



Mohammad Khalequzzaman

Rice production already under CLIMATE STRESSES

Says BRRI DG Khalequzzaman in an interview with The Daily Star

SUKANTA HALDER

Bangladesh is already facing the brunt of climate change in its major rice growing regions, according to Bangladesh Rice Research Institute (BRRI) Director General Mohammad Khalequzzaman, as the institute has identified several climate induced stresses that threaten production and eventually cause food security concerns.

"Rising temperatures and heat stress during the flowering and grain-filling stages are reducing both grain quality and yield," said the BRRI chief in an interview with The Daily Star.

He said that coastal areas are experiencing increasing salinity during the dry season, while low-lying regions are frequently affected by flooding and prolonged submergence. Meanwhile, drought and erratic rainfall are disrupting cropping patterns in drought-prone zones.

Changing weather patterns are also giving rise to new pest and disease pressures, making rice cultivation more difficult," added the agri scientist.

To deal with the issues, Khalequzzaman said BRRI is taking a range of proactive steps.

"We are developing and releasing climate-resilient rice varieties with tolerance to salinity, flooding, drought, and heat. Our goal is to combine multiple stress tolerances using trait pyramiding and modern breeding techniques," said the BRRI DG.

According to him, the institute is also promoting climate-smart technologies, including water-saving methods, improved crop management packages, and greater mechanisation, to increase resilience and reduce climate related risks.

Besides, the institute is working with both national and international partners to monitor climate trends, model future risks, and guide its breeding strategies.

"These combined efforts are meant to safeguard rice production from climate threats and secure the country's long-term food security," he said.

Khalequzzaman said their long term target is to maintain rice production growth at more than twice the rate of population growth over the next 50 years and ensure national self-sufficiency.

"To achieve this, we have formulated a long-term strategy focused on high-yielding, climate-resilient, and location-specific rice varieties and technologies," said the BRRI chief. "At present, our breeding programme covers 17 key ecosystems across 25 geographic segments, aligned with 25 product profiles."

He also highlighted BRRI's seed distribution network, which supplies breeder seeds of all major and newly released varieties. "We are committed to delivering full production packages to help farmers maximise yields from these improved varieties," he added.

However, the journey is not without obstacles. Khalequzzaman admitted that developing high-yielding, climate-resilient varieties is a complex task.

"The increasing frequency of droughts, floods, salinity, submergence, and heat

CLIMATE CHALLENGES TO RICE PRODUCTION			
Bangladesh's rice production is under threat from climate change	Rising heat, salinity, and floods are key stress factors	Heat stress during flowering reduces both yield and grain quality	Coastal areas are becoming saltier, especially in dry season
Flooding and submergence affect low-lying rice fields	Drought and irregular rains disrupt rice planting in dry zones	Rising sea levels threaten rice in coastal areas	New pests and diseases are emerging due to climate shifts
			
ADAPTATION THROUGH INNOVATION			
BRRI is releasing climate-resilient rice varieties		So far, BRRI has developed 121 high-yielding rice varieties	
New varieties can tolerate salinity, drought, heat, and floods		Of these, 38 are stress-tolerant and suitable for harsh conditions	
BRRI aims to double rice production growth over 50 years			
OTHER EMERGING CHALLENGES			
 Labour shortages and high production costs			

stress presents overlapping challenges that are technically difficult and time-consuming to address," he commented.

One of the biggest scientific issues lies in identifying and combining stress-tolerant genes from diverse sources while maintaining high yield potential.

On top of that, limited funding,

inadequate infrastructure, and a shortage of skilled personnel slow down the adoption of advanced breeding tools, such as genomic selection and precision phenotyping, according to the scientist.

Overcoming these obstacles, BRRI has so far developed and released 121 high-yielding rice varieties, including 113 inbred and 8 hybrid types. These are suitable for various seasons and agro-ecological zones across the country.

Besides, in response to ecological diversity and increasing climate pressures, the institute has released 35 varieties resistant to abiotic stresses and three resistant to biotic stresses.

Among them, BRRI dhan 67 (salinity-tolerant), BRRI dhan 71 (drought-tolerant), and BRRI dhan 51 and 52 (submergence tolerant) have performed well. These varieties have been widely adopted in stress-prone areas, increasing production under difficult conditions, said Khalequzzaman.

Recently, BRRI released three more varieties – BRRI dhan 109, BRRI dhan 110, and BRRI dhan 111 – designed for submergence, tidal submergence, and semi-deep water environments.

The BRRI chief said these are expected to expand rice cultivation in challenging areas and increase yields, improving the livelihoods of affected farmers.

With rising sea levels posing a growing threat to coastal agriculture, the DG said BRRI has adopted targeted strategies

to sustain cultivation and ensure food security in these vulnerable regions.

These include the development of salinity- and tidal submergence-tolerant varieties, as well as dual-tolerant types. The institute is also promoting short-duration and early-maturing varieties to help farmers avoid peak salinity periods.

