

COMMENT

Once in a lifetime opportunity

CLIMATE CHANGE THAT THREATENS FOOD PRODUCTION DEMANDS TIMELY ACTIONS FROM POLICYMAKERS

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Perhaps for once, we do have a “once in a lifetime opportunity”. The threat posed to Asia’s wheat and maize harvests by climate change-related drought has typically been presented in terms of its impacts in the 2050s and beyond. This has always been the Achilles’ heel for climate change — making it nearly impossible to stimulate action by governments or industry.

Now new research “Near future drought and related food security projections for Asia” models impacts on a 20-year timeframe and shows a considerable threat to food production by the 2020s. The message is clear for today’s policymakers: It could happen on your watch.

Jon Price, director of the Centre for Low Carbon Futures, a university-based research organization in the UK, recently commissioned the report on food security impacts in the more immediate 20-year time frame to provide an evidence base in order that action can be taken now to avert a future food crisis.

The increased risk of drought from climate change has been widely reported but what is not so well known is that its impact on food security will be felt much sooner

than realized. Using the latest state-of-the-science projections from 12 leading climate modeling centers around the world the research team looked at soil moisture changes in the 2020s comparing to the recent past (1990-2005).

They found that the threat to food production in Asia from climate change-related drought could be felt in the next 10-15 years. The results are cause for concern, particularly the trends in the severity of drought — periods of four consecutive months or longer where projected soil moisture levels were less than the 1990-2005 monthly average. By the 2020s an increased risk of severe drought will be widespread across Asia.

Of the major wheat and maize producing nations, China, Pakistan, and Turkey have the greatest increase in exposure to drought along with Iran. Afghanistan and Kyrgyzstan are notable for the greatest projected increase in drought exposure.

These impending changes should be of global concern since China, the most populous country in the world, is the largest producer of cereal crops. With the world’s population projected to exceed 8 billion people by 2025 and changes in diet and lifestyle associated with growth of the global middle class, the demand for food in Asia will grow strongly in the 21st century. Yet our ability to feed everyone is limited by the availability

of agricultural land and changes necessary to make it more sustainable.

Climate change mitigation is insufficient on its own to safeguard food production. Instead, it will be the ability of this region to adapt to climate change and the associated threat to agricultural production which will help reduce future crop losses in the drought years.

The ability of countries to adapt to changes in climate and drought was assessed using data on soil moisture and harvests during 1990-2005 and socio-economic changes projected to the 2020s. Of the major producers of wheat and maize, Indonesia, China and Pakistan were found to be relatively well placed to adapt to climate change.

There can be no room for complacency, however. Possessing the capability to adapt is ineffective if farmers are unable or willing to use flexible adaptation strategies, such as changing planting dates and using more heat-tolerant crop varieties.

The ability of India to adapt really caught the attention of researchers. Whilst India was not projected to experience one of the largest increases in drought risk, it was found to have one of the weakest rankings for adaptive capacity. Northern India was found to have one of the lowest adaptive capacities in Asia for wheat production and central and northern India one of the lowest for maize production.

This must be addressed as a matter of urgency if we want to avoid global shortages of key crops since India is the world’s second-largest producer of wheat and the seventh-largest producer of maize.

The adaptive capacities of other major producers, including the Philippines, Thailand and Vietnam, were also found to be insufficient.

The message for policymakers is clear; the threat to food production in Asia from drought risk brought on by climate change could be felt in the next 10-15 years. Given the slow rate of progress achieved over the 20 years up to the recent United Nations Conference on Sustainable Development (Rio+20), we cannot wait for actions to address the changes in the physical climate if we want to feed the growing Asian population and limit impact on global food security. Immediate actions are needed to achieve more sustainable use of water supplies and enhance adaptive capacity.

Many of the social and economic changes necessary to be able to adapt to climate change are locally specific. For example, the team found more intensive fertilizer use was associated with weaker adaptive capacity in cold and temperate climates with the opposite effect in some tropical and arid regions. Actions that work for wheat may not work for maize. Actions that work in rich countries

may not work in poor ones.

Countries with middle-income economies are especially vulnerable to climate change effects like drought. They appear to find themselves without the better adaptive capacity often linked to traditional agricultural methods in low-income countries. At the same time, they are without the financial means to invest in better agricultural technologies available to high-income countries, such as innovations in seed quality and fertilizer use. Reducing wealth inequality is essential in order to foster freer, fairer trade and to encourage the widespread uptake of technological developments which will improve harvest resilience.

Drought from climate change poses an imminent threat to food security across Asia and beyond. It demands informed and timely actions from today’s policymakers at all levels, both local and international. It really is a once in a lifetime opportunity.

