed to a robust and consistent policy framework, fortified by substantial public investments in technology, rural infrastructure, and human capital.

With one of the fastest rates of productivity growth in the world since 1995 (averaging 2.7 percent per year, second only to China), Bangladesh's agricultural sector has benefited from a sound and consistent policy framework backed up by substantial public investments in technology, rural infrastructure and human capital.



Source: Agriculture is a key driver to reduce poverty²⁹, The World Bank

²⁹ 'Agriculture growth reduces poverty in Bangladesh', The World Bank <<https://www.worldbank.org/en/news/feature/2016/05/17/bangladeshs-agriculture-a-poverty-reducer-in-need-of-modernization>> accessed 10 May 2023.



Source: Agriculture is a key element to reduce unemployment³⁰
(The Business Standard)

³⁰ 'Unemployment drops to 3.6% on increased women's participation', *The Business Standard* (29 March 2023) <<https://www.tbsnews.net/economy/unemployment-drops-36-increased-womens-participation-607726>> accessed 9 May 2023.

Agriculture has always been a significant contributor to the economy of Bangladesh. It is one of the largest sectors that employ a significant percentage of the country's workforce. With the increasing population, the demand for food has been growing in the country. Therefore, agriculture plays a vital role in reducing unemployment by creating job opportunities for the rural population, who make up the majority of the workforce in the sector.

Bangladesh has implemented various policies and initiatives to improve the agricultural sector's productivity and modernize the industry to make it more attractive to young people. These efforts have resulted in increased production, better quality crops, and improved access to markets. Overall, the development of agriculture is crucial to reducing unemployment in Bangladesh, particularly in rural areas, and contributing to the country's economic growth.

The Labor Force Survey of 2022 sheds light on a compelling narrative of economic transformation in Bangladesh. The total workforce in 2022 tallied up to an impressive 70.78 million people, with men constituting a majority at 45.79 million and women contributing a substantial 24.99 million. In an interesting twist, the agricultural sector experienced a significant influx of labor, with its proportion

The unemployment rate in Bangladesh declined to 3.6% in 2022 mainly riding on an upward trend in women's and youths' participation specially in agricultural sector, down from 4.2% reported in the previous survey conducted in 2016-17 by the Bangladesh Bureau of Statistics (BBS).

within the total labor force leaping from 40.6% in the fiscal year 2016-17 to 45.33% in 2022. This shift was largely precipitated by the Covid-19 pandemic, which sparked a mass movement of urban dwellers returning to their rural roots. Facing the new reality, many found solace and productivity in engaging with

farm activities, thereby inadvertently bolstering the agrarian sector. Furthermore, the unemployment rate witnessed a noticeable reduction, sliding from 4.2% in 2016-17 to a mere 3.6% in 2022. This encouraging development was largely propelled by a surge in the participation of women and youth, particularly in the agricultural domain. This data, as reported by the Bangladesh Bureau of Statistics (BBS), underscores a promising trend of increased engagement and employment within the nation.³¹

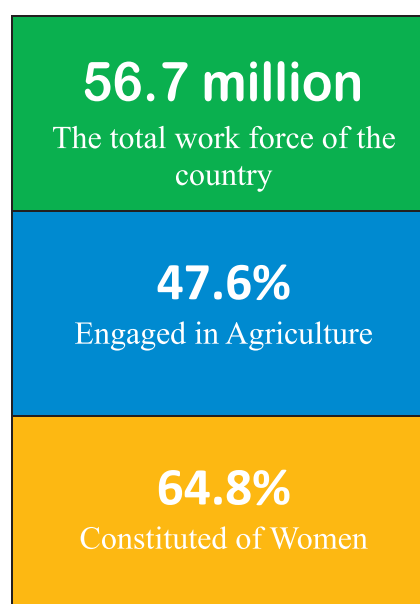
³¹ Labor Force Survey 2022, Bangladesh Bureau of Statistics (BBS), *ibid.*

For a swifter, more inclusive rural growth coupled with job creation, it is imperative to diversify agriculture and strengthen rural non-farm enterprise development. Transitioning from rice production to higher-value crops can greatly mitigate malnutrition, stimulate quicker income growth and generate improved on-farm and non-farm employment opportunities, particularly for women and youth. The livestock and fisheries sectors also present enormous potential for diminishing malnutrition and boosting income and employment in this highly land-constrained economy.

