

EDITORIAL HIGHLIGHTS

12-08-2026

1. Ladakh's giant 'rivers of ice' are slowing as the mountains warm (THE HINDU PAGE NO 7)

1. **GS I (Geography) & GS III (Environment)**
2. **Topics:** Important Geophysical phenomena; Conservation, environmental pollution and degradation.

Concepts: Glacier slowdown, climate change impact on Himalayan cryosphere, peak water phenomenon, Indus basin water security.

Ladakh's giant 'rivers of ice' are slowing as the mountains warm

Glacier slowdown has long-term implications for the Indus basin, where glacier melt contributes significantly to river flows during the summer; more melting may temporarily increase runoff, a phenomenon called peak water — but once glaciers lose a substantial fraction of their stored ice, the meltwater contributions are expected to drop

Hirra Azmat

Glaciers look still — but in reality they are constantly moving as they slowly carry ice from high mountains to the lower reaches.

A new study has reported that glaciers in the Zaskar region of Ladakh are now moving more slowly than they did 30 years ago, offering new clues about how climate change is affecting these giant 'rivers of ice'.

The Zaskar region is home to some of the largest, most extensive glaciers in the Himalaya.

They are natural reservoirs of freshwater, which they release as meltwater in the warmer months. This seasonal supply sustains rivers, ecosystems, agriculture, and local communities in the otherwise arid environment of Ladakh.

The glaciers "receive most of their snowfall from the mid-latitude westerly disturbances during winter," study co-author and IIT-Bombay doctoral student Tirthankar Ghosh said.

"Most of the glaciers are located at quite a high altitude compared to other regions. This unique climatic setting means that their response to climate change can differ from glaciers in the eastern or central Himalaya, making them valuable natural indicators of environmental change," he said.

Rate of slowing in their paper, in the journal *The Cryosphere*, the researchers described investigating how glacier flow changed from 1992 to 2023 across 12 glaciers in the Zaskar Himalaya and how these changes relate to ongoing glacier thinning due to climate change.

They used satellite data to derive the glaciers' surface velocities, which determine how efficiently ice is transferred from the high accumulation zones to the lower elevations, where melting is greatest.

"When a glacier loses more ice than it gains over many years, it generally becomes thinner," Mr. Ghosh said. "Thinner ice exerts less driving force, causing the glacier to flow more slowly. This is why changes in glacier velocity can reveal important changes within a glacier."

The researchers found that glaciers were moving more slowly across the terrain, having slowed by 2.4 m/year per decade on average. The team also found the pace of surface thinning had increased from around 0.22 m/year between 2000 and 2005 to around 0.57 m/year between 2015 and 2020.

The study also reported that the glaciers were not all responding to warming in the same way. Factors such as glacier geometry, debris cover, and conditions at the glacier's terminus or



The Zaskar region is home to some of the largest, most extensive glaciers in the Himalaya. TIRTHANKAR GHOSH

snout) can all influence how quickly it flows, Mr. Ghosh said.

'Ice transport slows' Mehrez Rashid, a lecturer of environmental management and sustainability at the University of Teesside, the U.K., said a major strength of the study is its long observational record, covering more than 30 years. Dr. Rashid was not associated with the study.

While most Himalayan studies have focused on glacier retreat or mass loss, which are important indicators of climate change, Dr. Rashid said the new study linked three processes — mass loss, glacier thinning, and glacier flow — to show that thinning is not just a consequence of warming but also changes the glacier's ability to move.

"As glaciers become thinner, the driving stress decreases, and ice transport slows," she explained. "That means the lower parts of the glacier receive less replenishment from higher elevations, which can make continued shrinkage more likely. In that sense, the study helps explain not only what is happening to Himalayan glaciers but also the physical mechanism behind those changes."

On a different note, Rayees Ahmed, project scientist at the Divecha Centre for Climate Change, Indian Institute of Science, Bengaluru, said the study focused on 12 representative glaciers, whereas the Zaskar basin hosts around 1,755. So while the glaciers the researchers studied do cover a range of settings, he advised caution before extending the findings to every glacier in Ladakh.

"Surface velocity observations derived from satellite imagery also cannot directly reveal processes occurring beneath the



Continued glacier thinning and slowdown are clear indicators that long-term glacier water storage is declining, which could have important implications for water security, agriculture, hydropower, and downstream ecosystems

RAYEES AHMED
Project scientist at Divecha Centre for Climate Change

glacier, such as subglacial hydrology or basal sliding, which can strongly influence glacier motion," he said. "In addition, long-term field measurements of ice thickness, glacier mass balance, and bed conditions remain limited in this region, making it difficult to fully attribute all observed changes."

Effect on Indus basin

That said, according to Dr. Ahmed, glacier thinning and slowdown have important long-term implications for the Indus basin, where glacier melt contributes significantly to river flows during the dry summer months. More melting may temporarily increase runoff, a phenomenon called peak water — but once glaciers lose a substantial fraction of their stored ice, the meltwater contributions are expected to drop.

"This does not mean the Indus basin will immediately experience water shortages solely because glaciers are slowing down. River flows also depend on snowfall, rainfall, groundwater, and water management," Dr. Ahmed explained. "Nevertheless, continued glacier thinning and slowdown are clear indicators that

long-term glacier water storage is declining, which could have important implications for water security, agriculture, hydropower, and downstream ecosystems in the coming decades."

Similar glacier slowdowns have been reported across the European Alps, Alaska, the Canadian Arctic, the Andes, and parts of the Tibetan plateau. Most of these regions have a similar dominant mechanism: as glaciers become thinner, they experience lower driving stress, causing them to flow more slowly.

"However, there are important exceptions," according to Dr. Ahmed.

"Some glaciers can temporarily accelerate due to increased meltwater reaching the glacier bed, glacier surges or interactions with proglacial lakes or marine environments. Therefore, while glacier slowdown is becoming increasingly widespread, local glacier characteristics still play an important role in determining individual glacier behaviour," he said.

The experts emphasised in their paper that they need long-term observations to understand how glaciers respond to climate change over decades. And while satellite observations have greatly improved glacier monitoring, Mr. Ghosh said more ground-based measurements of glacier thickness, mass balance, ice temperature, and meltwater discharge are required to validate satellite data and improve glacier models.

"Continuous weather observations at high elevations are also critical because climate conditions can vary considerably across mountainous terrain," he added.

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THE GIST

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2. The Mecca Pact and the rise of strategic hedging (THE HINDU PAGE NO 8)

1. **GS II** (International Relations)
2. **Topics:** Effect of policies and politics of developed and developing countries on India's interests.
3. **Concepts:** Strategic hedging, West Asian geopolitical realignments, autonomous regional security architecture, mutual defence agreements.