Prof Piers Forster and Dr Lawrence Jackson are with the University of Leeds. Jon Price is director of the Centre for Low Carbon Futures. Forster led the research Near future drought and related food security projections for Asia.

The research report will be available shortly at www.lowcarbonfutures.org

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country to adapt to the challenge climate change poses to their wheat and maize harvests.

“We found China and Indonesia are among the best placed countries in Asia to adapt to climate change and moderate its effect on harvest yields,” he says.

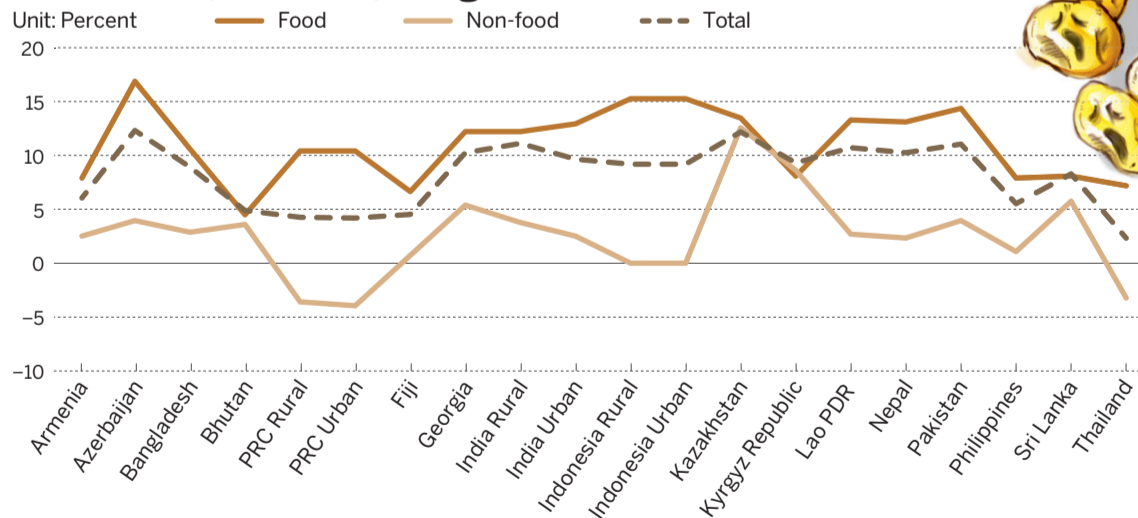
“In contrast, India, although not projected to experience a major increase in drought, is relatively poorly placed to adapt to climate change.”

India is the world’s second-largest producer of wheat and the seventh-largest producer of maize. Northern India is found to have one of the lowest adaptive capacities in Asia for wheat production, and central and northern India one of the lowest adaptive capacities for maize production.

Climate change is already impacting the production of rice, the staple for more than half of humanity.

The US-based International Food Policy Research Institute estimates that by 2050, climate change will have reduced rice production in East Asia and the Pacific by 10 percent

Annual food, non-food, and general inflation rates in Asia



PRC = People’s Republic of China, Lao PDR = Lao People’s Democratic Republic
Source: ADB staff calculations.

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and in South Asia by 14 percent. At the same time prices will have increased by between 32 and 37 percent.

Dr Robert Zeigler, director-general of International Rice Research Institute, says climate change is already impacting rice production in Asia and will continue to do so.

“Rice is grown in vast low-lying deltas and coastal areas in Asia that are exposed to sea-level rise, making rice production very vulnerable to climate change,” he tells *China Daily Asia Weekly*.

“Most of the gains in Asian rice production over the last decades have come from countries with

major deltas. More than half of Vietnam’s rice, for instance, is grown in the Mekong River Delta — all of which would be affected by the sea-level rise and flooding.

“We are already seeing farmers there having to cope with higher levels of salt water incursion and water scarcity during the dry season.”

Importantly for the world, Dr Zeigler points out, most of the rice produced in the Mekong delta region is exported, ensuring developing countries in Asia and Africa, not able to meet their own rice needs, have access to this important staple to feed their people.

“The rice available on the global market is already precariously ‘thin’ and the supply shortages predicted with climate change will push prices even further up,” he says. “As prices increase, more people are thrust into poverty and face hunger.”

Dr Zeigler says much of the institute’s climate change research is on preemptive measures that can be implemented by farmers on the ground.

“One good example of this is in Vietnam,” he gives an illustration. “We are working with national partners to help farmers adopt new technologies to cope with the anticipated effects of climate change.

“For example, we are supporting the local development and advancement of flood- and salt-tolerant rice varieties and the widespread adoption of water-saving technologies.”