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Achieving food security in a climate-challenged future

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Bangladesh is one of the countries which are most vulnerable to climate change. Its high population density, long coastline, and extensive low-lying areas, coupled with its location at the confluence of several major rivers, place it in a uniquely vulnerable position to the vagaries of a changing climate. As human-induced climate change continues, the frequency and intensity of flooding, droughts, storm surges and tropical cyclones are predicted to increase. As one indication of this, last year the country saw four cyclones – more than ever previously recorded in the Bay of Bengal, and exceeding the long-term average of one per year. As a country standing at the frontlines of climate change, Bangladesh faces greater risks to its agricultural production and more profound challenges in attaining universal food security than other countries.

Food insecurity is a daily reality for almost 60 million people living in urban and rural areas in Bangladesh. The children and women are disproportionately affected. This is reflected in sobering data on nutrition-related conditions. Nearly 41 percent of children under the age of five are chronically undernourished; 36 percent stunted; and 16 percent of children under five weigh less than they should for their height. Furthermore, only 25 percent of children consume daily diets that adequately meet dietary diversity. Among adult women, 24 percent are underweight and 13 percent are stunted. In times of scarcity, women are the more likely to sacrifice food consumption in favour of their children. With 16 percent of the country's population currently undernourished, the economic costs of food insecurity are also significant, leading to an estimated USD 1 billion of lost productivity annually.

Through Vision 2021 and the related Perspective Plan which aims to achieve complete food sufficiency that meets the nutritional needs of the population by 2021, Bangladesh is charting a path

towards universal food security – a four-pillar, multi-dimensional concept comprising food availability; physical and financial access to food; food utilisation, as measured by nutritional outcomes; and lastly, food stability. The emerging impacts of climate change, however, could put any or all of these dimensions in jeopardy.

The global community, including Bangladesh, by adopting the 2030 Agenda for Sustainable Development, has prioritised food security through the second Sustainable Development Goal, or SDG 2, which aims to “end hunger, achieve food security and improved nutrition, and promote sustainable agriculture” by 2030.

Much attention has been given to the risks that climate change poses to food availability, especially on how projected changes in temperature will impact crop yields. Crop production, especially rice, which account for over 80 percent of the cultivated land in Bangladesh, is highly susceptible to climate change. Estimates suggest that probable temperature change scenarios from climate change will result in annual rice production losses of 3.6 to 4.3 percent in Bangladesh by mid-century. Reductions in rice production will not only affect food security, but they will also have significant implications for the overall value addition of the agricultural sector to the economy. With rice production losses of this magnitude, this climate change impact alone could result in an average annual 1.15 percent reduction in total GDP. In addition to temperature variations, climate-induced increases in soil salinity along the coastal areas, which host 30 percent of Bangladesh's cultivatable land, could result in a 15 percent decline in rice output.

Moreover, such losses would adversely affect household incomes and could result in income declines of as much as 10 percent in the Barisal region and 7.5 percent in the Chittagong region. This will reduce the ability of families to purchase food. Thus, climate change not only poses risks to agricultural production, but it also threatens access to food through

increasing household financial stresses.

Financial access to food, one of the key pillars of food security, remains a particularly acute problem in Bangladesh, where 43 percent of the population still lives below the poverty line. The people most at risk are those dependent on agriculture and natural resources for their livelihoods. Increased frequency and intensity of climate-related shocks, such as flooding, droughts, and cyclones, may deteriorate the purchasing power of households, especially among agricultural households, and as a result jeopardise their food security by limiting their ability to purchase food. This in turn could also have significant repercus-

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sions for the allocation of food within households which reinforce undernourishment in children and women and thereby exacerbate existing nutritional deficiencies in Bangladesh.

Addressing the potential nutritional consequences of climate change will be

critical to achieving universal food security in Bangladesh. Climate change, by causing temperature variations, is likely to change the nutritional quality of certain foods and will also affect food safety through increases in food-borne diseases. Adding to this, climate change is projected to reduce water quality and exacerbate water-related diarrheal diseases. Increased climate variability along with the increased frequency and severity of extreme weather events will affect the stability of food supply, food access and food utilisation. Seasonality, combined with increased supply risks and reduced supply predictably will significantly impact crop yields and prices. Food price increases and volatility along with irregular income streams of those who depend on agriculture have the potential to limit economic access to food. Thus, through multiple pathways, climate change will affect the health of the population, through impacts such as vector-borne diseases, heat stress and natural disasters, which in turn will affect nutritional outcomes.

The pervasiveness of climate impacts on food security, combined with the inevitability of some level of future climate change already locked in to the global system, demands that steps be taken to adapt food production systems to climate change in order to ensure universal food security. In Bangladesh, Vision 2021 and the related Perspective Plan have taken important steps in this direction, and further efforts need to be mobilised to reduce risk and vulnerability while building community resilience. To this end, strengthening social protection strategies, addressing gender-related vulnerabilities, better child nutrition and comprehensive disaster management strategies will all play a role in the fight against hunger.

Additionally, institutional arrangements and policies must be put in place to support effective adaption of the food system at large scale, such as investment in new technologies, infrastructure, and information. Support for ongoing research and application of

climate resilient agriculture, involving development of new crop varieties, enhancing soil health and developing techniques that can be adapted at the smallholder farm scale will be important elements for Bangladesh to help transition its agriculture sector to a future of climate change.

Regional cooperation also has a critical role to play in building resilience and managing volatile shocks to food supply and prices. Recognising this, South Asian nations have prioritised agriculture as a key area of cooperation and crafted an Action Plan on Climate Change to leverage regional approaches to mitigation and adaptation. In addition to this, through the South Asia Food Security Programme, on-the-ground projects to address inadequate crop yields have also been successfully launched. Long term programmes, such as the Saarc Food Bank, should be made fully operational to provide effective instruments for dealing with food shortages and emergencies.

While the challenges facing Bangladesh in reaching its goals on food security are many, there is a growing international recognition of the urgency of addressing climate change and its impacts, and, through the Sustainable Development Goals, the need for integrated approaches to issues such as food security. There are also many solutions emerging, driven by greater understanding of climate science, new agricultural systems and technology, adoption of local knowledge and regional cooperation. Bangladesh has shown its impressive capacity for innovation and breakthrough solutions in areas such as micro finance and rural electrification. With the support of the international community, it can also rise to the challenge of achieving food security in a climate-challenged future.

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