"In parallel, BRRI is advancing better water and soil management techniques and conducting integrated research to map out where specific varieties are best suited," he said.

"These solutions are enabling coastal farmers to continue growing rice and protect their livelihoods."

But while many farmers remain committed to rice cultivation, some say it is no longer profitable when all costs are considered. What is BRRI's view on the economics of rice farming?

Khalequzzaman acknowledged that profitability varies widely depending on location, season, input costs, and farm management.

"Rising prices of fertilisers, labour, irrigation, and mechanisation have made rice farming less profitable for some," he said. "Yet rice is the most reliable and culturally important crop for most Bangladeshi farmers," he added.

Several studies by BRRI suggest that improving the rice marketing system and ensuring fair prices would enhance farmer profitability. The institute also collaborates with partners to conduct cost-benefit analyses and develop location-specific production strategies to increase farm-level returns.

"Despite the challenges, we have seen that with the right technologies and better practices, rice farming can still be both economically viable and sustainable," said the DG.

He also mentioned that BRRI has developed 14 premium rice varieties so far, including seven enriched with zinc, four with a low glycaemic index (diabetic-friendly), two rich in antioxidants, and one with GABA (gamma amino butyric acid). These varieties have strong export potential.

On top of this, BRRI has released a Basmati quality variety (BRRI dhan 104) and a Jasmine type variety (BRRI dhan 80). Several promising premium lines, including black rice, are also in the pipeline and could soon meet international export standards, Khalequzzaman said.

Apart from climate stresses, he identified some other threats to rice production, such as shrinking agricultural land, water scarcity, soil degradation, labour shortages, pest and disease outbreaks, and unstable markets.

"Addressing these threats will require an integrated approach," he said. "We must combine climate-smart varieties and sustainable practices with strong policy support and a more efficient market system to ensure long term resilience."

Regarding inadequate research funding and a growing brain drain in agriculture, Khalequzzaman said, "Yes, agricultural research in Bangladesh is underfunded, and we are losing talented researchers to opportunities abroad."

He called for increased and sustained investment to support the development of climate-resilient technologies and respond to emerging threats.

"To retain talent and make progress in rice research and food security, we need investment in infrastructure, competitive incentives, and stronger collaboration," he concluded.

Can the local tea industry recover?

MAMUN RASHID

Due to my long association with the tea industry, friends often ask me: if tea gardens are not profitable, why do so many people want to own them? More importantly, who skims the milk in our tea value chain?

Tea has been cultivated in Bangladesh since colonial times. Today, 168 commercial estates across Sylhet, Moulvibazar, Habiganj, Panchagarh, and Chattogram cover about 280,000 acres. In 2023, the gardens harvested a record 102.92 million kilogrammes, a seven percent rise that positioned the country as the world's ninth largest producer, accounting for roughly 3 percent of global output.

Almost every leaf stays within the country as annual domestic demand consumes 90 to 95 million kilogrammes. Yet, blenders still import around 610,000 kilogrammes to meet niche quality standards. Exports remain low, reaching only 2.2 million kilogrammes in the first 10 months of 2024, worth about Tk 382 million, a far cry from the 13.65 million kilogrammes shipped in 2002.

The sector operates as a hybrid of private conglomerates and state oversight. Heavyweights such as Ispahani Tea, James Finlay Bangladesh, Abul Khair's Sylcon, Kazi & Kazi, Duncan Brothers, Transcom, Halda Valley, and Orion dominate planting and distribution. The National Tea Company, in which the government holds a 51 percent stake, controls several gardens but continues to struggle with legacy inefficiencies. Oversight rests with the Bangladesh Tea Board, which sets auction rules, licenses factories, and regulates exports. These institutions help sustain a beverage that touches nearly every household, yet the underlying business model is showing signs of stress.

Structural bottlenecks begin at the auction house. Nearly all tea is traded weekly in Chattogram under Tea Board-mandated floor prices, preventing estates from negotiating directly with overseas buyers or even local trading houses. A lack of branding and modern packaging keeps Bangladesh stuck in the low-value bulk market. Meanwhile, high borrowing costs, 10 to 14 percent, because tea is classified as industry rather than agriculture, hinder replanting efforts. Yields remain low as output per hectare averages around 900 kilogrammes.

Labour policy deepens this further. Estates must retain headcounts fixed decades ago, regardless of crop size, and industry culture often resists reform. Basic wages hover around Tk 170 a day. Besides, workers receive subsidised food, free housing, and access to clinics and primary schools. Yet a recent NGO survey found that only 42 percent of homes had on-site electricity and safe drinking water. A welfare-linked productivity plan could raise incomes by at least 30 percent.