5

Recognizing Women's Contribution in Agriculture

In Bangladesh, empowering women through agriculture plays a transformative role in promoting gender equality and alleviating poverty. Traditionally, women's contributions to agriculture have been undervalued and overlooked, despite their pivotal roles in cultivating crops, raising livestock and managing resources. Women in agriculture and rural areas have one thing in common across Bangladesh, they have less access than men to productive resources and opportunities. If women had the same access to productive resources as men, FAO says, they could increase yields on their farms by 20–30%. This could raise total agricultural output in developing countries by 2.5–4%, which could in turn reduce the number of hungry people in the world by 12–17%.³² The gender gap is found for many assets, inputs and services—land, livestock, labor, education, extension and financial services and technology, it imposes costs on the agriculture sector, the broader economy, and society as well as on women themselves. So, the general overview of the extent of female force participation in labor market to which women are engaged mainstream economy activities besides household work. The total work force of the country is 56.7 million. Of this, 47.6% is engaged in agriculture and of that 64.8% is constituted of women.³³



³² Reaz Ahmad, 'Empowering women in agriculture', *Dhaka Tribune* (13 April 2019) <<https://archive.dhakatribune.com/bangladesh/agriculture/2019/04/13/empowering-women-in-agriculture>> accessed 7 May 2023.

³³ Labor Force Survey 2010, Bangladesh Bureau of Statistics (BBS), 'Recognition of Women's Role in Agriculture', *Manusher Jonno Foundation*, Policy Brief 4 (November 2020) <http://www.manusherjonno.org/wp-content/uploads/2021/03/FINAL_Policy-Brief-4-Women-in-Agriculture.pdf> accessed 5 May 2023.

Women constitute over 50% of the farm labour force in Bangladesh, much higher a participation comparing to 30% in India and Pakistan. But as they belong to small and marginal farm households, they are often left out from getting benefits of government's agricultural extension service. However, government has found out wonderful ways to empower women in agriculture. Governmental programs alongside the collaboration with international agencies are actively engaging

Women constitute over 50% of the farm labour force in Bangladesh, much higher a participation comparing to 30% in India and Pakistan.

women in training and extension services which include the promotion of modern farming techniques, diversification of crops and climate-smart agriculture. These programs aim to enhance women's agricultural skills,

increase their productivity, and ensure their access to inputs and markets. Moreover, financial institutions are creating opportunities for women in agriculture by offering microcredit and savings programs tailored to their needs. Such measures not only boost women's economic independence but also foster community development as women often reinvest their income in their families' education and health. For instance, under the collaborative guidance of the Bangladesh Ministry of Agriculture and its Department of Agricultural Extension, a transformative two-year initiative called Agriculture, Nutrition, and Gender Linkages (ANGeL) was launched. Spanning 17 months, this groundbreaking project serves as tangible evidence that the fusion of agricultural and dietary diversity leads to increased financial gains. Furthermore, these benefits are amplified when both women and men receive comprehensive training in farm production, nutrition, and gender sensitization.³⁴ ANGeL is currently assessing the effects of three distinct interventions, all aimed at promoting nutrition and fostering a gender-sensitive approach to agriculture which are mentioned in the following:

Agriculture Production: Facilitating the production of the high-value food commodities rich in essential nutrients through the diversification of crops, livestock and fisheries.

³⁴ Akhter Ahmed, Julie Ghostlaw and Nusrat Hossain, 'Empowering women in Bangladesh by strengthening the agriculture-gender-nutrition nexus' (*IFPRI Research Blog*, 10 March 2017) <<https://www.ifpri.org/blog/empowering-women-bangladesh-strengthening-agriculture-nutrition-gender-nexus>> accessed 7 May 2023.

Nutrition Knowledge: Conducting high-quality training in behavior-change communication to improve people’s knowledge of nutrition.

Gender Sensitization: Undertaking activities to empower women and raise their status while encouraging gender parity.



