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INDIA SHOULD CONSIDER NEW, INNOVATIVE DROUGHT MANAGEMENT STRATEGIES

Cecilia Tortajada and Asit K Biswas

According to FAO, droughts are the world's costliest natural disasters, inflicting $6-8 billion of annual global losses. Because of their extents, magnitudes and frequencies, their effects are felt by more people in the world than any other type of natural disaster. FAO further estimates that some 11 million people have died because of droughts since 1900, and over 2 billion people have suffered from them.

Global estimates in nearly all areas are highly unreliable. Drought estimations are not an exception. Not surprisingly, another UN institution, ESCAP, estimates that within the last three decades, and in Asia only, some 1.3 billion people were affected, and the cost was over $53 billion.

It is difficult to believe that only in Asia, and during the past 30 years, 1.3 billion people were affected but globally over the past 115 years 'only' 2 billion were impacted by droughts. Generally speaking, FAO estimates are more reliable than ESCAP's. Be that as it may, the facts remain that droughts have affected billions of people over decades and equally have inflicted heavy costs running into billions of dollars.

Droughts are different from other forms of natural disasters. Its impacts are not visible immediately and are accumulative over time. They are slow-building threats and could become silent killers over time on a massive scale. Their devastating powers may not be fully felt or realized for years.

Throughout history, droughts have occurred in India frequently. Importance of good monsoons in a predominantly agrarian economy like India has been well-known for millennia. Thus, in Mahabharata, Rishi Narada greeted the Pandava King Yudhisthira with, "I hope your realm has reservoirs that are large and full of water, located in different parts of the land, so that agriculture does not depend on the caprice of the Rain God."

Rain-gauges were first invented in India by Kautilya around 320 B.C. and not, as believed now, by the Italian Benedictine monk, Benedetto Castelli, some two millennia later. Kautilya used rain-gauges to measure rainfall which were then used as a basis for taxation. In other words, good rainfall meant higher taxes because of increased agricultural production and poor rainfall years had lower taxes.

In 1909, Sir Guy Fleetwood Wilson, an eminent Privy Councilor, noted that Indian budget "is largely a gamble on rain." Since then, this statement has become a cliché. Even a century later, in 2010, Finance Minister Pranab Mukherjee, invoked the rain-god Indra for a good monsoon so that the growth trajectory of the country could be maintained.

According to the Indian Space Research Organisation (ISRO), during the 19th and 20th centuries, India suffered 42 serious droughts, that is, one every five years. Among the more recent ones, the 1979-drought reduced grain production by 20% per cent. The 1987-drought affected production in 58.6 million ha of arable land which adversely impacted upon some 285 million people.

Since 2000, India has witnessed three serious droughts. The World Bank has estimated that the 2012-drought reduced the country's GDP by half a percentage point even though it was not serious.

This year, the monsoon rain is expected to be the weakest since 2009. Nearly, 90 per cent of India received below normal rainfall in June. Indian Meteorological Department (IMD) estimates that rainfall between June 1 and August 24 has been 18 per cent below normal over the entire country.

Because of deficient rainfalls, plantings of crops like rice, soybean and lentils have been delayed. Agriculture Ministry estimates that as of August 8, total area in the country under monsoon crops has declined by nine per cent to 80.3 million ha. Union Minister of Earth Sciences Jitendra Singh said in early August that rainfall is likely to be 24 per cent less in the main grain and sugarcane growing areas of northwest and 11 per cent less in the central region, which is the main soybean producing area.

Not surprisingly, Reserve Bank of India left interest rates at eight per cent for the third straight meeting in early August, citing upward pressure on inflation. In 2009, when rainfall was 22 per cent below normal, inflation doubled because of food shortages and subsequent price increases.

IMD defines a drought when rainfall deficit exceeds 10 per cent in 20-40 per cent of the country. As of now (August 28), neither the country nor any of the states have declared an official drought, even though a few states have experienced over 30 per cent rainfall deficiency compared to a normal year.

Over the last four decades, India has made tremendous progress in managing droughts. Prolonged droughts are no longer synonymous with famines, as was the case regularly prior to the 1970s. The good news is that the adverse impacts of droughts now are less than they were even 20 years ago. The country has become more drought-resilient, but it can, and should, do even more.

India will undoubtedly have to live with droughts in the future. Additionally, the current scientific consensus is that because of global warming, the country should expect extreme climatic events like droughts and floods more frequently, and the damages they inflict would also be higher because of increasing urbanization and also higher population.

The main problem with the basis of the current policy is that India continues to manage droughts as a part of an

emergency and disaster relief process which is reasonably effective over the short-term.

However, it is not at all appropriate for long-term droughts which will continue to occur on a regular basis. A major negative impact of the current policy is that farmers and agribusiness are taking unnecessary risks with full confidence that the governments will bail them out during droughts. Also, focus on technical solutions addresses primarily the symptoms but not the disease.

