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# CURRENT AFFAIRS FOR UPSC

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19th to 25th April 2026



**DreamIAS**



## INTERNATIONAL

### IN BID TO BYPASS HORMUZ CHOKEPOINT, GULF COUNTRIES SCRAMBLE TO RAMP UP INFRA

WITH TEHRAN weaponising the Strait of Hormuz and jeopardising global oil and gas flows, countries in the Gulf region led by the United Arab Emirates and Saudi Arabia are scrambling to reduce their dependence and vulnerability on this chokepoint. From ports to pipelines, countries are hoping to ramp up infrastructure in the coming years.

- Even as numerous oil tankers, among scores of merchant vessels, have been stranded in the Persian Gulf, Saudi Arabia and the UAE managed to export some of their oil using pipelines that bypass the Strait of Hormuz. These are Saudi Arabia's 1,200-km long East-West pipeline that runs from oil fields near the Persian Gulf all the way to the Red Sea port of Yanbu, and the UAE's Abu Dhabi Crude Oil Pipeline (ADCOP) that connects the Habshan oil field to the port of Fujairah in the Gulf of Oman.
- While the volumes that can be moved through these pipelines are much lower than what Saudi Arabia and the UAE usually export through the Strait of Hormuz, they have exhibited the potential of pipelines as a tool to reduce dependence on the Strait of Hormuz.

#### Do You Know:

- According to Al Jazeera, the East-West Pipeline is also known as the Petroline and is operated by Saudi oil giant Aramco. Aramco is one of the world's largest companies with a market capitalisation exceeding \$1.7 trillion and annual revenues of \$480bn. The oil giant controls 12 percent of global oil production with a capacity of more than 12 million barrels per day (bpd).
- The 1,200km (745-mile) pipeline runs from the Abqaiq oil processing centre close to the Gulf in Saudi Arabia to the Yanbu port on the Red Sea on the other side of the country. However, the pipeline does not have the capacity to fully make up for the Hormuz closure.
- In 2024, about 20 million bpd passed through the Strait of Hormuz, according to data from the United Nations. Crude oil and condensate made up 14 million bpd of this while petroleum was the remaining 6 million bpd.
- The East-West Pipeline has the capacity to transport up to 7 million bpd. On March 10, Aramco said about 5 million bpd could be made available for exports while the rest could supply local refineries. Since the US-Israeli war on Iran began on February 28, Saudi Arabia has ramped up its oil flow through this pipeline.

### WAS US SEIZURE OF IRAN SHIP LEGAL? WHAT MARITIME FRAMEWORK SAYS

On Sunday (April 19), the US intercepted and seized the Iran-flagged cargo ship *Touska* in the Gulf of Oman as it attempted to get past the American naval blockade near the Strait of Hormuz.

#### Key Takeaways:

- The USS *Spruance* struck and damaged the *Touska's* engine room, following which Marines boarded and took custody of the vessel. The Iranian vessel had reportedly ignored radio and visual warnings by US Central Command (CENTCOM) for almost six hours leading up to the attack.



- The US defended the operation as lawful enforcement to protect the integrity of its blockade on Iranian ports, which has been in place since April 13. Iran, on the other hand, said both the blockade as well as the operation constituted overarching “acts of piracy”.
- The US-Israeli alliance began the war on Iran on February 28. Iran responded by effectively “closing” the Strait of Hormuz, the narrow passage that accounts for a fifth of the world’s energy flows in peacetime. A temporary ceasefire took effect on April 8, but, days later, US President Donald Trump announced a naval blockade aimed at restricting Iran’s oil exports and intercepting vessels entering or exiting its ports. Iranian forces retaliated by intercepting foreign-flagged oil tankers on April 18 — two days before the commencement of the second round of diplomatic talks scheduled in Islamabad.