The Mecca Pact and the rise of strategic hedging

The mutual defence agreement signed by Saudi Arabia, Türkiye and Pakistan in Mecca on August 7 could mark an important turning point in the geopolitics of West Asia. Its significance lies not merely in its provision that an attack upon one member will be considered an attack upon all three, but in what it reveals about the changing calculations of three of the most important states in the Muslim world. For decades, West Asian, especially the Gulf, security has depended overwhelmingly upon the United States. The new pact does not terminate that dependence. Saudi Arabia remains closely tied to Washington militarily, Türkiye is a member of the North Atlantic Treaty Organization (NATO), and Pakistan retains an important, if complicated, relationship with the U.S. which has been recently strengthened because of the personal chemistry between U.S. President Donald Trump and Field Marshal Asim Munir. What the agreement suggests instead is a growing determination among regional powers to supplement external security guarantees with arrangements of their own.

The partners, complementary strengths

The three partners bring remarkably complementary capabilities. Saudi Arabia provides enormous financial resources, energy power and political influence throughout the Arab and Islamic worlds. Türkiye contributes the strongest conventional military establishment among the Muslim countries of West Asia and a rapidly expanding indigenous defence industry. Pakistan contributes a large professional military and decades of military cooperation with Saudi Arabia. But its most important strategic attribute is its nuclear weapons. Although Pakistan has not formally extended a nuclear guarantee to its partners, an adversary contemplating an attack upon one member must now take Pakistan's nuclear capabilities into account.

Each participant has distinctive reasons for joining. For Saudi Arabia, the agreement provides



Mohammed Ayooob

University Distinguished Professor Emeritus of International Relations, Michigan State University, and the author most recently of 'From Regional Security to Global IR' (2024)

The agreement between Saudi Arabia, Türkiye and Pakistan could end decades of externally guaranteed West Asian security arrangements

strategic insurance. The attacks on Saudi oil installations in 2019, subsequent regional crises and the current confrontation with Iran have demonstrated the risks of excessive dependence upon a single external guarantor.

Türkiye sees the arrangement through the prism of strategic autonomy. President Recep Tayyip Erdoğan has sought to transform Türkiye from NATO's southeastern flank into an independent centre of power. The pact expands Ankara's influence into the Gulf and South Asia while creating opportunities for its growing defence industry.

For Pakistan, the agreement widens the country's strategic horizons beyond its traditional rivalry with India. It institutionalises Islamabad's close relations with Saudi Arabia and Türkiye and converts Pakistan's considerable military capabilities into greater geopolitical influence.

The pact through India's eyes

This inevitably raises questions for India. New Delhi has cultivated exceptionally close relations with Saudi Arabia during the past two decades. Therefore, India must not interpret the pact automatically as an anti-Indian development. Riyadh has enormous economic and strategic interests in maintaining good relations with India and would have little incentive to allow the agreement to become an instrument in Pakistan's disputes with New Delhi.

Türkiye presents a more complicated problem because Ankara has repeatedly supported Pakistan's position on Kashmir and supplied weapons that Pakistan has used against India. New Delhi should seek explicit reassurance from Riyadh that the pact has no application to an India-Pakistan confrontation but it should resist viewing the emerging alignment exclusively through the prism of Pakistan.

The pact's implications for Iran are very complicated. Given the Saudi-Iranian rivalry and recent Iranian attacks on Saudi Arabia, and vice-versa, it is tempting to interpret it as an

anti-Iranian coalition. However, Türkiye and Pakistan share borders with Iran with complementary interests in keeping their restive minorities inhabiting the border regions in check.

They thus have strong reasons to avoid confrontation with Tehran. Israel is likely to view the development with greater concern. One of its enduring strategic advantages has been the political and military fragmentation of the Muslim world. The Mecca agreement does not explicitly create an anti-Israeli alliance. Nevertheless, an institutionalised relationship combining Saudi financial power, Turkish conventional strength and Pakistani nuclear capability inevitably alters strategic calculations.

For Washington, the pact presents a paradox. The U.S. has long demanded that regional partners assume greater responsibility for their own defence. But greater responsibility can also produce greater strategic autonomy and consequently diminish American leverage.

Put together by regional powers

It would be premature to describe the agreement as an anti-American realignment. Saudi Arabia continues to depend heavily upon American military technology and security guarantees; Türkiye remains in NATO; and Pakistan has no interest in unnecessary confrontation with Washington in the midst of their current love fest. The more appropriate description is strategic hedging. But when several major states begin hedging simultaneously, their cumulative actions can transform the regional order.

For most of the modern era, West Asian security arrangements have been created or guaranteed by outside powers. The Mecca pact raises the possibility of something different: a more autonomous security architecture constructed by regional powers themselves. India, with enormous economic, energy and strategic stakes in West Asia, cannot remain a spectator to that transformation but, at the same time, should not react to it with undue alarm.

3. Hyperpolitics: CJP protests and its aftermath (THE HINDU PAGE NO 9)

1. **GS II** (Polity & Governance) & **GS I** (Indian Society)
2. **Topics:** Pressure groups and formal/informal associations and their role in the Polity; Social movements.
3. **Concepts:** Hyperpolitics, digital mobilisation without institutional grounding, algorithmic rationality in protests, pressure groups vs. formal political parties.

Hyperpolitics: CJP protests and its aftermath

The Cockroach Janta Party (CJP)-led 'GenZ' protests are widely seen as a success story, and with reason. A decentralised, ideologically agnostic mobilisation converged on a singular demand: the resignation of the Union Education Minister. When that came through on July 25, the CJP leaders declared victory and called off the protest.

It is certainly important to claim victory, not least because the protesters had forced the Narendra Modi government to do what it abhors: appear weak by making a concession. This win also came at a significant juncture. After 12 years in power, it had begun to seem as if India's ruling elite occupied a celestial realm insulated from the democratic claim-making of ordinary Indians struggling with petty indignities in a nether world rife with corruption and decay. Communication had become one-way – downward from the top. It was hence a major triumph to send a message back in the other direction.

A time for introspection

And yet, if we place the CJP phenomenon in a historical context of mass politics, hard questions arise. For instance, this protest sought to end endemic exam fraud. How do we view its effectiveness in altering the structure of impunity and corruption that make exam fraud a feature rather than a bug? The mammoth edifice of over-centralisation, embedded in an opaque, crony-infested network of hyper-privatisation that envisages higher education as a commodity to be monetised is not about to crumble from the resignation of one Minister. The state has merely made tactical concessions out of political expediency – concessions that will not alter the material reality that students continue to face. If changing that reality is the true project, it requires durable institutional capability, which this



G. Sampath

The internalised algorithmic rationality of Instagram and YouTube generated a burgeoning corpus of edgy yet entertaining political content that served to mobilise huge swarms of 'GenZ'

protest movement lacks.