Source: Empowering Women in Agriculture³⁵ (Dhaka Tribune)

The groundbreaking ANGeL study, conducted by the Ministry of Agriculture (MoA) in collaboration with the esteemed Washington-based food policy think-tank, the International Food Policy Research Institute (IFPRI), brought together 4,000 farm households across 16 upazilas, spanning an equal number of districts. The findings of this comprehensive research shed light on the remarkable impact of integrated agriculture, nutrition, and gender sensitization trainings, resulting in significant advancements in the empowerment of women within the agricultural sector.³⁶

³⁵ Bangladesh Ministry of Agriculture, Food and Agricultural Organization, supra note 31.

³⁶ Supra note 34.

Lastly, the legal framework has been strengthened to protect women's rights to land and other agricultural resources which are fundamental to their empowerment. The National Women Development Policy (NWDP) 2011 has made provisions in Part II Chapters 26, 30, 31, 36 and 37 to ensure women's rights in farming, food security, and agricultural economy. NWDP states that the women labor as farming hands contributing to the national economy need recognition. NWDP commits to extend support and assistance to ensure equal wages for the same job and to remove wages discrimination for women in agriculture, and to take steps to ensure the farming women have equal opportunity and access to resources and assets. Furthermore, the National Agricultural Extension

Policy (NAEP) 2012 recognizes the indispensable role of women's participation and is committed to enhancing their engagement in agricultural activities. Moreover, it aims to establish and manage cottage

Article 18 of the National Agricultural Policy 1999 highlights training programs to be conducted and capital support to be provided to encourage women's interest and improve their skill in agricultural activities.

industries based on locally produced agricultural commodities that are suitable for women. NAEP Pillar 18 specifically emphasizes the integration of women into the agricultural sector. An essential guiding principle of NAEP is to address the unique needs of women farmers through customized extension approaches and comprehensive support packages. In alignment with this, Article 18 of the National Agricultural Policy 1999 highlights the importance of conducting training programs and providing capital support to foster women's interest and enhance their skills in agricultural endeavors. The National Food Policy 2006 also recognizes and appreciates the pivotal role played by women, particularly rural women, in ensuring food security. Within Strategy 2.3 and Objective 3, it acknowledges the imperative to implement women-focused development programs, such as enhancing women's participation in all agricultural activities and providing them with opportunities and resources to enhance their productivity in production, processing, and marketing endeavors within the rural agriculture sector.

This integrated approach of capacity building, financial inclusion and legal protection is revolutionizing women's status in Bangladesh's agriculture sector, transforming them from invisible laborers to recognized farmers and entrepreneurs. By empowering women in agriculture, Bangladesh is not only advancing gender equality but also promoting sustainable agriculture, food security, and overall rural development.

6

Envisioning E-Agriculture in Bangladesh

Bangladesh has been ranked third in South Asia on the Agriculture Digitalization Index (ADI), according to a report published in the World Bank's book titled "What's Cooking: Digital Transformation of the Agrifood System."

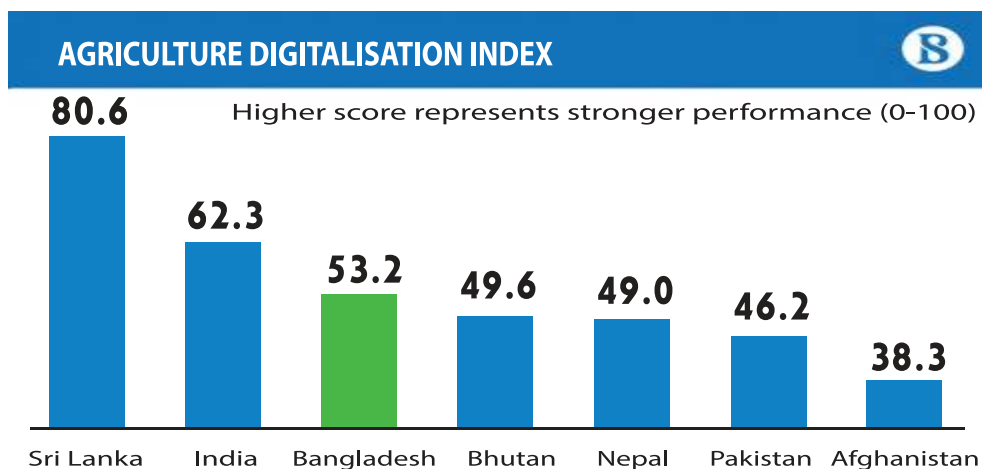
Bangladesh has been ranked third in South Asia on the Agriculture Digitalization Index (ADI), according to a report published in the World Bank's book titled "What's Cooking: Digital Transformation of the Agrifood System." The country achieved an impressive score of 53.2 out of 100, outpaced only by Sri Lanka and India in the region.