Reclassifying tea as agriculture would reduce interest rates to four to six percent, saving roughly Tk 6 per kilogramme, funds that could support replanting and factory upgrades. Export strategies also need segmentation. Bulk shipments could go directly to Pakistan, Egypt, and Russia, bypassing auctions and increasing gross margins by about 12 percent. Organic and wellness lines, already pioneered by Kazi & Kazi, can tap into premium online buyers. Meanwhile, seven million Bangladeshi diaspora offer an underutilised market whose monthly purchases could double export volumes.

Good governance would also boost investor confidence. Introducing ERP payroll systems, GPS asset tracking, and IoT field sensors could reduce theft and verify sustainability claims. Gardens that meet fair-wage and low-carbon standards should qualify for tax rebates and faster export clearance.

Bangladesh has scale, climate, and a century of experience. What it lacks is a policy bridge connecting leaf, labour, and logistics. If interest rates drop, auctions liberalise, and technology tightens governance, output could rise by 15 percent, wages by 30 percent, and even a 1 percent slice of the global speciality market could push export earnings past Tk 5 billion. The tea industry's roots run deep, but its branches will only spread if reform waters them.

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Salehuddin urges caution in approving large projects

STAR BUSINESS REPORT

Finance Adviser Salehuddin Ahmed has cautioned against approving unnecessary large-scale projects, saying such ventures could jeopardise the country's debt sustainability if not backed by proper demand, feasibility, and long-term benefits.

"Before approving any big project, we must assess whether the demand is justified, whether the project is feasible, and whether it promises long-term benefits," he said.

He was addressing a workshop titled "Navigating Public Debt in Bangladesh," organised under the Finance Division's Strengthening Public Financial Management Program to Enable Service Delivery, at a Gazipur hotel on Friday.

The programme aims to improve fiscal forecasting, budget preparation and execution, financial reporting, and transparency to enable better resource availability for service delivery in selected ministries, departments, and agencies.

The adviser called for collective responsibility in managing public debt, noting that it should not be seen as the government's burden alone.

"Debt management is a shared obligation involving the corporate sector, Bangladesh Bank, the bond market, and private actors," he said, according to a press release.

He also pointed out the need for real time data and institutional interoperability to tackle debt-related challenges. "That remains one of our biggest challenges," he added.

Chairing the session, Finance Division Secretary Md Khaireuzzaman Mozumder stressed shifting focus from external to domestic borrowing and urged the need for more skilled professionals in debt management.

Why green investors keep getting carried away

REUTERS, London

To paraphrase Mark Twain, speculative bubbles don't repeat themselves, but they often rhyme. The green technology boom that has imploded over the past three years is remarkably similar to the alternative energy bubble that inflated prior to the global financial crisis of 2008. Both frenzies were driven by investors' unrealistic expectations about how quickly new energy technologies would be taken up.

What is now known as the Cleantech 1.0 boom took off in 2005 after the US Congress enacted tax credits for renewable energy. Former Vice President Al Gore's 2006 documentary "An Inconvenient Truth" raised public awareness of climate change. In early 2007 the venture capital investor John Doerr gave a much-publicised TED talk in which he asserted that "green technologies – going green – is bigger than the internet. It could be the biggest opportunity of the twenty-first century." Doerr's firm, Kleiner Perkins, later launched a fund to "help speed mass market adoption of solutions to the climate crisis." Many other venture capitalists jumped on the bandwagon. The WilderHill Clean Energy Index,

launched in 2004, more than doubled between May 2005 and December 2007. Dozens of startups were launched to invest in batteries, solar, biomass and wind energy. An electric vehicle company, Better Place, established in Silicon Valley in 2007, raised nearly \$1 billion to build a network of charging stations. Solyndra,

an innovative solar panel manufacturer,

attracted a host of big name investors and later received more than \$500 million in loan guarantees from the administration of President Barack Obama.

No single factor was responsible for pricking the bubble. The collapse of Lehman Brothers in September 2008



This photo shows solar panels on a solar field at Moers, western Germany. Spain and Germany reduced their subsidies for renewable energy, and American solar companies proved unable to compete with subsidised Chinese competitors.

dampened animal spirits; advances in hydraulic fracturing technology led to cheaper US natural gas; Spain and Germany reduced their subsidies for renewable energy; and American solar companies proved unable to compete with subsidised Chinese competitors. Nearly all the 150 renewable energy startups founded in Silicon Valley during the boom subsequently failed, including Solyndra and Better Place. Cleantech venture capital funds launched during the bubble produced negative returns. By the end of 2012 the WilderHill index had fallen 85 percent from its peak to around 40. By coincidence, that is where the benchmark currently trades.

The recent green tech bubble was more extreme. The WilderHill index climbed from 47 in March 2020 to 281 less than a year later. Whereas US venture capitalists spent an estimated \$25 billion funding clean energy startups between 2006 and 2011, Silicon Valley splurged more than twice that sum in 2021 alone, according to Silicon Valley Bank. Market valuations were quite absurd. By late 2020, the battery company QuantumScape, which came to the market by merging with a blank-check firm, was valued at more than General Motors, despite having no sales.

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