A study in contrast is the farmers' movement of 2020-21 against the three Farm Bills. It has come to embody the most unambiguous victory over the Modi government. But its success came after a campaign sustained on the ground for a year and four months. That was made possible by the institutional backbone of a multitude of farmers' groups, and by the fact that the farmers had gathered there as individuals who had a relationship with political organisations. The CJP protests, on the other hand, began as a purely digital phenomenon, with no organisational capacity other than social media followership.

Political theorist Anton Jäger, in his new book, *Hyperpolitics: Extreme Politicization without Political Consequences*, uses the term 'hyperpolitics' to describe mobilisations that often produce impressive spectacles of dissent, but in the absence of an institutional grounding, fail to produce lasting political change. He references the Black Lives Matter movement, the Yellow Vest unrest of 2018 in France, and the January 6 Capitol Hill riots of 2021 as manifestations of hyper-politics.

Born of a satirical meme, the CJP in its early days displayed hyperpolitical characteristics, especially in its refusal of representation by political parties. CJP leaders took pains to clarify that they had nothing to do with the Congress or the Aam Aadmi Party, that they were not against the Bharatiya Janata Party (BJP) per se, but were "only" interested in accountability for paper leaks. Jäger provides an interesting question that can be used to test if a mobilisation is hyperpolitical: "What did you have in common before the protest, and what did you have in common afterward?" In mature mass politics, it is typically the relationship to an institution – be it a political party, a civil society group, or a union. It would be safe to say that 99% of those who showed up at the CJP protests had no such relationship

with any political body.

What the legions mobilised by the CJP did have in common, though, was a set of influencers.

Digital performance of dissent

Much has been written about the demographic profile of the protesters. Indeed, a great many of them were frustrated NEET aspirants, gig workers, and unemployed youth. However, many of them were essentially consumers of 'insurrectionary pleasure', drawn to Jantar Mantar by the chance to participate in what cultural anthropologist Graham St John calls a 'protestival'. The area around Jantar Mantar had become a fair, a Meme Expo, where thousands of 'disentrepreneurs' performed dissent, consumed dissent, and turned the performance and consumption of dissent into monetisable digital content which, in turn, set in motion an infinite loop of production-consumption.

The internalised algorithmic rationality of Instagram and YouTube generated a burgeoning corpus of edgy yet entertaining political content that served to mobilise huge swarms of 'GenZ'. This was not, and could not have been, foreseen, and its rapidly growing momentum made the state nervous. As was inevitable, the heavy-handed response from the state vested the movement with enough kinetic energy to transcend its hyper-political origins, and for a few days starting July 20, it did, before it was called off on July 25.

To its credit, the CJP leadership has said that it will continue to function as a pressure group. If this movement is to effect lasting political change, it needs to embed its agenda in existing institutional infrastructure, be they political parties, student bodies, women's groups, or alternatively, build fresh organisational capacity that demands of its supporters much more than servicing the growing digital market for dissent.

4. India's rising dependence on U.S. LPG (THE HINDU PAGE NO 10)

1. **GS III** (Economy/Energy) & **GS II** (International Relations)
2. **Topics:** Infrastructure: Energy; Bilateral, regional and global groupings and agreements.
3. **Concepts:** Energy security, geopolitical risk premium, diversification of energy sources, Strait of Hormuz choke point.

India's rising dependence on U.S. LPG

India's reliance on the U.S. for two-thirds of its LPG signals a diversification of sources amid the crisis in the Strait of Hormuz. It suggests that the country's LPG security cannot be anchored to a single geography. India must strengthen local production and build more strategic reserves

EXPLAINER

Santosh V. Perumal

The Union Minister of Petroleum and Natural Gas, Hardeep Singh Puri, said last week that 67% of India's liquefied petroleum gas (LPG) came from the U.S. Although he did not mention the timeframe for when energy-hungry India "achieved" this, it is clearly a drastic shift from an earlier government decision to source about 10% of cooking gas from the U.S.

As part of crisis management, India, the world's second-largest importer of LPG, started buying cooking gas from the U.S., backed by a long-term deal signed by state-run oil refiners for 2.2 million tonnes in 2026, even as exact contracted \$/tonne or landed cargo price has not been publicly disclosed.

India's reliance on the U.S. for two-thirds of its LPG assumes significance, signalling prudent diversification of sources amid the crisis in the narrow Strait of Hormuz, which suggests that the country's LPG security cannot be anchored to a single geography.

As per Vortexa, India's LPG imports from West Asia fell almost 85% between February 2026 and June. However, India partially offset the lost flows by increasing LPG imports from other countries, including the U.S., from where India's imports in June reached 0.77 million metric tonnes.

The risk of overdependence
Overdependence on any market is risky, but relying more on a nation which keeps amorphous relations and sees partners through the lens of national interest could prove costly, as it may yield energy as a bargaining tool in bilateral trade talks. Energy-import dependence also makes monetary policy more complicated.

The U.S. has historically used financial sanctions, export controls and technology as foreign policy tools, going by the episodes in Iran, Iraq, Cuba, North Korea,



An Indian LPG carrier, Shivalik, at the Mundra Port in Gujarat. REUTERS

Syria, Russia, Venezuela, Myanmar, Libya, Sudan and Afghanistan.

Even when commercial ties are extant, the U.S. can influence third-country transactions. The Lindsey O. Graham Sanctioning Russia and Iran Act of 2026, proposing tariffs of up to 100% on the top five buyers of Russian oil and natural gas, is a non-tariff trade barrier.

Proximity pricing

Unlike the West Asian supplies, largely based on long-term Strategic Partnership Agreements (SPA), U.S. energy exports could potentially be swayed by trade and other agendas, enhancing dependence risks. Traditionally leaning towards the Gulf region, India imports about 60% of the LPG (a mix of propane and butane) it consumes, with nearly 90% passing through the Strait of Hormuz. It could lose the advantage of proximity pricing, as U.S. shipments generally take 25-35 days, compared with 5-10 days from the Gulf.

Although the U.S. LPG (Mont Belvieu propane-based) claims a competitive edge over West Asian supplies; the reality is that the former could be cheap at the point of production, but the West Asian LPG (Saudi Aramco CP) is usually cheaper

at the disembarking point because of the much shorter shipping distance although the arithmetic has changed now due to geopolitical risk temporarily inflating the West Asian supply costs.

Politically volatile fuel

For India, cooking gas is not merely a good but a politically volatile fuel, the shortages of which would have social and political consequences; and so the priority is making it available rather than cost optimisation.

The Strait of Hormuz disruptions have led to Gulf LPG prices surging sharply, with Saudi CP rising from about \$543 per tonne in February to around \$790 in June. Under such conditions, even costlier U.S. cargoes would become attractive because they were available and reduced supply risk.