**Do You Know:**

- The 1982 UN Convention on the Law of the Sea (UNCLOS) regulates peacetime activities. International conflicts, meanwhile, are governed by the Law of Active Combat (LOAC), which is also known as International Humanitarian Law (IHL). The LOAC says an ‘international armed conflict’ exists whenever there is a “resort to armed force between States”, regardless of whether a formal declaration of war has been made. This is where the transition from a ceasefire becomes legally tricky. A ceasefire is merely a pause in fighting, not a legal end to a war.
- The US may view the underlying February conflict as still active and argue, therefore, that imposing a blockade is a lawful resumption of hostilities. Iran, however, may argue that the ceasefire functioned as an end to the fighting, making the blockade an unprovoked attack in peacetime.
- A naval blockade is strictly a wartime operation, according to maritime law. While the main conditions regarding the status of the conflict and exact coordinates of the blockade determine the legality of the action, the multiplicity of doctrinal choices in maritime law must also be acknowledged. There is the modern LOAC, which is underpinned by the Geneva convention, the San Remo manual (1994) and international Prize law (whose formal domestic courts have been largely dormant since World War II). There is also the UN Charter, whose Article 2(4) prohibits member states from using or threatening force against the territorial integrity or political independence of any state.

**‘TRUMP HAS CULTIVATED MORE OF A MADMAN IMAGE THAN MOST OTHER WORLD LEADERS’**

Roseanne McManus, professor of political science and international affairs at Pennsylvania State University, explains why some US Presidents and other leaders have cultivated the ‘madman’ image, and its benefits and pitfalls.

**Key Takeaways:**

- While questions remain over whether the ceasefire would hold after Israel continued its aggression in south Lebanon and Iran struck oil facilities in the Gulf nations, Trump’s vacillating statements and inconsistent actions — not just during the course of the war but throughout his second presidential term — have lent credence to belief that the US President is practising the “madman theory”.



- In foreign policy, the theory gained currency during the Cold War and proposes that heads of state, by showing a willingness to take extreme measures, can influence an adversary's calculations by raising fears of escalation. Although it was meant to be used to explain erratic or unpredictable behaviour, this was subsequently deployed as a deliberate strategy to intimidate opponents into making concessions.

- Roseanne McManus, professor of political science and international affairs at Pennsylvania State University, explains how Trump seems to have put the theory into practice since his return to the White House last year, and what it means for the US's standing in the global order.

**Do You Know:**

Roseanne McManus, professor of political science and international affairs at Pennsylvania State University, explains-

- Exactly what it means to be a “madman” is not always clearly defined, but in my research, I argue that two types of “madness” can give leaders’ threats more credibility. The first is unpredictability, meaning that the leader might do anything. The second is extremism, meaning that the leader is insensitive to the consequences of war, including casualties.

—Trump’s statements and actions during the war could lend support to perceptions that he has both types of ‘madness’. His inconsistent statements about the goals of the war and vacillation between threats and more conciliatory rhetoric give the impression of unpredictability.

- Additionally, Trump’s willingness to shatter norms and experience domestic and global backlash for making extreme threats, such as to destroy an entire civilisation, suggests an unusual indifference to the consequences of his actions.

- Overall, I think that Trump has cultivated more of a madman image than most other leaders. According to private records, Richard Nixon desired to cultivate a reputation for madness. Yet he was not consistent enough at acting madly for others to believe it. The Soviets not only did not believe he was mad, but they considered him their favorite US president to work with.

—George W Bush was called a madman by some critics who used the term for general disparagement, but I don’t think he either sought or had a reputation for either type of madness that I identified above. He was viewed as a hawk, but not necessarily unpredictable or extremist.

—Vladimir Putin developed a madman image after invading Ukraine, and he sought to convince the West that he was insensitive to the costs of using nuclear weapons. However, I think his reputation for madness faded a bit when he never did use nuclear weapons, despite getting bogged down in the Ukraine War.

—Kim Jong Un probably developed the strongest reputation for madness of any of the leaders you mentioned. With extreme threats and surprising actions, such as executing his own uncle and brother in dramatic ways, he came to be seen as both extreme and unpredictable. He is probably the closest analogy for Trump.