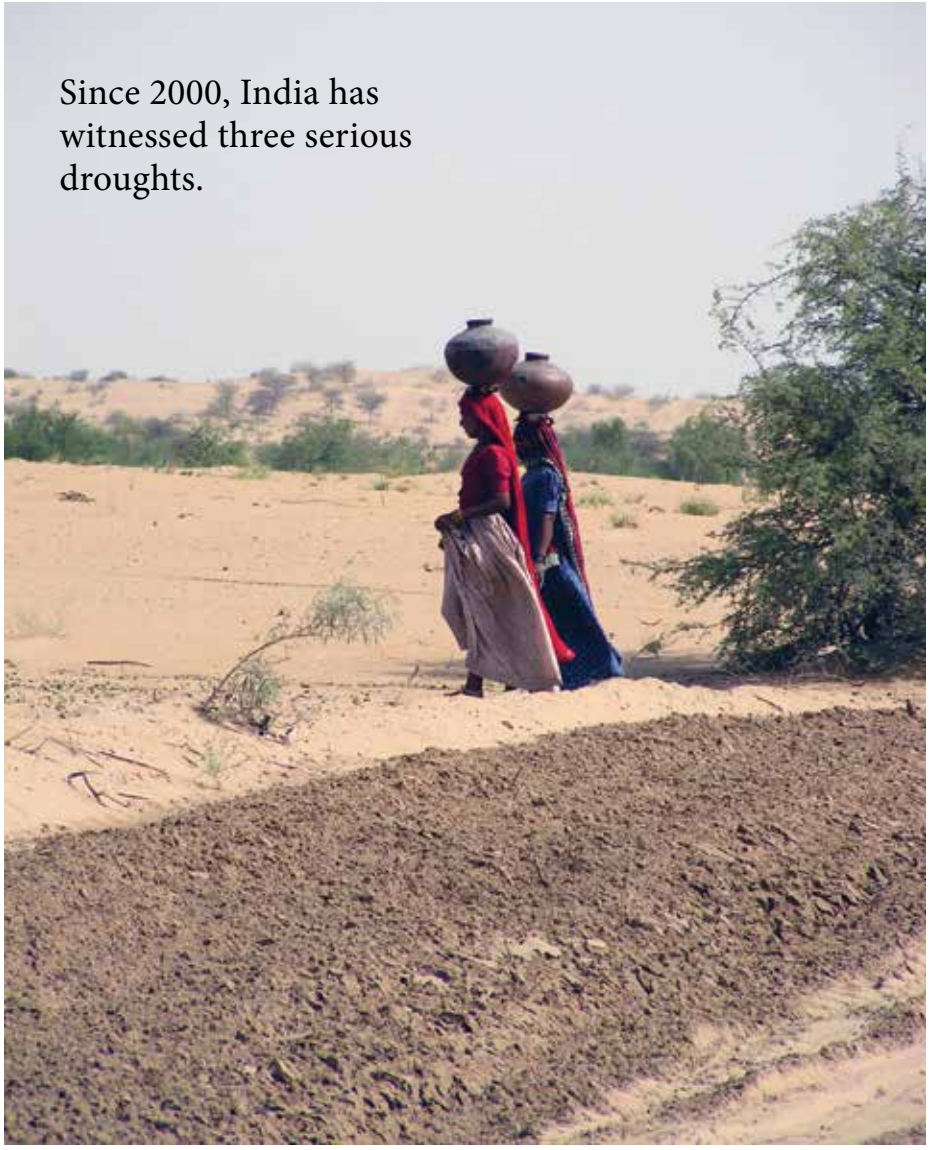
India has hundreds of millions of small farmers who do not have technical knowledge and financial capacity and ability to manage the drought risks prudently. As industrialization and mechanization of agriculture continue to advance in the country, new and proactive policies are essential, which would diversify production risks and India should consider new and innovative drought management strategies.

Droughts are caused by absence of timely availability of water. Thus, new policies must include significant improvements in water use efficiencies in agriculture water use which now accounts for nearly 90 per cent of the country's total water consumption. India now has enough knowledge, resources and technology to reduce its agricultural water requirements by some 30-40 per cent most certainly within a decade.

However, lack of political will, absence of sustained public and media pressure, and institutional inefficiency and overall lethargy have ensured that very little progress was made in the past. Further, in drought-prone areas, many water-intensive crops are still being cultivated which are not suitable for water stress conditions, primarily because the government continues to assume most of the droughts risks.

An important adverse impact of all droughts is higher use of groundwater for agricultural, domestic and industrial uses. For example, the current prolonged drought in California has contributed to increase in pumping costs of the farmers alone by $500 million.

In an Indian context, even in normal years, groundwater levels are declining by one metre every three years in the main food producing areas. During drought years, the decline in groundwater levels will accelerate even further. This, regrettably, is not only unsustainable over the long-term but also will cause significant social and economic problems for the farmers and the country's sociopolitical fabric in the future.



Over the longer-term, India also needs to give increased emphasis to research in associated areas like plant breeding and genetic modifications to develop new variety of crops that are drought-resistant, pest-resistant and/or salt-tolerant.

For example, researchers in Egypt have shown that by transferring a single gene from barley to wheat, water requirements could be reduced by over 80 per cent.

India needs to accelerate research on GM crops and plant breeding, and also ensure prompt authorization of new crop varieties after appropriate safety studies and necessary safeguards. Otherwise, the country will not be able to feed properly 1.7 billion people by 2050.

Finally, India needs a vigorous and knowledge-based debate as to whether it wants to achieve food self-sufficiency or food security. Food security goes well beyond national production. Food security means both food affordability and accessibility. With strong economic growth over decades and hopefully in the future, middle class in India has grown, and will continue to grow, significantly. They can afford to buy food, irrespective of where they are sourced from, domestic or foreign market. The poor could receive targeted food subsidies. If the country adopts new and innovative policies for drought amelioration, there is no reason why the country cannot live with droughts with much less human sufferings and socio-economic losses.

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