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The strong performance is attributed not only to technological advancements but also to the facilitative non-digital environment that includes swift market access and reliable electricity supply. Moreover, government-led initiatives to leverage information and communication technology (ICT) for public services on a national scale have significantly propelled the nation's digital agriculture agenda.

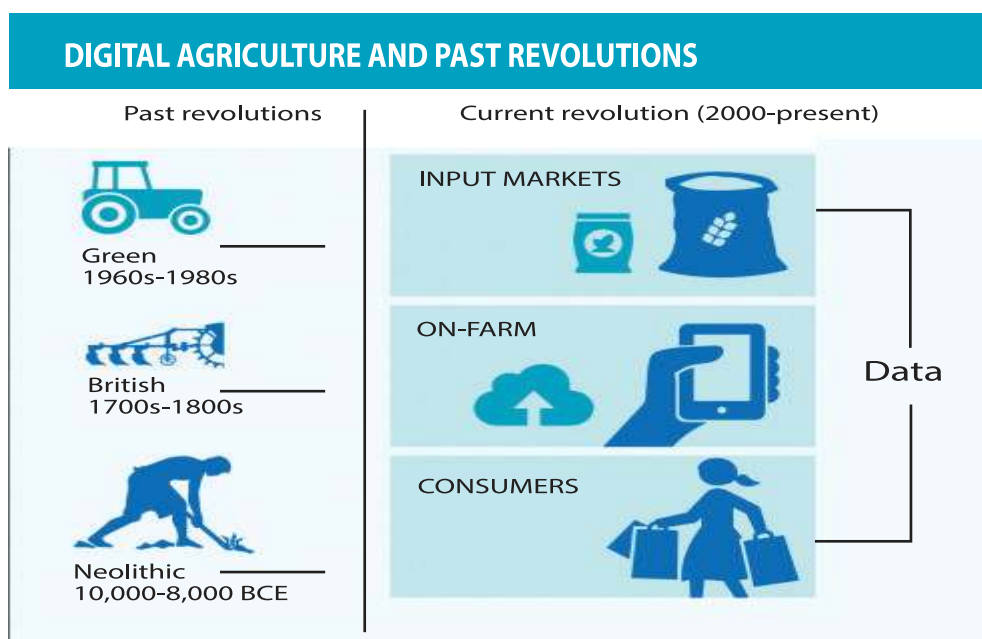
In the near future, we can envision an agricultural sector in Bangladesh that is characterized by a seamless integration of digital technologies, data-driven decision-making and environmentally sustainable practices. Precision agriculture will be at the forefront of this transformation, utilizing cutting-edge technologies such as drones, satellite imaging and IoT-enabled sensors to collect real-time data on soil conditions, weather patterns and crop health. This data will enable farmers to optimize their use of resources, reduce waste and minimize the environmental impact of their farming practices. Smart farming techniques will also play a critical role in revolutionizing Bangladesh's agricultural sector. Artificial intelligence and machine learning will be employed to analyze massive amounts of data, predict

³⁷ Mohsin Bhuiyan, 'Bangladesh 3rd most agriculturally digitalized in South Asia: Study' (*The Business Standard*, 18 March 2021) <<https://www.tbsnews.net/economy/agriculture/bangladesh-3rd-most-agriculturally-digitalised-south-asia-study-218209>> accessed 6 May 2023.