- Madman theory is intended to be a crisis bargaining strategy, and it may have some benefits in crises. Outside of crises, however, having a leader who is perceived as a madman will cause the United States to be perceived as a less reliable partner for cooperation. It also reduces the US's image of responsibility and competence. Thus, I ultimately expect it to decrease the US's standing in the global order.



## TWO AMERICANS, TWO PATHS

On April 12, U.S. President Donald Trump launched a lengthy broadside against Pope Leo XIV. In a social media post, he described the head of the Catholic Church as being “weak on crime”, “weak on nuclear weapons”, and “terrible for foreign policy”. As he went on, the tirade became a personal attack, with Mr. Trump taking credit for Leo – born Robert Francis Prevost – getting picked to be the Pope. “He [Prevost] wasn’t on any list to be Pope, and was only put there by the Church because he was an American, and they thought that would be the best way to deal with President Donald J. Trump. If I wasn’t in the White House, Leo wouldn’t be in the Vatican,” he wrote.

Mr. Trump ended by urging ‘Leo’ to “get his act together as Pope, use Common Sense, stop catering to the Radical Left, and focus on being a Great Pope, not a Politician.”

Conflict between the Church and the state is not uncommon in Western history. But this was the first time in the modern era that the Commander-in-Chief of the most powerful Christian-majority state got into a public war of words with the pontiff. What made it more unusual was they were both Americans. To Mr. Trump’s annoyance, Pope Leo is the more popular American. A recent NBC News poll found the Pope to enjoy a 34-point net favourability rating, in contrast to Mr. Trump’s minus 12-point rating. Mr. Trump’s irritation with Pope Leo was not without grounds. He has faced little political resistance to ‘Operation Epic Fury’, the joint military operation with Israel that he launched against Iran on February 28. The Congress was under Republican control, and Democrat politicians were equally committed to unconditional military support for Israel. With very little pushback from establishment voices, the Trump administration sought to dress up what was essentially a war of choice as a quasi-religious mission of Christian righteousness – a so-called ‘just war’.

For instance, Secretary of War Pete Hegseth started evangelical worship services at the Pentagon. On March 25, he prayed for “overwhelming violence of action against those who deserve no mercy... We ask these things with bold confidence in the mighty and powerful name of Jesus Christ.” There was a concerted effort to portray the assault on Iran as a ‘holy war’ against “God’s enemies”. For Pope Leo, spiritual leader of 1.4 billion Catholics, remaining silent in the face of an attempt to enlist Jesus on the side of what he has described as an “unjust war” was not an option.

### **Moral condemnation**

As early as March 1, on Day 2 of the war, he warned of a “tragedy of enormous proportions”. From March through early April, as the war escalated, his public pronouncements gradually shifted in tenor from calls for dialogue and expressions of sadness at civilian deaths, to outright moral condemnation of the war. When Mr. Trump threatened to annihilate the Iranian civilisation, the Pope, in a direct rebuke, said it was “truly unacceptable”.

Finally, on April 11 during a Prayer Vigil, Pope Leo spoke out explicitly against religious justification for the Iran war. He issued an appeal to the “overwhelming majority who want peace” to use prayer as a “bulwark against that delusion of omnipotence that surrounds us and is becoming increasingly unpredictable and aggressive”. He further called out those who make “themselves and their own power into a mute, blind and deaf idol, to which they sacrifice every value, demanding that the whole world bend its knee”. Less than 24 hours later came Mr. Trump’s diatribe on Truth Social. He followed it up by posting an AI-generated image depicting himself as Jesus Christ healing the sick, deleting it after it provoked a public outcry.



Political observers have pointed out that it was politically unwise for Mr. Trump to get into a public confrontation with the Pope, especially with the mid-term polls around the corner. Catholics form 20% of the electorate in the U.S. Traditionally, their votes have split evenly between the Republicans and Democrats. But in the 2025 Presidential race, 55% of Catholics voted for Mr. Trump.

