Agriculture in Bangladesh
A Note on Food Security by Enhancing Productivity

Summary Awami League’s Election Manifesto 2008 appropriately recognizes the importance of ensuring food security for all in Bangladesh. Food Security requires increasing agricultural growth which in turn is a key factor in reducing poverty in the country. Food security also requires increasing agricultural production and protecting consumers. Sustained production increases, in turn, require technology-driven increases in the productivity of crops (rice in particular), fisheries and livestock. This is possible through interventions that improve: (i) agricultural research and extension systems to generate and disseminate high yielding varieties and location-specific solutions to production constraints; (ii) timely access to quality production inputs, especially seeds and fertilizer; (iii) coverage, targeting, and administration of production subsidies (especially fertilizer) in order to make them efficient and fiscally sustainable; and (iv) irrigation and drainage. Increasing the incomes of small and marginal farmers requires promotion of commercial agriculture and agri-business opportunities through: (a) value chain development and value-addition to selected agricultural commodities; (b) improvements in market infrastructure; (c) supporting the development of farmer groups and producer organizations and link them with value chains and markets; and (d) facilitating private sector investment in agri-business development, demand-driven research & extension systems, and rural finance through public-private partnerships. Food safety nets are needed to protect poor and vulnerable consumers but their coverage, targeting and administration need to be improved. All these interventions will require a right blend of public policies, resources, and participation of public and private sector, and increased technical and administrative capacity of the institutions responsible for agriculture extension, research, food procurement, water management, and safety net management.

I. Sector Background

1. The agricultural sector in Bangladesh (BD) plays a critical role in promoting overall economic growth and poverty reduction. It is important for food security and sustenance of rural livelihoods as nearly 70 percent of the country’s population is classified as rural. Employing over 60 percent of the total labor force, the sector is one of the main sources of livelihood for more than 70 percent of the total rural population.

2. Crops account for some 60 percent of total agricultural GDP. The contributions of fisheries, livestock and forestry are about 20, 13 and 7 percent, respectively.

3. Depending on the season, rice accounts for up to 60% (or some 5 million ha) of total cultivated area (7.9 million ha). In comparison wheat is grown on about 0.5 million ha; cash crops (mainly jute and sugarcane) on about 0.7 million ha; pulses, oilseeds, spices and potato on about 0.3 million ha each; and vegetables and fruits on 0.35 million hectare. The contribution of the agriculture sector (including crops, livestock, forestry and fisheries) in terms of value added as a percentage of GDP has diminished gradually over time: from 30 percent in 1990 to 19 percent at present, while the contributions of services and industry have grown significantly.

5. Even though Bangladesh’s agriculture has been subject to significant technological change following the Green Revolution and liberalization of agricultural input markets, agricultural growth has significantly lagged growth in other sectors. During the past decade agriculture grew by just over 3 percent per year on average, as compared to 7 and 6 percent in manufacturing and service sectors, respectively.

II. Sector’s Main Challenges

6. Ensuring food security is crucial for economic and social development of Bangladesh: Bangladesh suffers from widespread food insecurity due to low income for a vast majority of the
population, population growth and a vulnerable natural resources base. Agricultural growth is a necessary condition for reaching Millennium Development Goal #1 of reducing poverty and hunger by 50 percent between 1990 and 2015. However, agricultural growth has lagged over the past two decades putting the country’s poverty reduction and food security goals at risk. Because of its strong forward and backward linkages with the rural non-farm economy, the agriculture sector through intensification and diversification can be an important factor in promoting economic growth in Bangladesh.

7. **Agricultural growth is important but cannot be the only engine of economic growth.** While sustained growth in the agriculture sector is necessary, such growth alone is not sufficient to address the rising challenges to ensure food security, reduce poverty, and generate and promote rural livelihoods and employment. Even under the best of circumstances (say, at least 4 percent annual agricultural growth) BD’s growth in the manufacturing and services will remain crucial in order to achieve the target of sustained 7.5 percent annual growth in overall GDP, which is considered as necessary to reach the middle-income status by 2021. Given that the predominant share of the total population in the country continues to live in rural areas, achieving growth in the non-farm rural sector will be central for reaching this target.

8. **In order to guarantee food security, Bangladesh needs to continuously increase its rice productivity and production.** Rice being the main staple food of Bangladesh, the performance of the agricultural sector is to a large extent determined by rice. The current level of rice production at the national level is satisfactory. But as the demand for rice is projected to grow at a rate of 2-2.5 percent per year based on population and income growth, self sufficiency in rice can be achieved only by increasing production by at least 330,000 MT each year. This is a major challenge, given slow yield growth and the annual one percent decline in the availability of land for rice production.

