

Food security in the realm of climate change

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M. MIZANUR RAHMAN

In this twenty-first century, agriculture is at the nexus of two of the greatest challenges like ensuring food security for this huge population and adapting to climate change while critical resources like water, power and land are becoming increasingly scarce. Agriculture is highly sensitive to climate, both in terms of longer-term trends in the average conditions of rainfall and temperature. And any change in the trend of rainfall and temperature impacts food production directly.

International Food Policy Research Institute (IFPRI) predicts that population numbers will continue their march towards a likely nine billion by 2050, while higher incomes in hitherto poor countries will lead to increased demand, which in turn will put additional pressures on sustainable food production.

Though Bangladesh has produced significant foodgrains, especially rice, this year, despite the fact that the report of Global Agricultural Information Network (2012) claims it a result of increasing Boro cultivation which is causing Bangladesh's water table to

drop by 4 to 5 feet annually, the tension around food security of the nation is not faded away. There are a number of challenges around this issue when the adverse impact of climate change on food production is the major one which is accompanied with population growth, high food price in international market, disasters, land degradation, high input price, lack of governance etc. But this year, a new challenge has been added to this group i.e. low rice price received by the farmers and it was even lower than the production cost in many places of the country.

Global Food Security Index 2012 ranked Bangladesh on 81st out of 105 countries when the IPCC (2007) predicts that Bangladesh will lose about 8% of its rice and 32% of wheat production by the year 2050. Again an analysis of FAO (2012) shows that the prevalence of under-nourishment in Bangladesh was in a declining trend up to 2008 but it has started rising again this year. Almost the same trend is being observed in the case of food inadequacy as well and according to FAO, in 2010-2012, 26.80% people of the country suffer from food inadequacy. But it is interesting to see

that after all this population growth, urbanisation, industrialisation and land encroachment, percentage of arable land up for irrigation is increasing. But this may not be a good symptom for sustainable agricultural growth for the country as this extra arable land comes from deforestation and earth filling at water bodies.

Climate change is likely to bring more extreme events, possibly including a failure of the monsoon in South Asia while IFPRI simulates an extended drought beginning in 2030 and continuing through 2035. So, this situation will hamper food production immensely in this region but on the other hand, countries here will have more increase in population and income which will create much demand for food.

Again, agricultural growth is essential for eradicating extreme poverty in Bangladesh. Overall, the role of agricultural growth in reducing poverty is likely to be greater than its role in driving economic growth. This is likely to be the case because the share of the labour force that works in the agriculture sector is much larger than the share of economic output that comes from agriculture.

For the least-developed countries, the share of the total economically active population in agriculture was 66 percent in 2009, more than double the share of agriculture in GDP. The implication is that the people who work in agriculture tend to have lower incomes, which is consistent with the fact that poverty is concentrated in rural areas.



Drought, salt and flood tolerant seed varieties can yield better harvest

Because so many of the poor work in agriculture, agricultural growth is more likely to involve and benefit the poor than is non-agricultural growth. (IFAD, WFP and FAO, 2012)

According to FAO, the global demand for food is expected to increase by 60 percent by 2050. Given climate change, natural resource constraints and competing demands, especially for the production of bio-fuels, among other factors, this presents a considerable challenge for the agriculture and food systems worldwide. Smallholders will need to play a key role in meeting these requirements and that is why retaining these poor farmers in the agricultural production is very essential and for this more and more public sector investment is indispensable. But unfortunately, in recent years the country has experienced a lot of phenomena that have discouraged the farmers seriously. For example, increasing input cost especially for fertilizers, pesticides, price of electricity and

diesel has frustrated the farmers.

In this situation, whatever the adversities are, ensuring food security is a must and most priority issue for the country and for this we need to explore and adopt all the possible strategies as we have more to do for the supply side of food economy. Among all the possibilities, introduction of agricultural risk reduction activities like promotion of drought, salt and flood tolerant seed varieties, and vaccination

programmes that reduce the risk of disease for livestock farmers can be notable ones.

Crop insurance can be another good solution. In Bangladesh, if this insurance cannot give the entire security to the farmers, it can initially support partially and reduce the intensity of loss. Insurance that mitigates the impact of weather shocks is a key tool for helping farmers avoid poverty traps and for accelerating the adoption of agricultural technologies.

Adaptation to climate change is the most pertinent effort that Bangladesh needs to take immediately in a comprehensive way and while financing local adaptation, promoting climate resilient agriculture should be taken as an important point. In this sense, awareness raising and skill building of the farmers for adopting climate resilient agricultural practices at the local level are mandatory.

Finally, a proper foodgrain procurement policy need to be adopted and implemented so that even the small holding farmers can sell their agricultural products with the price that is above their production cost otherwise, the farmers will move to cash crop production which will create food shortage in local market and the country will be dependent on external market -- the cost of which will be too burdensome for the country.

The writer is a development researcher and a technical coordinator at CARE. He can be reached: mithunmds07@gmail.com

Area of assessment	1998-00	2002-04	2006-08	2010-12
Prevalence of undernourishment	20.70%	15.70%	15.50%	16.80%
Prevalence of food inadequacy	29.60%	23.80%	24.60%	26.80%
Percent of arable land up for irrigation	47.50%	57.10%	64.50%	66.70%

Source: FAOSTAT

WHEN SANDY LASHED US COASTS

An oyster in the storm

Just as corals protect tropical islands, oyster beds created undulation and contour on the harbour bottom that broke up wave action before it could pound the shore with its full force.



Sandy lashing shore area

PAUL GREENBERG

DOWN here at the end of Manhattan, on the border between evacuation zones B and C, I'm prepared, mostly. My bathtub is full of water, as is every container I own. My flashlights are battery-ed up, the pantry is crammed with canned goods and I even roasted a pork shoulder that I plan to gnaw on in the darkness if ConEd shuts down the power.