BANGLADESH'S PERFORMANCE ON THREE SUBINDEXES

| Subindex | Score |
|-----------------------------------|-------|
| Digital agriculture availability | 41 |
| Digital agriculture affordability | 46.3 |
| Non-digital factors | 72.4 |



Source: Bangladesh Position in Agriculture Digitalization Index³⁸

³⁸ World Bank, *ibid.*

patterns, and recommend the best possible solutions to agricultural challenges. For example, AI-powered systems could help farmers identify pests and diseases in their fields, allowing them to respond promptly and mitigate the potential damage to their crops.

Nuclear Agriculture has ushered in a transformative revolution in the agricultural sector of Bangladesh. This remarkable achievement can be primarily attributed to the proactive efforts of farmers, who have embraced cutting-edge technologies devised by research organizations, alongside the invaluable support of the Department of Agricultural Extension (DAE) and its efficient Agricultural Extension Services. Furthermore, the Ministry of Agriculture's Department of Agricultural Marketing (DAM) has taken a commendable step by implementing an e-government initiative. This initiative harnesses the potential of information and communication technology (ICT) to generate and disseminate crucial Agricultural Market Information to farmers, traders, government officials, policy makers, development agencies, and various other stakeholders.

Smart farming techniques will also play a critical role in revolutionizing Bangladesh's agricultural sector. Artificial intelligence and machine learning will be employed to analyze massive amounts of data, predict patterns, and recommend the best possible solutions to agricultural challenges.

Various governmental and non-governmental organizations in Bangladesh have started providing information's, advisory service through mobile phone (IVR/Call/SMS based). An example of this kind of website is ekrishok.com. The Bangladesh Institute of ICT in Development (BIID), in collaboration with Katalyst (a multi donor development initiative) and Grameen Phone (telecom operator) has launched the e-Krishok initiative in 2008. E-Krishok builds the awareness and capacity of farmers of Bangladesh to use ICT-enabled information and advisory services.³⁹

³⁹ Saiful, 'Technology based E-Agriculture in Bangladesh' (*Agro and Farming*, 13 December 2013) < <https://agricultureandfarming.wordpress.com/2013/12/13/technology-based-e-agriculture-in-bangladesh/> > accessed 8 May 2023.

In addition, mobile applications and digital platforms will empower farmers by providing easy access to vital information, expert advice, and financial services. Through these digital channels, farmers will be able to learn about the latest agricultural practices, connect with agronomists and other industry professionals,

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and access credit and insurance products tailored to their needs. These platforms will also facilitate market linkages, enabling farmers to sell their produce directly to consumers and wholesale buyers, ultimately improving their profitability and strengthening the country's food supply chain.

Farmers in Bangladesh, just like their counterparts worldwide, aspire to have accessible and contextually relevant technology that ensures long-term sustainability. The role of technology in honoring and elevating their livelihoods is invaluable, as it facilitates the exchange of best practices and fosters collaboration for innovative ideas. Recognizing this significance, Bangladesh's 2018 Information and Communications Technology (ICT) Policy places a specific focus on agriculture through its eKrishi Vision 2025. This visionary plan mandates the implementation of ICT-enabled farming services ("Krishi") in alignment with the broader vision of establishing a "Digital Bangladesh." Given the economic importance of agriculture, the private sector is encouraged to create products and services that seamlessly integrate technology into this sector. Development partners actively strive to enhance the country's crop diversity and agricultural productivity, often leveraging smart technology as a vital tool in achieving these goals.⁴⁰

Furthermore, the adoption of blockchain technology in agriculture has the potential to enhance traceability, ensuring food safety and promoting transparency throughout the entire supply chain. Almost 70% of the Bangladesh farmers are smallholders and unbanked. Access to finance is often costly for farmers, making farming an unviable business case. This is because of risk associated with financing smallholder farmers. Peer-to-Peer lending platforms and crowdfunding platforms can offer low-cost financing opportunities for farmers. However, cutting edge

⁴⁰ 'Bangladeshi Farmers: Technology to the Rescue' (*AgriLinks*, 12 January 2021) <<https://agrilinks.org/post/bangladeshi-farmers-technology-rescue>> accessed 9 May 2023.

technology like blockchain could be used to create a digital and verified identity of

Cutting edge technology like blockchain could be used to create a digital and verified identity of the farmers along with their credit and transactional history in a distributed network and accessible by relevant actors such as banks and insurance companies.