III. **Ways to Enhance Food Security**

9. **Improving food security requires simultaneous attention to stimulating agricultural production and protecting consumers.** In order to balance the interests of producers and consumers it is imperative to follow a three-tier approach. First, policies should focus on improving agriculture productivity and production in order to achieve self sufficiency of rice and guarantee food security in the medium and longer term. Second, the production of high-value crops such as fruits, vegetables, and livestock and fisheries products need to be enhanced through promoting private sector-led value chain development and public-private partnerships. Third, consumers and vulnerable people need to be protected by ensuring access to sufficient quantities of rice at affordable prices. This approach will require an appropriate blend of public policies and resources, participation of public and private sectors, and increased technical and administrative capacity of government institutions responsible for agriculture extension, research, food procurement, and safety net management.

10. **Achieving yield gains through technological change is fundamental for increasing domestic rice production.** The potential for expansion of cropped area in the country is limited as less than four percent of total arable land remains unsown and about one percent of currently cultivated area is lost every year to non-agricultural use. Major attention needs to be given to technology-driven yield increases in order to enhance agricultural production and achieve the overall objective of self-sufficiency in rice. In this respect, AL’s manifesto puts special emphasis on the “modernization of agriculture, innovation of technology and expansion of facilities for research and extension.” In addition, possibilities need to be explored to improve cropping intensity, and bring new and fallow lands under cultivation by improving water use efficiency of existing irrigation/drainage schemes and with new major irrigation/drainage facilities, particularly in the coastal and Monga
affected areas. Intensification of rice production may also allow the release of land and other resources required for diversifying agriculture toward higher value added production.

11. **Raising rice yields is feasible.** Average rice yields in Bangladesh are slightly higher than in India but much lower than in China and Vietnam. With appropriate measures average rice yields in Bangladesh can be increased to about 3.5-4.0 metric tons (mt)/ha from the current level of 2.5 mt/ha (i.e. an increase of about 60 percent). Field experiments by the Bangladesh Rice Research Institute (BRRI) and the Department of Agriculture Extension (DAE) during 2004-06 have shown that rice productivity can be increased by 30 percent to 60 percent by using hybrid seed, rationalizing input utilization, and improving other crop management practices.\(^1\) It is therefore vital to embark on an accelerated program of technology-driven yield.

12. **Besides rice, livestock and fisheries offer plenty of untapped potential to raise rural incomes and employment.** The fisheries subsector accounts for about 20 percent of agricultural GDP and 3.7 percent of total GDP. Fish is an important source of protein for Bangladeshis, accounting for 60 percent of their animal protein intake and 7 percent of total protein intake. Similarly, milk production is an important economic activity in Bangladesh providing about 3.6 million households with supplementary income, employment and nutrition. The local dairy industry offers potential opportunities to generate more income, employment and nutrition to particularly the landless, women and poor rural population, while reducing the use of foreign exchange for importing milk powder.

13. **Simultaneous attention to research, extension and linking farmers to markets is fundamental for agricultural sector development.** Three other areas are vital for enhancing agriculture productivity and production. First, *agricultural research* needs to be reoriented to respond better and in a timely manner to real farmer needs and solve major bottlenecks that limit productivity increases. A larger focus will be required on bio-technological research to develop high yielding rice varieties that are resilient to specific agro-ecological conditions, especially in saline and Monga affected areas. Second, *agriculture extension systems* need to be made more demand-driven and efficient to promote new technologies and solve farmers’ location-specific problems. Third, *research-extension-market linkages* need to be strengthened. Agricultural research and extension are to a significant extent “public goods” in which the government should perform a leading role, not only through public research institutes but perhaps even more as a provider of resources on a competitive basis. But deep involvement of the private sector is also needed to achieve a real demand-driven approach in research and extension.

14. **Fertilizer availability to farmers needs to be improved.** Availability of fertilizer to farmers in sufficient quantities at the appropriate time is crucial for increasing agricultural productivity. There is consensus among fertilizer experts that the main problem faced by the farmers is not fertilizer price but the timely and adequate availability of fertilizer. Unfortunately in Bangladesh a variety of factors complicate farmers’ access to this crucial input including inefficiencies in production, distribution, and storage infrastructure; restrictions imposed on private sector fertilizer trade; inadequate network of fertilizer dealers; uncontrolled non-agricultural usage of subsidized urea fertilizer; and lack of adequate monitoring of fertilizer availability at the local level. It is necessary to address these issues on a priority basis in order to complement other initiatives of the Government aimed at productivity enhancement.