Even as the Pope continued to debunk his administration's religious justifications of the Iran war, saying, earlier this week, "God does not bless those who drop bombs," Mr. Trump was forced to go on the defensive, clarifying, "I'm not fighting with him," and that it's fine for the Pope to express his views and for them to disagree. However, two of Mr. Trump's lieutenants, Vice-President J.D. Vance and House Speaker Mike Johnson, took on the Pope. Mr. Vance, who converted to Catholicism seven years ago, averred that the Pope should restrict his comments to matters of theology and morality. Mr. Johnson countered the Pope's statement that "Jesus does not listen to the prayers of those who wage war" by invoking the 'Just War Doctrine', which has long been a part of Christian theology.

The Pope's spokespersons debunked both these arguments, noting that war is not merely a political or foreign policy issue but fundamentally a moral issue. Second, they pointed out that the 'Just War' doctrine has a long history of being abused by military aggressors, and unless there was an "immediate threat"—there was no immediate threat from Iran—such a claim does not hold. The Iran war was not the first instance of the Pope censuring Mr. Trump. In 2025, he had criticised Mr. Trump's anti-immigrant actions, labelling them as "inhuman". In a veiled reference to Mr. Trump, he said, "Someone who says I am against abortion but I am in agreement with the inhuman treatment of immigrants... I don't know if that's pro-life."

#### **Dangerous moral void**

Pope Leo, the first ever American Pope, has much in common with his predecessor, Pope Francis, the outspoken Argentinian priest who was also critical of American foreign policy and Mr. Trump's immigration politics. Like Francis, Pope Leo, too, has a strong Latin American connection, having spent two decades in Peru on the frontlines of political violence between the government forces and Shining Path, the far-left guerrilla group. Even as a foreign cleric in the country, he did not shy away from criticising the then-Peruvian President for his failure to prevent atrocities in the conflict.

Christian principles of pacifism are not new. But unlike earlier pontiffs who were reluctant to wade into geopolitics, or to criticise unprovoked American military aggression, Pope Leo sees the present moment, especially after the Gaza genocide, as a dangerous moral void that obliges him to speak up for the value of human life. As analysts have pointed out, it is also possible he views it as an opportunity to restore the Catholic Church's moral authority, which has suffered serious erosion in recent decades over clerical sexual abuse scandals.

Faced with an opponent against whom his trusted toolkit — tariffs, sanctions, bombs, regime change — are useless, Mr. Trump was forced to switch from instinctive bluster and intimidation to calm calculation. As for Pope Leo, he is clear that in a world "being ravaged by a handful of tyrants", peace "is everyone's responsibility", including the Pope's. As he put it in a post on X on April 16, "Woe to those who manipulate religion and the very name of God for their own military, economic, and political gain, dragging that which is sacred into darkness and filth."



## YELLOW LINE: HOW ISRAEL IS PUSHING BOUNDARIES, FROM GAZA TO LEBANON

When the 10-day ceasefire between Israel and Lebanon began on Thursday (April 16), there were hopes that the next round of talks, if it happens, would discuss the return of the Israel Defense Forces (IDF) soldiers from southern Lebanon.

### Key Takeaways:

- However, on Saturday, Israel announced that it has created a buffer zone, named the “Yellow Line”, which will enable the forces to prevent the locals from returning to their homes, destroy Hezbollah infrastructure, and continue striking beyond the zone while enforcing a defence line reaching up to the Litani River.
- Hardliners in Israel have adopted the phrase “Gaza Model” to describe the replication of this strategy in other theatres of conflict, most notably in southern Lebanon. When IDF stretched its operations northward in early 2026, figures like Defence Minister Israel Katz began referencing the “Gaza Model” to justify establishing a new “yellow line” stretching up to the Litani River.
- The international community and global watchdogs view the Yellow Line as a violation of international humanitarian law and the original tenets of the ceasefire agreement. Human rights monitor Euro-Med has called the Yellow Line a tool for systematic land seizure and forced ghettoisation.