Higher Gulf benchmark, shipping disruptions and risk premia can make the U.S. LPG competitive despite its longer voyage. India may have cut Hormuz risk, but remains exposed to commodity-price, dollar and freight risks.

If U.S. inflation remains elevated, the Federal Reserve may have to keep interest rates higher for longer. Tighter U.S. monetary policy can simultaneously

strengthen the dollar, raising the rupee cost of each imported cargo.

If domestic LPG prices are held down when the global price rises amid rupee depreciation, then oil companies' under-recoveries expand, leading to more fiscal and external-sector issues.

The government recently informed the Parliament that the accumulated under-recoveries of public sector Oil Marketing Companies (OMC) was over ₹59,000 crore as of July 31 this year.

The way forward

The Petroleum Planning and Analysis Cell (PPAC) data suggests that as of July 1, 2026, the PSU OMCs (Indian Oil, Bharat Petroleum and Hindustan Petroleum) together have 33.14 crore active domestic LPG customers, with a compound annual growth rate (CAGR) of 7.6% during 2015-2026. The original LPG consumption estimate is 34,692 TMT for 2026-27.

India's LPG production, which remained nearly stagnant over the past several years, has not been keeping pace with consumption growth. While LPG production was 4.3 MMT (million metric tonnes), consumption was 6.5 MMT in the first quarter of FY27.

Refineries were directed to maximise the LPG output by diverting propane, butane and other streams into the LPG pool. As per QIFY27, LPG production saw 35.73% year-on-year increase to a total of 4.26 MMT.

At the peak of the crisis, India's OMCs ramped up their cumulative daily production of LPG from 34,000 metric tonnes (MT) to 55,000 MT, which helped the country absorb some impact of lower imports.

Australia offers strategic advantages as it is in the Indo-Pacific, outside Hormuz, and has a shorter route than the U.S., but export volumes are much smaller.

However, energy security is not about replacing one supplier with another; it is about ensuring that no single player holds all the cards. Instead, India must strengthen local production, bolster multiple supply chains and build more strategic reserves.

THE GIST

▼ The Union Minister of Petroleum and Natural Gas, Hardeep Singh Puri, said last week that 67% of India's liquefied petroleum gas (LPG) came from the U.S.

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5. The work that won Deepak Dhar the Dirac Medal (THE HINDU PAGE NO 10)

1. **GS III** (Science & Tech)
2. **Topics:** Science and Technology- developments and their applications; Achievements of Indians in science & technology.
3. **Concepts:** Statistical physics, Abelian sandpile model, self-organised criticality, non-equilibrium systems.

The work that won Deepak Dhar the Dirac Medal

The Dirac Medal is awarded to physicists who have made outstanding contributions to theoretical physics

Vasudevan Mukunth

The story so far:

Theoretical physicist Deepak Dhar has been awarded the Dirac Medal for his contributions to statistical physics – an honour he is sharing with three other physicists, Bernard Derrida, Marc Mézard, and Haim Sompolinsky. The Dirac Medal is awarded by the International Centre for Theoretical Physics (ICTP) in Trieste, Italy, on the birthday of the late British physicist Paul A.M. Dirac, for significant contributions to theoretical physics.

Dhar has spent most of his career in India. He is also the second Indian winner of the Dirac Medal; the first was string theorist Ashoke Sen in 2012.

In physics circles, Dhar is known for his work on a concept called Abelian sandpiles.

What is an Abelian sandpile?

Imagine dropping grains of sand, one at a time, on a flat surface. The pile slowly grows until it gets steep enough. Then, sometimes new grains on the pile will shift it, maybe cause a modest slide, sometimes even trigger an avalanche. And it is hard to predict in advance which grain will trigger which size of event.

In the late 1980s, physicists Per Bak, Chao Tang, and Kurt Wiesenfeld proposed that this behaviour could be a general principle underlying many phenomena in nature, from earthquakes to forest fires to the extinction of species. They called it **self-organised criticality**. The term refers to a system that sometimes organises itself into a delicately balanced critical state where even small nudges can produce effects of any size, from trivial to significant.

Dhar and his collaborators then developed the so-called Abelian sandpile

model as a mathematical version of the sandpile idea. 'Abelian' means no matter in which sequence grains topple and cascade, the pile always settles into the same final shape. This was Dhar's important insight – a property that lets physicists calculate exact answers and thus predict the final shape.

The Abelian sandpile model has numerous applications fundamentally because it captures a very general kind of behaviour: of systems that build up some kind of instability until they can release it in unpredictable ways. Scientists have used it to model earthquakes, the spread of forest fires, bursts of activity in neural networks in the brain, and fluctuations in financial markets.

Biographical sketch

Dhar was born in 1951 in Pratapgarh, Uttar Pradesh. He studied at Allahabad University, got his master's degree from

IIT-Kanpur, and then went to the California Institute of Technology (Caltech) for his PhD, which he completed in 1978. While at Caltech, he was a teaching assistant to Richard Feynman.

After finishing his doctorate, Dhar returned to India rather than stay in the U.S., and spent most of his career at the Tata Institute of Fundamental Research, Mumbai, before moving to the Indian Institute of Science Education and Research (IISER), Pune, in 2016. Since 2024, he has been the INSA Distinguished Professor at the International Centre for Theoretical Sciences, Bengaluru.

The Abelian sandpile is Dhar's most well-known work but not his only one. Across nearly five decades, Dhar has made important contributions to statistical mechanics – the branch of physics concerned with how the collective behaviour of vast numbers of particles, like grains or neurons, gives rise to large-scale patterns.

He won the Shanti Swarup Bhatnagar Prize in 1991, the TWAS Prize from the World Academy of Sciences in 2002, the Padma Bhushan in 2023, and the Boltzmann Medal in 2022, together with John Hopfield, who shared the physics Nobel Prize 2014 for laying the foundations of neural networks. The Boltzmann Medal, awarded once every three years, is often considered the single most prestigious prize in statistical

physics.

What is the Dirac Medal?

The ICTP Dirac Medal was established in 1985 to honor Paul Dirac, the British physicist whose equations helped lay the foundations of quantum mechanics. It is announced each year on Dirac's birthday and awarded to physicists who have made outstanding contributions to theoretical physics but who have not already received the very top honours.

In fact, the medal is explicitly not given to Nobel laureates, Fields Medalists, or Wolf Prize laureates. Past recipients include Edward Witten, Stephen Hawking, and Leonard Susskind. Notably, several past Dirac Medalists have gone on to win a Nobel Prize.

All four of this year's winners have been feted for pioneering work that applied the tools of statistical mechanics in distinct fields like non-equilibrium systems, optimisation problems, theoretical neuroscience, and artificial intelligence.