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The widespread adoption of digital technologies in Bangladesh's agricultural sector will also

necessitate a focus on capacity-building and skill development. This will require close collaboration between the government, private sector and educational institutions to design targeted training programs and establish dedicated centers of excellence in agri-tech.

Bangladesh has gracefully entered a new era of the Digital World, guided by a magnificent vision of creating a truly Digital Bangladesh. This visionary pursuit encompasses the integration of E-Agriculture, which embraces a multitude of interdisciplinary endeavors in Agricultural Informatics, Agricultural Development, and Entrepreneurship. Together, these initiatives harmoniously strive towards constructing a highly efficient and resourceful Bangladesh. By embracing these emerging technologies and fostering a spirit of innovation and collaboration, Bangladesh can usher in a new era of sustainable and prosperous agriculture that benefits not only its farmers but also the nation as a whole.

⁴¹ Fahad Ifaz, 'Envisioning tech-and-data-driven agriculture in Bangladesh' (*Financial Express*, 28 December 2019) < <https://thefinancialexpress.com.bd/views/views/envisioning-tech-and-data-driven-agriculture-in-bangladesh-1577458271> > accessed 7 May 2023.

7

Conclusion

In conclusion, Bangladesh's remarkable transformation from a food-deficient nation to one that has achieved self-sufficiency stands as a testament to the power of visionary leadership, strategic policies and targeted investments in the agricultural sector. The Green Revolution has been instrumental in this transformation, enabling the country to harness the potential of high-yielding crop varieties, advanced irrigation infrastructure, modern market institutions and increased mechanization.

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Our country's unwavering commitment to placing agriculture at the heart of its development agenda, as evidenced by the Eighth Five-Year Plan⁴², National Agriculture Policy 2018⁴³, National Food Policy 2006⁴⁴ and Sustainable Development Goals (SDGs), has further

fueled this progress. By implementing a range of initiatives including those promoting the use of organic and balanced fertilizers, the country is making strides towards sustainable farming practices.

The comprehensive food security program has significantly improved food security in Bangladesh through various initiatives and digital technology incorporation. Focusing on reducing poverty, unemployment and empowering women, Bangladesh's progress towards food self-sufficiency serves as an exemplary model for other nations. The country's experiences offer valuable insights for addressing global food security and sustainable development. Bangladesh's commitment to agricultural innovation, sustainable practices and data-driven technology positions it for a prosperous future while providing a blueprint for achieving sustainable growth globally.

⁴² Supra note 2.

⁴³ Supra note 3.

⁴⁴ Supra note 4.

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The Empowerment through Law of the Common People (ELCOP) is an independent, non-political, non-profit non-governmental organization, established in the year 2000. The poor, underprivileged and marginalized segments of the population of Bangladesh woefully lack in knowledge and awareness about their legal rights and duties, often resulting in denial of their access to justice by the more powerful and deceitful and in their inability to become good citizens. This environment of knowledge deficit and lack of capacity of a good mass of people in Bangladesh was crying out for a robust initiative that would fill this void of powerlessness and redeem them from the state of hopelessness and darkness of ignorance. And there was light in the founding of ELCOP. Thus, ELCOP, having been established in fulfillment of a demand of time and situation in Bangladesh, has emerged as Voice of the Voiceless and Power of the Powerless.

In founding the ELCOP, needless to say, the challenge was both intellectual and operational – what portfolio of knowledge and information to develop and how to reach out to the people most of whom are half-literate or illiterate. The founder of ELCOP has made it all easy and simple. The defining feature of ELCOP is that its activities are conducted by law students and teachers from different universities of Bangladesh. It also involves those legal experts in such activities who are concerned, have commitment and are competent enough to deal with human rights and empowerment issues.



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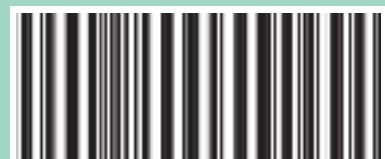
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