### Do You Know:

- The Yellow Line was first introduced during the Gaza war in October 2025. It is a military demarcation and deployment boundary that effectively bifurcated the Gaza Strip between the territory under direct Israeli military control and Palestinian-controlled areas.
- It was included in the geopolitical lexicon within the draft frameworks of the October 2025 Gaza peace plan, proposed and released by US President Donald Trump. In a bid to draw such a boundary on the ground, IDF deployed yellow-painted concrete bollards equipped with 3.5-metre-high poles spaced at 200-metre intervals deep inside the enclave.
- According to the Israeli security perspective, the Line represents a forward defensive posture amid the security challenges posed by the

October 7, 2023, attacks by the Hamas militants. IDF doctrine holds a buffer zone necessary to prevent militant groups like Hamas and Hezbollah from regaining operational capabilities close to the Israeli border. While initially used as an interim deployment to ensure the disarmament of militant groups, the Line seems to have become a regular feature of the Israeli security strategy.

- Militarily, the Yellow Line represents IDF’s commitment to manage the challenges with available resources and a re-engineering of the operational theatre. The research group T-Politography conducted spatial analyses of the conflict in Gaza to understand the phenomenon, revealing that the line places approximately 58% of the Gaza Strip under direct, open-ended Israeli military control. IDF treats the area east of the line as a closed military and free-fire zone.



## 'PREDATOR' LEADERS SEEK TO IMPOSE NEW WORLD ORDER, SAYS AMNESTY

The leaders of the United States, Israel and Russia are seeking to impose a new “predatory” world order while most countries are too cowardly to stop them, rights group Amnesty International said on Tuesday.

Launching the global group’s annual report in London, Secretary General Agnes Callamard condemned U.S. President Donald Trump, Russia’s Vladimir Putin and Israel’s Benjamin Netanyahu as “predators”.

Such leaders have rejected the multilateral system developed since the Second World War in favour of a “vision without moral compass”, where “war, not diplomacy, rules”, the report said.

The report comes at a “challenging moment” that could “destroy all that was built up over the last 80 years”, Ms. Callamard said. “Throughout 2025, Mr. Trump, Mr. Putin and Mr. Netanyahu, among others, pursued economic and political domination through international destruction, suppression and violence on a massive scale,” she said.

“And rather than confront those predators, the majority of governments, most notably European governments, opted instead for appeasement.”

The spiralling conflict in West Asia is “just the latest example of this new predatory world order”, Ms. Callamard said.

China is not on the “predator” list because it has been “much more discreet”, she said, but the country nevertheless has “supported the junta and the military operations in Myanmar”.

Focusing on Israel’s actions in Gaza, the report said: “The world’s most powerful governments failed to take meaningful action to stop the genocide”

When it comes to facing up to these “bullies and looters”, almost every world leader “has demonstrated cowardice”, Ms. Callamard said.

The report also criticised the U.K. for proscribing the Palestine Action group and arresting thousands of peaceful protesters against the ban.

## LESSONS FROM HUNGARY’S VOTE AND ORBÁN’S DEFEAT

Hungarian voters have swept their far-right strongman Viktor Orbán out of office, ending his 16-year run as Prime Minister and electoral autocrat. Here are six lessons the world can take from them.

First, an illiberal democracy can be ousted in elections. Mr. Orbán prepared the model for what he called ‘illiberal democracy’ (or electoral autocracy), emulated by many others including Donald Trump and Narendra Modi. Such regimes create an impression of the Great Leader’s unstoppable popularity and electoral invincibility — or what we may call the ‘aayega to Orbán hi’ effect. This produces apathy: voting is either a display of fealty, or an exercise in futility.

Hungarians have shattered that illusion, and India must take note.



### Democratic resilience affirmed

Second, obituaries to modern universal democracy are premature. Realist experts, as well as illiberal leaders and ideologues, tell us that democracy has no universal validity, it is elitist and unpopular with the majority, even in the West, as proved by popular mandates for Brexit, Mr. Trump, Mr. Orbán, and Mr. Modi, and the stability of the Chinese and Russian regimes.