The ICTP itself was founded in 1964 by the Pakistani physicist and Nobel laureate Abdus Salam, together with the Italian government and the International Atomic Energy Agency. Salam had envisioned it as a place where physicists from the Global South could work together and exchange ideas with colleagues from around the world.

6. Behind Mecca story, Arab weakness and rise of three powers(INDIAN EXPRESS PAGE NO 10)

1. **GS II** (International Relations)
2. **Topics:** Effect of policies and politics of developed and developing countries on India's interests.
3. **Concepts:** Middle East regional order, Arab solidarity vs. national interests, military diplomacy, shifting balance of power in the Persian Gulf.

Behind Mecca story, Arab weakness and rise of three powers



RAJA MANDALA
BY C RAJA MOHAN

AMID THE animated Indian commentary on the Mecca Joint Defence Agreement signed on August 7 by Saudi Arabia, Turkey and Pakistan, it is worth recalling a remark made 70 years ago by Huseyn Shaheed Suhrawardy. As Pakistan's prime minister during the Suez crisis of 1956, Suhrawardy was under intense domestic pressure to abandon the Baghdad Pact — a regional security arrangement backed by Britain and the US — and rally behind Egypt's Gamal Abdel Nasser. Suhrawardy dismissed Arab and Muslim solidarity in a phrase that has outlived him: "Zero plus zero still amounts to zero."

Being analytically right is not the same as being politically correct. Faced with a massive backlash at home and widespread denunciation in the Arab world, Suhrawardy had to eat his words. His government fell within a year. The seven decades since have been kinder to Suhrawardy's analysis.

The United Arab Republic, the Egypt-Syria federation founded in 1958 as pan-Arabism's consummation, dissolved in 1961. The Baghdad Pact lost Iraq in 1959, became the Central Treaty Organisation (CENTO), and expired in 1979. Its developmental twin, the Regional Cooperation for Development — launched in 1964 by Iran, Turkey and

Pakistan, the region's three non-Arab Muslim states — became the Economic Cooperation Organisation in 1985 and has achieved little. The Gulf Cooperation Council, founded in 1981 in the shadow of the Iranian revolution and the Iran-Iraq war, could not stop three members blockading a fourth in 2017. Today, the GCC is deeply divided on its approach to war and peace in Iran. The Arab League and the Organisation of Islamic Cooperation are forums for declarations, not instruments of action. National interest has consistently defeated supranational identity, ethnic or religious.

The coalitions that worked were the ones Washington built. American military power, not Arab solidarity, reversed Iraq's annexation of Kuwait in 1991. American-led air and missile defence coordination has repeatedly intercepted Iranian salvos. Six months into the latest hostilities with Iran, the coalition Riyadh has assembled to protect Red Sea shipping — 13 countries and counting — leans on the US Central Command. The accord is therefore not evidence of Islamic security self-reliance but a hedge against American unreliability. The Saudis have watched Washington squander political capital through Donald Trump's erratic policies. They recognise the need to demonstrate, if not develop, other options, however weak.

Pakistan's security cooperation with Saudi Arabia is long-standing; Rawalpindi has provided training, advice and regime protection over the decades. But when Riyadh went to war in Yemen in 2015 and sought Pakistani troops, Islamabad's parliament voted unanimously for neutrality. Since the September 2025 defence pact, Hou-

thi missiles and drones have struck Saudi Arabia regularly. There is no sign of the Pakistan Army entering that fight; nor has Riyadh joined Rawalpindi's fight with Taliban-led Afghanistan.

Riyadh's Turkish turn is the more significant implication of the Mecca Accord. Only a few years ago, Recep Tayyip Erdoğan was campaigning to make Crown Prince Mohammed bin Salman a pariah over the 2018 killing of Jamal Khashoggi. That campaign was inseparable from Ankara's patronage of the Muslim Brotherhood, which several Sunni regimes, including the Saudis, Emiratis and Egyptians, regard as an existential threat.

Erdogan aspires to a leadership of the Islamic world the Saudis consider theirs by custody of the holy places. And the House of Saud, which fought its way out of Ottoman suzerainty, is in no hurry to fold itself into Erdogan's imperial ambitions. Riyadh and Ankara have sought to patch up their differences over the last few years, but it would be bold to claim the Mecca Accord dissolves the structural contradictions between them. As a signal to Tehran and Washington, the Mecca Accord might mean something; but it is not a break in the evolution of the regional security order.

The deeper story is one of enduring Arab weakness and the rise of three non-Arab powers: Israel, Turkey and Iran. Pakistan is not among them. In the 1950s, Pakistan enjoyed real standing in the Middle East, a strong Anglo-American connection, an army of imperial pedigree and commanding geography at the edge of the Persian Gulf. A Pakistan less consumed by India and more attentive to its economy might

have realised the full possibilities of being a security actor in the Middle East. But its reliance on regular Saudi bailouts has made Rawalpindi a retainer and a condottiere rather than a partner.

What about Delhi? Undivided India was the sheet anchor of Persian Gulf security. After 1947, Delhi simply walked away, and for decades treated renunciation as a virtue. The Gulf states, weak on their own, have had no choice but to seek external partners; independent India has remained the big tree that gives no shade. As a result, Delhi became a passive bystander in the Middle East.

The past cannot be undone. What of the present? There is no escaping the essence of Suhrawardy's arithmetic: Regional capabilities have grown over the decades, but so has the complexity of the problems. Regional cooperation remains less than credible, and American salience is not about to disappear.

Instead of wringing its hands over the Mecca Accord, Delhi should expand its own military engagement. Vulnerable states across the Middle East are eager to diversify their defence partnerships and have long looked to a reluctant India. India's military diplomacy in the region has gained some recent traction. But to be a credible security actor, Delhi needs to build the capabilities to project military power into the Middle East, in tandem with deeper political and security partnerships there.

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Pakistan is not among them. A Pakistan less consumed by India and more attentive to its economy might have realised the full possibilities of being a security actor in the Middle East

7. Someone has to pay for UPI. How do we decide who?(INDIAN EXPRESS PAGE NO 10)

1. **GS III** (Indian Economy)
2. **Topics:** Indian Economy and issues relating to planning, mobilization of resources, growth, development.
3. **Concepts:** Digital public infrastructure funding, Merchant Discount Rate (MDR) subsidies, money supply, transaction costs vs. financial inclusion.

Someone has to pay for UPI. How do we decide who?



ARYA ROY
BARDHAN

A charge does not remove UPI from the money supply; UPI merely moves bank deposits, which are already money. The fee alters the ease with which that money is used

UPI was never costless. The MDR is the fee a merchant pays its bank to accept a digital payment, ordinarily 1 to 2 per cent on a card transaction. On UPI, it has been zero, mandated by statute. The infrastructure has always been paid for either by banks, the payment applications, or the government, which reimbursed them for the fee they were required to forgo. That subsidy has been unevenly disbursed over time. The figure oscillates from year to year, and even at its height it met only a fraction of industry's estimated operating costs. The budget has proved to be an unreliable means of keeping UPI free. The amendment is the other half of that predicament: To relieve the exchequer, and to permit a fee in its place.

