

Climate change and food security

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import a substantial quantity of rice and wheat (Ismail, 2016).

Adaptation is key

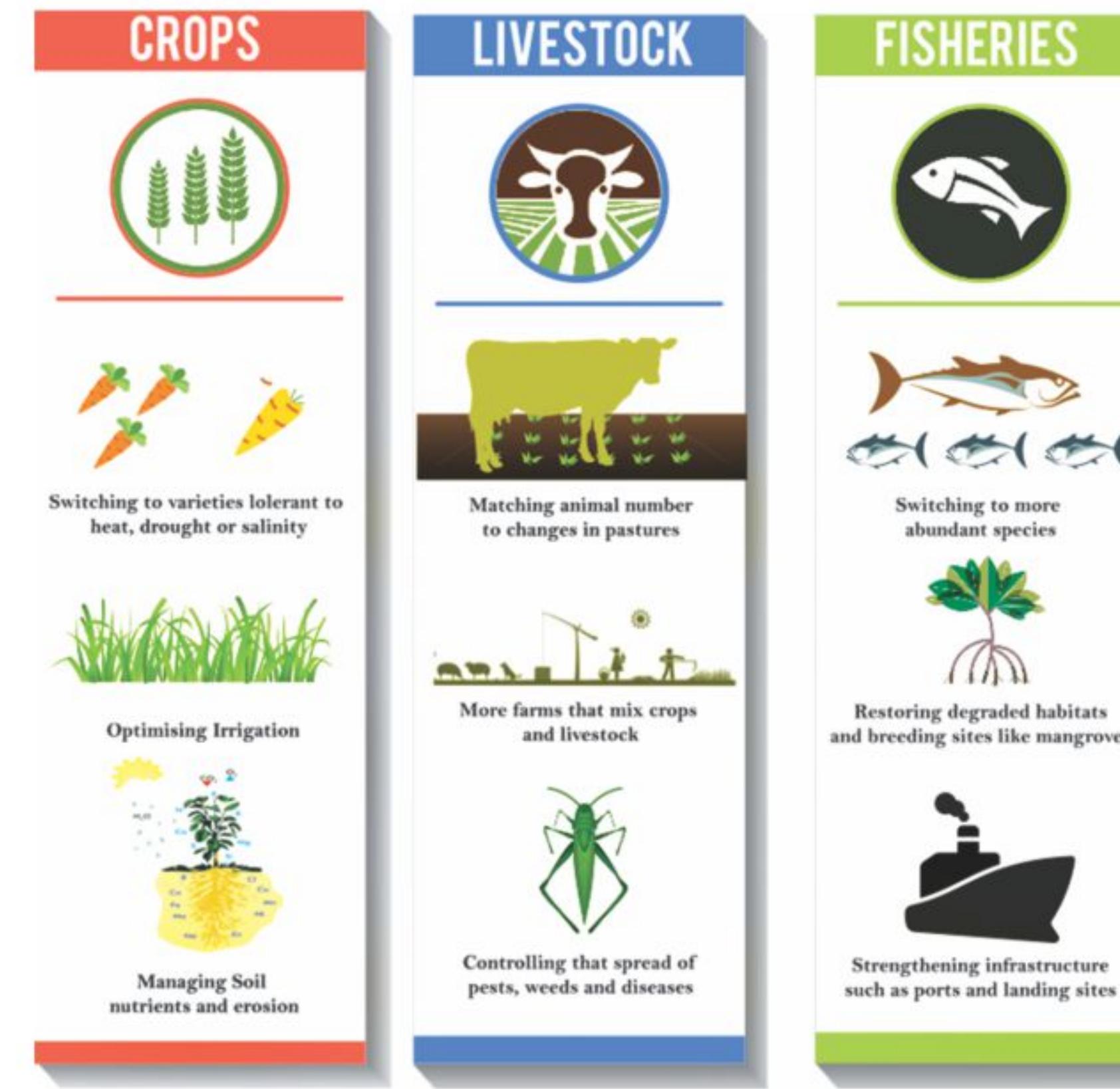
The government and citizens of Bangladesh have had to cope with risks of floods, famines, and cyclones for generations. Most recently, Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009 has been implemented, which adds to the country's long list of climate sensitive interventions by modes of contemporary and effective policies, programmes, and projects. The BCCSAP is a 10-year programme (2009-2018) dedicated to building capacity and readiness of the systems to confront the aftermaths of climate change. In order to cope with the threats to food security, efforts have been concentrated on community-level adaptation, agricultural technological extension, surveillance systems installation to track patterns of weather, pests and diseases, and sanitation program implementation (BCCSAP, 2009).