Péter Magyar, who defeated Mr. Orban, is probably as bad on LGBTQIA+ rights as Mr. Orbán and worse on immigration. But the election is not about him. It is about Hungarians affirming, for all of us, that a majority can vote against majoritarianism; that regime change against tyrants is an irrepressible human urge.

Third, a mandate for Ukraine. What is self-evident in Europe might be less so in India; Ukraine won the Hungarian election.

On winning the 2022 elections, Mr. Orbán claimed to have 'overpowered' not only his immediate rivals but also Ukrainian President Volodymyr Zelenskyy. Going by his party's 2026 campaign billboards, a visitor could be forgiven for assuming that Mr. Orbán's rival was Mr. Zelenskyy, not Mr. Magyar. Mr. Orbán asked Hungarian voters, 'Who should form government: Zelenskyy or me?'

He blamed Hungary's economic crisis on European Union (EU) aid to Ukraine — a pretext for a 'peace plan' that was a wishlist by Russian President Vladimir Putin. It is telling that Hungarian voters rebuffed this notion, despite it being legitimised by some geopolitical and economic pundits.

Instead, Hungarians blamed the wrecked economy on Mr. Orbán's corrupt cronyism that was inseparable from his position as Mr. Putin's Praetor in Europe. He used Russian oil profits to bankroll 'Europe's richest far-right think tank', which funnelled funds to parties such as Reform UK.

United States Vice-President J.D. Vance boasts that cutting off aid to Ukraine is 'one of the proudest' achievements of the Trump administration. To him, as to much of Europe's far-right, a Russian victory over Ukraine would be a victory for what Mr. Vance, in his electoral endorsement of Mr. Orbán, called the 'defence of Western/Christian civilisation and values'.

Like Mr. Trump and Mr. Putin, Israeli Prime Minister Benjamin Netanyahu too endorsed Mr. Orbán because he supports the project of folding Europe into a Russia-led Christian white-supremacist Eurasia, away from the 'evil, globalist' European Union.

### Some of the accusations made

Fourth, regime change accusations are confessions. Mr. Vance accused the EU of "one of the worst examples of foreign election interference". Mr. Orbán accused Ukraine of funding the opposition party Tisza, just as he has blamed Pride march protests on 'regime change' and 'colonial' interference by the EU. As is so often the case, the shrillest accusations are often confessions. Not only were Mr. Netanyahu, Mr. Trump and Mr. Vance star campaigners for Mr. Orbán, but he also invited Russian intelligence operatives and experts in online disinformation to run large-scale fake news campaigns. The Russian embassy itself stands accused of running a pro-Orbán influence operation.

Fifth, Mr. Orbán lost power, Chinese President Xi Jinping lost a friend. Mr. Xi personally called Mr. Orbán a friend. In 2024, when he visited Hungary, the police cracked down on Tibetans to prevent



any protests. This friendship was not just pragmatic, it was ideological. The founder of a leading media platform in China, Eric Xun Li, writes in an international left-wing journal that while Mr. Trump's MAGA movement sees China as a rival, it shares China's view of Ukraine, Europe, and universalist democracy, as do Mr. Putin and Mr. Orbán. He enthuses, "Hungary stands out as the most pro-China government in Europe", and is also "the country most closely aligned with Russia".

Mr. Xi has extolled the 'win-win cooperation' and 'all-weather' partnership between Hungary and China. But Hungarians noticed that the Belt and Road Initiative projects were 'win-win' for Mr. Orbán's childhood friend and Hungary's richest businessman, Lőrinc Mészáros, and 'lose-lose' for Hungary's economy.

Despite fierce protests by Hungarian students, the Orbán regime went ahead with a project backed personally by Mr. Xi: a campus of Shanghai's Fudan University in Hungary. Pre-tax construction costs for this campus were "estimated at \$1.8 billion, more than the Hungarian government spent on its entire higher-education system in 2019".

#### **Sustain the momentum**

Sixth, it is time to discard the 'West vs rest' world map. We are accustomed and thus attached to a West versus rest map of the world. But there is no room on that map for Hungary, which was the battleground to decide if Europe should be a de-democratised outpost for Mr. Trump, Mr. Netanyahu, Mr. Putin and Mr. Xi. Mr. Orbán was the sole European leader with the distinction of flouting International Criminal Court arrest warrants for both Mr. Netanyahu and Mr. Putin on genocide charges.