If large merchants are charged, will they not simply pass the cost to their customers? Economists term this pass-through, and the presumption that firms with market power will transfer the entire burden to consumers holds only under restrictive assumptions. The share of the cost that reaches the final price depends on the elasticity and curvature of demand, and may range from half the cost to more than its whole. A second and subtler concern is what a transaction cost does to the structure of money supply and demand. A charge does not remove UPI from the money supply; UPI merely moves bank deposits, which are already money. The fee alters the ease with which that money is used. A significant part of money's usefulness lies precisely in its trivial transaction cost. Once a cost is introduced, the instrument becomes marginally less money-like, and theory anticipates a modest shift towards the medium that bears no fee: Cash. Throughout the expansion of UPI, cash did not recede. Bank notes in circulation continued to rise, reaching approximately Rs 42 lakh crore in 2026. If free UPI did not displace cash, a small fee would scarcely revive it. The genuine concern is the exposure of low-value payments. Were a fee ever to extend to the transactions of Rs 10 and Rs 20 that constitute the core of UPI's use, the retreat to cash would become likely.

A third concern is that of timing. The Bill has arrived in the midst of trade negotiations with the United States, and the coincidence raises suspicion. The United States Trade Representative's 2026 report does register objections to India's payments regime but not to zero MDR. Its complaints are that American firms cannot compete with RuPay, that they are excluded from credit on UPI, that no single application may exceed 30 per cent of the market, and that payment data must be stored within India.

The infrastructure must be paid for by someone. But by whom, and will that decision be taken openly? Ordinary users and small merchants should be kept free by law, not by assurance. Any fee should be capped low and confined to large merchants. Its proceeds should be ring-fenced for the security and reliability of the UPI system. It should be determined transparently, through the payments authority, and held apart from the trade talks. It should be reviewed periodically as the system matures. None of this requires abandoning the core UPI principle. It only requires that the terms of any charge be fixed in law, deliberated, and justified by the cost of the system.

The writer is junior fellow, ORF

8. Caste census is dead. Don't expect a formal announcement or funeral (INDIAN EXPRESS PAGE NO 11)

1. **GS II** (Social Justice) & **GS I** (Indian Society)
2. **Topics:** Welfare schemes for vulnerable sections; Salient features of Indian Society.
3. **Concepts:** Socio-Economic and Caste Census (SECC), caste enumeration methodology, political implications of demographic data, administrative procedures.

Caste census is dead. Don't expect a formal announcement or funeral



DESHKAAL

BY YOGENDRA YADAV

THE GOVERNMENT that announced the caste census a year ago has decided to kill it. The same cold political calculus that forced a concession has now prompted a reneging on that reluctant promise. Obviously, we should not expect a formal announcement or an official funeral. Instead, the idea will be buried quietly, finely camouflaged under technical verbiage, while the charade of the caste census carries on.

According to the report by Deepthi Tiwary, first carried in this paper ('No drop-down options, caste census format to be open-ended', *IE*, August 9), the Registrar General of India (RGI), in charge of conducting the census, has decided to use an open-ended question on caste rather than a drop-down menu of castes for the population enumeration phase of the coming census of India. Simply put: When the census enumerator comes to your house, she will not offer you a list of caste names to choose from, but simply ask you to name your caste and record it the way you state it.

Now, what's wrong with that? And how does this seemingly trivial and super-technical decision sound the death knell of the exercise of the caste census?

For this you have to read Trina Vithayathil's authoritative book *Counting Caste: Census Politics, Bureaucratic Deflection, and Brahmanical Power in India*. It is a painstaking documentation of how the caste census was sabotaged in 2011. An intense parliamentary debate led by Sharad Yadav contributed to an all-party consensus in favour of carrying out a caste census. But there was no discussion or even an awareness of how exactly caste was to be recorded in the census. This is where the social power

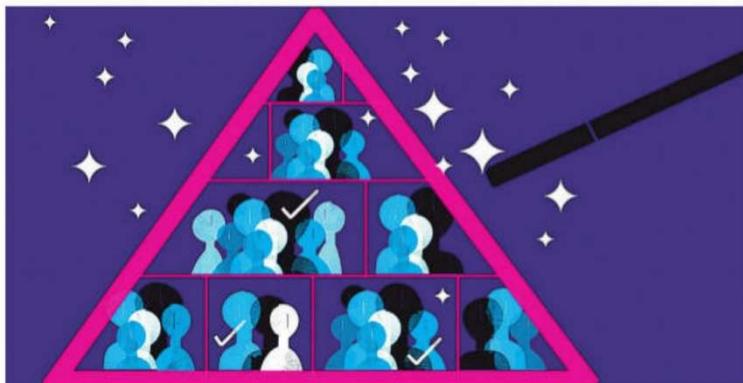


ILLUSTRATION: C.R. SAKSHI

of the Brahmanic order asserted itself and deflected the whole enterprise with two critical but managerial and technical decisions. First, caste enumeration was detached from the decennial Census of India, ostensibly not to overburden the census. A separate nationwide survey called the Socio-Economic and Caste Census (SECC) was designed for this purpose. Second, caste was recorded through an open-ended question, disregarding the existing SC, ST and OBC lists. This decision and other procedural lapses meant that this huge exercise resulted in 4.7 million caste names, a perfect alibi for first delaying and finally burying the publication of caste data. According to Vithayathil, this was an instance of how Brahmanic power works in India, through bureaucratic deflections.

The *Indian Express* report suggests that we are about to witness an action replay of the same sabotage, except that this time it will happen not under a separate survey but under the official Census of India 2027. It also confirms that the RGI's office is perfectly aware that this caste census is designed to fail.

Is there an alternative? How do we categorise and classify the infinite variety of castes, sub-castes

and their multiple surnames? What is the alternative to asking the people to name their own caste?

Fortunately, there is an alternative. It exists within the official practices of the Indian state. It has been used by the Census of India in the past. It has been successfully used recently in Bihar and Telangana. It is simply this: Instead of asking everyone to name their own caste, begin by asking their caste category (SC/ST/OBC/General) and then ask them to choose from a menu of caste names in their category. The remaining 1 or 2 per cent cases, where the drop-down menu does not work, can be placed under "others" and asked to name their caste.