Nevertheless, the BCCSAP is yet to update its endeavours for a comprehensive disaster management system to mitigate the problems of food security. Research and development needs to focus on low-cost, high-efficiency, and easily adaptable systems for the rural and uneducated vulnerable farmers.

Weather-index based crop insurance (WIBCI)

The increasingly unpredictable weather and climate changes jeopardise the already fragile agricultural support and elements of food security in Bangladesh. Substantiating losses on innumerable small landholdings can prove to be extremely costly, hence rendering traditional loss-based insurance unfeasible for remote rural small-holder farmers.

A new scientific system has been formulated recently, which could simultaneously introduce a new path for strengthened agricultural production



and provide financial safeguard for all farmers. Rural areas that were previously deemed uninsurable are able to reap benefits from new satellite technology and data analysis that help avoid the conventional traps of high transaction costs.

In 2013, Asian Development Bank (ADB) inaugurated a USD 2.5 million experimental program to introduce crop insurance to Bangladeshi farmers. The programme – supported by the Japan Fund for Poverty Reduction with additional finance from the Japan Aerospace Exploration Agency and the Bangladesh government – will design and carry out the trial of WIBCI aimed at the small and destitute farmers who are at the most danger of losing everything to hostile environmental factors. The insurance

would enable a farmer to retrieve remuneration from the insurer when calamities occur, for instance when a cyclone or tropical storm in a region reaches certain enormity or when rainfall shifts from a specified range. This form of safeguard would enable farmers to plan and save for long term despite their harvests being capriciously destroyed by tumultuous weather.

Scale-up public grain storage

One of the major constraints in Bangladesh agriculture sector is the lack of grain storage systems. This constraint causes farmers immense difficulties in restoring their livelihoods after a natural disaster. Most farmers do not have access to proper storage facilities and hence, they trade their entire harvest in bulk, leaving none for selling or con-

sumption during disastrous times. Currently, grain storage capacity provided by the Bangladesh Government is 1.62 million tons, provided mainly through conventional granaries and warehouses where the typical shelf-life of grain is less than 1 year (Ministry of Food, 2015).

These facilities do not have the amenities to control moisture and temperature properly and is plagued by ineffective grain management, leading to high annual losses as depreciation. The Ministry of Food (MoF) plans to enhance the grain storage capacity to 3 million tonnes by 2021. However, there is still a shortage of large-capacity, privately-owned storage; this is an area that can be turned into a source of investment for private-public partnership.

Agricultural technological extension

Poverty and food insecurity have recently been aggravated due to the interwoven crises of food, environmental, and financial factors, predominantly in the emerging nations. Over the last 5 years, global food prices have spiked, marginalising many from food consumption, and highlighting the deeper organisational weaknesses in the world-

wide food production system. Moreover, in the last 40 years, the tools and agricultural procedures have triggered dilapidation of fertile land, enormous greenhouse gas (GHG) discharges, and widespread water pollution - all the factors that have jeopardised the viability of food production and access (World Economic and Social Survey, 2011).

Agriculture technology would have to be radically upgraded to facilitate implementation of land management standards and environmentally sustainable technologies to expand food production. Small scale farmers are at the core of the food security challenge – since almost 90 percent of food consumed in developing countries is locally produced. In Africa and East and South-East Asia, 40 percent of the agricultural workforce has limited access to land, credit, markets, and technology.

Bangladesh will face significant challenges in the near future in terms of climate change which will severely hamper the steady economic and industrial growth of the nation. As the country approaches towards its goals of sustainable development and steadily continues its successes in achieving the Millennium Development Goals (MDGs), finding effective solutions for climate change impact on food security is crucial. It is predicted that floods will be frequent, along with cyclones and droughts; these will harm the economy and the health of the citizens. Therefore, it is essential to revise the Climate Change Strategy and Action Plan to incorporate scientific, evidence-based, and need-based strategies into the system, to build resilience against food security challenges.

The writer is currently a Research Associate at the Institute for Policy, Advocacy, and Governance. She can be reached at mitul.mahmud@ipag.org.

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