But as I confidently tick off all the things that Gov. Andrew M. Cuomo recommends for my defense as Hurricane Sandy bears down on me, I find I'm desperately missing one thing.

I wish I had some oysters.

I'm not talking about oysters to eat although a dozen would be nice to go with that leftover bottle of Champagne that I really should drink if the fridge goes off. I'm talking about the oysters that once protected New Yorkers from storm surges, a bivalve population that numbered in the trillions and that played a critical role in stabilizing the shoreline from Washington to Boston.

Crassostrea virginica, the American oyster, the same one that we eat on the half shell, is endemic to New York Harbour. Which isn't surprising: The best place for oysters is the margin between saltwater and freshwater, where river meets sea. Our harbour is chock-a-block with such places. Myriad rivers and

streams, not just the Hudson and the East, but the Raritan, the Passaic, the Kill Van Kull, the Arthur Kill -- the list goes on and on -- flow into the upper and lower bay of the harbour, bringing nutrients from deep inland and distributing them throughout the water column.

Until European colonists arrived, oysters took advantage of the spectacular estuarine algae blooms that resulted from all these nutrients and built themselves a kingdom. Generation after generation of oyster larvae rooted themselves on layers of mature oyster shells for more than 7,000 years until enormous underwater reefs were built up around nearly every shore of greater New York.

Just as corals protect tropical islands, these oyster beds created undulation and contour on the harbour bottom that broke up wave action before it could pound the shore with its full force. Beds closer to shore clarified the water through their assiduous filtration (a single oyster can filter as much as 50 gallons of water a day); this allowed marsh grasses to grow, which in turn held the shores together with their extensive root structure.

But 400 years of poor behaviour on the part of humans have ruined all that. As Mark Kurlansky details in his fine book "The Big Oyster," during their first 300 years on these shores colonists nearly ate the wild creatures out of existence. We mined the natural beds throughout the waterways of greater New

York and burned them down for lime or crushed them up for road beds.

Once we'd hurled all that against the wild New York oyster, baymen switched to farming oysters. But soon New Yorkers ruined that too. Rudimentary sewer systems dumped typhoid- and cholera-carrying bacteria onto the beds of Jamaica Bay. Large industries dumped tons of pollutants like PCBs and heavy metals like chromium into the Hudson and Raritan Rivers, rendering shellfish from those beds inedible. By the late 1930s, oysters in New York and all the benefits they brought were finished.

Fortunately, the New York oyster is making something of a comeback. Ever since the Clean Water Act was passed in the 1970s, the harbour's waters have been getting cleaner, and there is now enough dissolved oxygen in our waterways to support oyster life. In the last 10 years, limited sets of natural oyster larvae occurred in several different waterways that make up the Greater New York Bight.

Alongside nature's efforts, a consortium of human-run organisations that include the Hudson River Foundation, New York-New Jersey Bay Keeper, the Harbour School and even the Army Corps of Engineers have worked together to put out a handful of test reefs throughout the Bight.

Yes, there have been some setbacks. New Jersey's state Department of Environmental Protection actually demanded that a test reef from the nearby bay at Keyport be removed for fear that people might poach those test oysters and eat them. But the programme has persisted, even in New Jersey. In 2011 the Navy offered its pier at Naval Weapons Station Earle, near Sandy Hook, as a new place in New Jersey to get oysters going.

Will all of these attempts to get oysters back in New York City have any effect in defending us against Sandy? Surely not. The oyster kingdom is gone, and what we have now are a few struggling refugees just trying to get a foothold in their old territory.

But what is fairly certain is that storms like Sandy are going to grow stronger and more frequent, and our shorelines will become more vulnerable. For the present storm, all we could do was stock up on canned goods and fill up our bathtubs. But for the storms to come, we'd better start planting a lot more oysters.

The writer, the author of *Four Fish*, is writing a book about reviving local seafood.

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ENVIRONMENTAL PROBLEMS

Shared approach to give better result

MD. ATIKUR RAHMAN

ENVIRONMENT vis-à-vis climate change has become a global issue. Environmental problems -- much of it human-induced -- are challenging the quality of life people enjoy in modern advanced societies. The nature of environmental problems varies a great deal at different levels -- some are local, some national or regional, some global like green house effect and climate change. Thus the problems should be addressed at appropriate level and often at multiple levels.

Some problems are caused by human indifference and industrial activities. These include water, air and noise pollution due to unwarranted disposal of toxic solid and liquid waste in the open, deforestation, filling of water body, etc. Such problems call for public awareness and government action at the national level.

Another type of environmental problems, for instance, are overexploitation of common rivers and forests, shared coastlines etc. These can be better addressed by the countries concerned at a bi-lateral level. For example, Indian plan to harness and divert river water

can have catastrophic effects on the ecosystem and environment of entire lower riparian region that is Bangladesh.

Soil erosion, bio-degradation, aridity and lowering of ground water level are problems faced by many regions. Countries concerned can from a forum to share their experiences and knowledge in fighting common regional problems.

Fourth type of problem pervades across national boundaries and call for multilateral and global approach. For example, toxic and radioactive industrial waste disposal in oceans, ozone layer degradation by carbon emission, among others, fall in this category. British scientists are trying to lay the ground for a global consensus to find strategies to avoid disastrous consequences of global warming.

Environmental problems, however, should be viewed as common problem of the mankind and efforts that are endorsed and shared globally are more likely to produce best of results. Sharing first hand knowledge and best practices will help the global community to overcome environmental problems better.

The writer is librarian, BGMEA University of Fashion & Technology (BUFT), Dhaka atik@bift.info

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Deforestation: Small economic benefit at great environmental cost