Hungarians defeated not just a national tyrant but also an illiberal international alliance. One hopes that pro-democracy people of the world will unite to do the same.



# DreamIAS



## NATIONAL

### INDIA VIOLATING ITS OBLIGATIONS, SAYS UN RAPPOREUR

India “is violating its obligations under international law”, said UN Special Rapporteur on the Occupied Palestinian Territories, Francesca Albanese, in an interview with The Hindu.

Ms. Albanese’s comments were in response to questions about the findings in her latest report titled ‘Torture and Genocide’, which she presented at the 61st session of the UN Human Rights Council, on March 23.

The report has examined Israel’s “systematic use of torture against Palestinians” from the occupied Palestinian territory, since October 7, 2023. It notes how various forms of torture — such as forced displacement, mass killings, deprivation, among others — have “become integral to the “domination of and punishment” inflicted on men, women and children”.

Responding to how she views India’s legal and moral responsibility by associating with Israel and its war, Ms. Albanese said that while India is “violating its obligations” under International law, it might also be “facing responsibility”.

“In an ideal world, if there was a court that was capable of dealing with all member states who have violated the law to support Israel causing harm to the Palestinians, probably the Indian government would face this court as well,” Ms. Albanese said.

During Prime Minister Narendra Modi’s state visit to Israel in February, he spoke to the Knesset hailing India’s cultural, political and military relationship with Israel. He described Israel as the “fatherland” of Indian-origin Jews, while the visit also brought upgraded ties sealed with a ‘Special Strategic Partnership’. Within days, the U.S. and Israel initiated a war against Iran.

According to the report, Israeli authorities have arrested more than 18,500 Palestinians since October 2023, which include at least 1,500 children. As of February 26, Israel still holds 9,245 Palestinians in various detention facilities, many of them held without trial.

On March 30, the Knesset passed a death-penalty law, which according to critics, targets only Palestinians prisoners.

Ms. Albanese stated that Israel’s National Security Minister Itamar Ben-Gvir — who pushed for the law — was the face of the policy which has institutionalised torture.

“What Mr. Ben-Gvir has done is simply to institutionalise and to make legal what until some years or decades ago was believed to be exceptionally incidental. Torture is not incidental. It is central to a broader system of violence aiming to destroy the Palestinians as individuals and as a people, as body and mind, as capacity to exist in the future, and even to have a decent memory of their past,” Ms. Albanese said.

### NO BRICS CONSENSUS ON WAR, INDIA’S CHAIR SUMMARY NOTES ‘DEEP CONCERN’

With opinion divided within the BRICS grouping on the US-Israel war on Iran, a consensus was elusive and Delhi issued a Chair’s summary on Friday and said that “members expressed deep concern on the recent conflict in the Middle East [West Asia] and offered views and assessments on the matter”.



**Key Takeaways:**

— The Chair’s statement is a declaration by the host and the chair of any grouping, which is a summary of the statement, but has not been agreed to by all the members. Usually, a joint statement which is agreed to by all the members is issued after any multilateral meeting. This was a practice in the G20 meetings in the run-up to the summit in 2023, when there was no consensus on the Russia-Ukraine war.

— India, which holds the chair of BRICS in 2026, said, “The BRICS Deputy Foreign Ministers and Special Envoys on the Middle East and North Africa (MENA) met on 24 April 2026 in New Delhi, and exchanged views on the current situation in the region. Members expressed deep concern on the recent conflict in the Middle East and offered views and assessments on the matter”.

— In early March, The Indian Express had reported that on March 13 Tehran reached out to Delhi to take the lead in issuing a statement on behalf of the BRICS, currently chaired by India, condemning the US and Israeli strikes against Iran in the previous two weeks. This put Delhi in a diplomatic pickle since it has stayed away from taking sides in the ongoing conflict.