Do we have a ready-made menu of most Indian caste names? Surprisingly, we do. We already have comprehensive official lists of castes, which includes sub-castes and synonyms, for nearly three-fourths of the Indian population, namely SC, ST and the OBC (officially called Social and Educationally Backward Classes). When the census enumerator goes to a Dalit household, she first asks them if they belong to the SC category. If yes, she then takes out the list of Scheduled Castes and places

them on one of the entries in the official list. The same is the case with STs. This could be easily extended to the OBCs, for which comprehensive lists are available at the state and national levels. (That these two lists do not overlap poses no difficulty for the enumerator, as long as there is no confusion about caste names.)

The remaining one-fourth, the "General" category, are not as difficult to count as it is made out to be. After all, the Census of India 1931 recorded all castes, including those in the General category today. It is safe to assume that not too many new castes would have come up in the last century. Besides, we have a 43-volume encyclopaedia, *People of India* (edited by KS Singh), an official documentation of all castes and communities throughout the country, carried out in the 1980s. That could be used to fine-tune the 1931 list. An open-ended question could be asked to the remaining minuscule population of "others", not to 140 crore Indians.

The real problem is not the technical alternative, but political will, or rather political ill-will. Unlike 2011, when a political decision was sabotaged by bureaucratic deflection, this time it is a clear case of a politically designed sabotage. The *Indian Express* report quotes an unnamed Union minister: "The Opposition has been demanding it for political reasons. We have accepted it. Let them deal with the final data." Clearly, the bureaucratic decision has been taken with political approval, with full knowledge of the failure that awaits this exercise. Now, either the BJP has had second thoughts about the caste census, and the possibility of losing its General caste vote bank, especially after the UGC protest and youth rebellion. Or the subterfuge was planned right from the beginning.

Either way, the political game is clear. The PM can throw up his arms and say to his OBC voters: Look, we tried, but nothing came out of this exercise. And he could wink to his core "upper" caste Hindu vote bank: Don't worry, we've managed it. *Saanp bhi margaya, lathi bhi nahin tooti.*

The writer is member, *Swaraj India*, and national convenor, *Bharat Jodo Abhiyan*. Views are personal

9. Stronger India is at home, more useful it is to the world (INDIAN EXPRESS PAGE NO 11)

1. **GS II** (International Relations) & **GS III** (Economy)
2. **Topics:** Bilateral, regional and global groupings and agreements involving India; Inclusive growth and issues arising from it.
3. **Concepts:** Global South leadership, demographic dividend conversion, supply chain resilience, India's geopolitical posturing (Viksit Bharat).



KAUSHIK SHAPARIA

Stronger India is at home, more useful it is to the world

AS INDIA enters its 80th year of Independence, it is tempting to look back with pride at how far the country has travelled. But the more important question today is not only how large India has become. It is how relevant India is becoming. India is no longer waiting to be discovered. It is already part of the choices the world is making on trade, technology, talent, energy, supply chains and development. This is the real shift.

We are living through a time when old assumptions are being tested. Countries are rethinking where they source from, where they invest, whom they trust and how they build resilience. The world is not becoming simpler. That is why India's position matters. It has strong relationships with advanced economies but also carries credibility with the Global South. It understands the aspirations of developing countries because it is still living many of them itself. At the same time, it has the ambition, capability and institutional weight to contribute meaningfully to global conversations. That combination is not common.

India is home to more than one-sixth of the world's population but accounts for a much smaller share of global trade. The opportunity now is to bridge that gap. The coming decades will be defined by how effectively India converts demographic scale into economic influence and domestic strength into global relevance.

The idea of Viksit Bharat captures that larger aspiration. It is a

statement of intent about the kind of country India wants to become when it completes 100 years of Independence. A bigger economy, certainly. But also, a more capable, confident, inclusive and globally respected one.

To achieve that, capital will matter. India will need investment in infrastructure, manufacturing, clean energy, cities, technology and enterprise. But capital alone is never enough. It must move into the right places, at the right pace, with the confidence that rules are stable and opportunities are real. Countries that can attract long-term capital and put it to productive use will help define the next phase of global growth.

We can already see this in the way India is being viewed by companies and governments looking for new growth corridors. The India-EU Free Trade Agreement is a useful example: Two large democratic partners choosing to deepen economic ties at a time when the global order is being reshaped. For India, it strengthens links with a major advanced market. For Europe, it offers a deeper partnership with a country that is central to Asia's growth and to the wider search for resilient supply chains. Capability is another integral element of the story. India's demographic dividend has long been acknowledged as its biggest strength. However, India's long-term competitiveness will be determined by how effectively it converts its demographic strength

into innovation, enterprise and broad-based prosperity.

Today, the gap between average incomes and the incomes of middle-income households suggests that the gains from growth are not reaching all sections of society equally. Creating productive, formal and better-paying jobs must therefore remain a priority, alongside strengthening manufacturing, improving productivity and building globally competitive businesses. As technology and AI reshape industries, success will depend not just on the size of our talent pool, but on the quality of skills, education and healthcare that support it.

India's advantage is that its domestic journey and global role are now deeply connected. The stronger India becomes at home, the more useful it becomes to the world. And the more deeply it engages with the world, the more pathways it opens for its own people.

As India enters its ninth decade of Independence, its task is not simply to participate in global growth. It is to help shape it. The first 80 years were about securing India's place in the world. The years ahead are about defining what India does with that place. That may ultimately be India's most important contribution: Not just becoming one of the world's largest economies but becoming one of its most relevant.

The writer is CEO, Deutsche Bank Group India & Emerging Asia

As India enters its ninth decade of Independence, its task is not simply to participate in global growth. It is to help shape it

10. Monsoon revived, but why there's cloud over the farm(INDIAN EXPRESS PAGE NO 12)

1. **GS III** (Agriculture/Economy) & **GS I** (Geography)
2. **Topics:** Major crops cropping patterns, issues of buffer stocks and food security; Important Geophysical phenomena.
3. **Concepts:** Kharif sowing area coverage, El Niño impacts on agricultural yields, global food price hardening (FAO index), diversion of edible oils for biofuels.

• AGRICULTURE

Monsoon revived, but why there's cloud over the farm



HARISH DAMODARAN

THE SOUTHWEST monsoon's revival in July, in the face of a strengthening El Niño, has helped considerably narrow the gap in area sown under kharif crops this season relative to last year's coverage.

The Agriculture Ministry's data shows that Indian farmers had planted only 350.85 lakh hectares (lh) area in the current kharif (monsoon) season till July 6, which was 20.8% below the 442.80 lh sown during the same period of 2025.

These acreage gaps were even higher for oilseeds (39.3%), pulses (21.8%) and cotton (23%). A previous Explained column had pointed out that the combined value of India's imports of the three commodities was close to \$25 billion in 2025-26 (April-March) and how El Niño could push this further to a new high in the current fiscal.

The above lag in sowings was due to a poor start to the monsoon season (June-September). Rainfall during June for the country as a whole was 38% below the normal long-period average (LPA) for the month.