\(^1\) The DAE, in collaboration with the BRRI, is currently conducting a similar demonstration pilot (Rice Technology Demonstration and Dissemination), building on the lessons of the previous experiment, under the ongoing National Agriculture Technology Project (NATP) which receives financing from the World Bank (IDA).
15. **Balanced use and efficient application of fertilizer need to be promoted.** Imbalanced use and inefficient application of fertilizer are two major issues that not only limit the achievement of desired crop yields, but also adversely affect soil nutrient balances. A major national drive by the agriculture extension department would be necessary to promote balanced use and proper application of fertilizer by farmers. Certain techniques, such as Deep Urea Replacement, have been pilot tested in Bangladesh with positive results and these interventions should therefore be scaled up.

16. **Improved access to high quality seeds is needed to increase rice productivity.** Research has shown that the use of high quality seeds alone can boost the rice yield by about ten percent. Extension services should play a significant role to ensure availability, accessibility, and adoption of good quality certified seeds of high yielding rice varieties as well as varieties that are resilient to location-specific water, drainage and salinity conditions. The National Seed Policy of 1993, which was updated in 2004, recognizes the roles of both the public and the private sectors to improve the efficiency of seed production, processing, storage and distribution. These policy recommendations need to be implemented in a phased but speedy manner.

17. **Subsidies need to be administered efficiently.** Subsidies for agricultural inputs is one instrument to encourage farmers to continue to engage in agriculture toward maintaining national food security. However, production subsidies are fiscally costly and have high opportunity costs because they use resources that otherwise could have been used for productive investments. Therefore it is imperative to improve the coverage, targeting, and administration of subsidies for the benefit of poor and marginal farmers. At the same time, level of subsidies need to be maintained in a fiscally sustainable manner.

18. **Fostering public-private agribusiness-farmer partnerships is important for the commercialization of agriculture.** Commercialization of agriculture is necessary to improve the profitability of farming and increase farmers’ income. This requires the promotion of value addition to agricultural commodities, particularly horticulture and dairy; support to agri-businesses; and linking farmers with markets. Promotion of agricultural commercialization and value chains involves a wide set of public goods interventions including organizing farmers to achieve scale and turn them into commercially viable producer groups; improving market infrastructure and information systems; providing incentives to the private sector to invest in agro-businesses; and facilitating linkages between organized producer groups and private agribusiness.

19. **Increased investments in irrigation/drainage infrastructure are important for increasing crop production.** Besides seeds and fertilizer, improved irrigation systems along with efficient land and drainage management are crucial to sustain and further increase agricultural production in general and rice in particular. The experience with the 2008 boro crop has shown how access to electricity for irrigation can contribute to significant increases in rice production. Agriculture in coastal areas is not sustainable without preventing saline inundation into lands during normal weather. Therefore, proper maintenance and construction of coastal embankments, irrigation and drainage infrastructure, and efficient on farm irrigation management and drainage control are crucially important. At the same time, possibilities for new irrigation/drainage infrastructure to bring new land under cultivation need to be explored.

**IV. Ongoing World Bank Interventions**

20. The World Bank, with co-financing from IFAD and the Government of Bangladesh, is providing technical and financial assistance in support of some of the above recommendations. The

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2 About 55 percent of the 8.5 million ha cultivable land in Bangladesh is irrigated, mostly through tubewells.
ongoing National Agricultural Technology Project (NATP) which started in 2008, is supporting the Government to improve national agricultural research and extension delivery systems; help linking extension, research and marketing systems; and support the formation of organized farmer groups and linking them with markets. This is the first five year phase of a 15 year long program in three phases. The ongoing Water Management Improvement Project (WMIP), with co-financing from the Bank, the Government of The Netherlands and the Government of Bangladesh, supports the improvement of the service delivery capacity of national water development and management agencies for flood control, irrigation and drainage; and rehabilitates flood control, irrigation and drainage schemes. This project started in late 2007 and is expected to continue until 2014.

21. The ongoing Social Investment Program Project (SIPP) helps promoting rural livelihoods through support to rural poor landless and marginal people to form organized community groups; and start and engage in various livelihood and income generating activities including agricultural and non agricultural small enterprises. This program is now being implemented successfully providing livelihood support to the communities affected by Cyclone Sidr in 2007. The Emergency Cyclone Sidr Recovery and Restoration Project (ECRRP) is a four-year project that was approved by the Bank in November 2008. It is expected to rehabilitate coastal embankments and revitalize and improve sustainable agriculture production in coastal areas. This ECRRP will also help building capacity of farmers in cyclone-prone areas through the adoption of new crop varieties and improved agronomic practices.