June usually witnesses around three low-pressure systems (LPS) that bring rain and are active over 11 days of the month. This June was an anomaly, with not a single LPS being formed. That made it the sixth-driest June in India since 1901. The previous five years to have registered lower June rainfall were 2014, 2009, 1926, 1923 and 1905.

Significantly, the deficient June rainfall was despite El Niño only emerging and being in a weak-to-moderate phase that month.

The July turnaround

In July, El Niño intensified into a moderate-to-strong event.

Yet, this month recorded four LPSs, as against the normal three. And since these systems moved slowly with longer durations, the number of LPS-affected days were about 24 (normal is 14). As a result, all-India rainfall in July was 2.4% above the LPA. This was contrary to the India Meteorological Department's (IMD) forecast of "most likely to be below normal (<94% of LPA)" rains for the month.

The monsoon's turnaround in July and

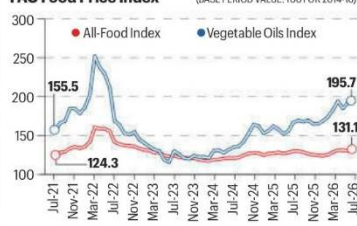
• KHARIF AREA COVERAGE AS ON AUGUST 10

(LAKH HECTARES)

	2026	2025	% GROWTH
Rice	344.78	360.67	-4.41
Pulses	103.78	105.73	-1.84
(a) Arhar/Tur	37.53	40.14	-6.50
(b) Moong	31.37	33.21	-5.54
(c) Urad	22.86	20.29	12.67
(d) Moth Bean	8.80	8.67	1.50
Coarse Grains	168.50	173.21	-2.72
(a) Maize	87.15	90.63	-3.84
(b) Bajra	62.44	63.00	-0.89
(c) Jowar	12.82	12.61	1.67
(d) Ragi	2.80	3.10	-9.68
(e) Small Millets	3.30	3.88	-14.95
Oilseeds	180.20	175.01	2.97
(a) Soyabean	119.92	119.66	0.22
(b) Groundnut	46.82	43.11	8.61
(c) Sesamum	9.96	8.52	16.90
(d) Sunflower	1.01	0.59	71.19
Cotton	106.01	106.42	-0.39
Sugarcane	58.31	58.62	-0.53
Jute & Mesta	6.34	6.22	1.93
All KHARIF CROPS	967.92	985.89	-1.82



FAO Food Price Index (BASE PERIOD VALUE: 100 FOR 2014-16)



Source: Department of Agriculture & Farmers' Welfare; Food and Agriculture Organization of the United Nations.

July rain has boosted plantings and been a lifesaver for the already-sown crop. But uncertainties, from El Niño and conflicts in Iran & Ukraine, remain

and temperatures — i.e. for the warm ocean waters to alter atmospheric air and wind patterns — comes with a lag of 1-2 months and can play out over 5-6 months or more. To that extent, the worst from El Niño, in terms of suppressing rainfall, is still to come.

SECOND, if El Niño continues to intensify, and given that it is known to raise temperatures as well, the real hit would be to the ensuing rabi or winter-spring crops. A relatively short and warm winter isn't good for wheat, mustard or potato yields.

In short, even if kharif doesn't turn out as bad as it was feared — especially after an extremely dry June — the uncertainty from El Niño on the rabi season remains.

Global price hardening

Meanwhile, the United Nations' Food and Agriculture Organization's (FAO) food price index has hit a three-and-a-half year high in July. The index — a weighted average of world prices of a basket of food commodities over a base period value (taken at 100 for 2014-16) — touched 131.1 points last month, up 1% from July 2025 and the highest since the 131.4 of January 2023.

The rise is being attributed to the perfect storm from El Niño and the effects of recent heatwaves on crop yields in Europe, alongside renewed supply disruptions from conflicts in West Asia and Ukraine.

A closer look at the FAO index components, however, shows the increase to be largely vegetable oils-driven. At 195.7 points, the FAO's vegetable oils index in July was 17.3% up year-on-year and the highest since June 2022 (see chart). The cereals index, at 113.8 points, was 6.9% higher than a year ago, while the dairy and sugar indices were actually down by 24.8% and 8% respectively. The meat index was up just 0.8% compared to July 2025.

Clearly, vegetable oil prices are the real concern for India now. Their firming up has mainly to do with diversion from food to biofuel production. When international petroleum prices harden, as they have been of late, there's added incentive to use palm, rapeseed and soyabean oil for making fatty acid methyl esters. The latter is a substitute for regular petroleum diesel.

On the positive side, the government has enough stocks of rice and wheat — 92.6 million tonnes (mt) on July 1, against a required minimum of 41.1 mt — and also pulses (over 4 mt). These stocks in public godowns can be offloaded in the open market to contain food inflation.

the cumulative rainfall deficit for the season easing to 12% as on August 11, notwithstanding a strengthening El Niño, has spurred kharif sowings. The 967.92 lh area covered till August 7 was only 1.8% lower than the progressive acreage during the corresponding period of last year.

Moreover, the sowing gap has also reduced to 1.8% in pulses and 0.4% in cotton, while exceeding last year's levels for oilseeds, particularly groundnut and sesamum (see accompanying table).

"The rains during the third and fourth weeks of July have boosted sowings and also been *amrit-varsha* (life-rejuvenating) for the already-sown crops that were facing moisture stress. Without these showers, their vegetative growth (development of roots, stems and leaves) would have got affected," said Nitin Kalantri, a leading dal (split pulses) miller from Latur in Maharashtra.

The area sown under soyabean, too, has shown recovery. "Overall, the crop condition is normal to good. Healthy vegetative growth is being observed in most areas, with no major insect pest or disease incidence re-

Delayed effect

El Niño, which increases temperatures and suppresses rain, comes with a lag of 1-2 months and can play out over 5-6 months or more.

Even if kharif (monsoon) season is not as bad as feared, the rabi crop (winter-spring) may be affected.

ported during field inspections," said DN Pathak, executive director of the Indore-based Soybean Processors Association of India.

The worst isn't over

The kharif crops need rain during August and early September too, when they undergo flowering and grain/pod formation that ultimately translate into yields.

The IMD has predicted a fresh LPS to form over the north Bay of Bengal and adjoining West Bengal-Bangladesh coasts around August 12, which should sustain the monsoon's present active phase at least till the third week of the month. The uncertainty is over what happens after that.

Most global weather agencies expect sea surface temperatures in the central and eastern Pacific Ocean off the coasts of Peru and Ecuador to keep climbing, before turning into a "very strong" El Niño during October-December. Further, the El Niño conditions may persist through the winter and spring months till March 2027.

There are two implications from this. FIRST, El Niño's actual impact on rainfall