— The BRICS grouping has Brazil, Russia, India, China and South Africa (the original five), along with Egypt, Ethiopia, Iran, Saudi Arabia, the UAE and Indonesia. Saudi Arabia and the UAE, which host US bases and personnel, have been targeted by Iranian missiles and drones.

— The fact that all three countries are in the BRICS has made diplomatic navigation difficult for India. India, which holds the rotational presidency of the grouping for 2026, is expected to host the summit of BRICS leaders later this year.

— With Iran reaching out to India for a statement by BRICS, Delhi had made it public in mid-March that it has been difficult to forge a consensus on the issue because of involvement of BRICS member countries in the ongoing conflict.

— Without naming any country, the Ministry of External Affairs’ official spokesperson Randhir Jaiswal had said, “Some members of the BRICS are directly involved in the current situation in the West Asia region, which has impacted forging a consensus on a common BRICS position on the ongoing conflict. As Chair of BRICS, India has been facilitating discussions among members through the Sherpa channel.”

—India is likely to host the BRICS Foreign ministers’ meeting on May 14-15, which Chinese Foreign minister Wang Yi and Russian Foreign Minister Sergey Lavrov are expected to attend, sources said. Iran’s Foreign Minister Seyed Abbas Araghchi may join virtually, depending on the circumstances.

—While there are many moving parts as a result of the ongoing conflict and the ceasefire talks between US and Iran, sources said, Delhi is preparing the ground for the meeting of the Foreign ministers.

—The timing of the BRICS foreign ministers is significant since India has not been able to forge a consensus among the BRICS grouping on the war in West Asia.



**Do You Know:**

— The acronym BRIC was first used in 2001 by Goldman Sachs in their Global Economics Paper, 'The World Needs Better Economic BRICs'. The paper projected that Brazil, Russia, India, and China would be among the world's largest economies in the next 50 years or so.

— As a formal grouping, BRIC started after the meeting of the leaders of Russia, India and China in St. Petersburg on the margins of the G8 Outreach Summit in 2006. The grouping was formalised during the first meeting of BRIC Foreign Ministers on the margins of the UNGA in New York in 2006.

— The first BRIC Summit was held in Yekaterinburg, Russia, in 2009. It was decided to include South Africa at the BRIC Foreign Ministers' meeting in New York in 2010, and accordingly, South Africa attended the 3rd BRICS Summit in Sanya, China, in 2011.

**NEW DELHI TO HOST FOURTH INDIA-AFRICA FORUM SUMMIT END OF NEXT MONTH**

After a gap of 10 years, New Delhi will host the fourth India-Africa Forum Summit next month, bringing together leaders from across the African continent and charting a roadmap for further cooperation between the two sides across various sectors.

**Key Takeaways:**

- To be held on May 31, this will be the fourth edition of the summit, after earlier editions held in 2008, 2011, and 2015, and will be significant in the present geopolitical and geo-economic context.
- Speaking at the unveiling of the logo, theme, and website for the upcoming summit in New Delhi on Thursday, External Affairs Minister S Jaishankar emphasised that the two regions are not merely partners in development, but also "in shaping a better world".

Jaishankar said, "As the world navigates through complex geopolitical and geo-economic challenges, our partnership assumes particular significance. It will be a message of stability in a turbulent world, of reliability in an uncertain one and of solidarity in difficult times."

• Announcing the summit, the Ministry of External Affairs (MEA) said, "India will host the fourth India-Africa Forum Summit (IAFS-IV) on 31 May 2026 in New Delhi in collaboration with the African Union Commission."

• "The IAFS-IV will bring together leaders from across the African continent, the African Union (AU) Commission, along with representatives from regional organisations to strengthen the enduring India-Africa partnership, and lay out a roadmap for further expanding cooperation across diverse sectors," the statement from the ministry said.

• The summit will be held under the theme "IA SPIRIT: India Africa Strategic Partnership for Innovation, Resilience, and Inclusive Transformation", reflecting the comprehensive nature of the India-Africa partnership. In the lead-up to the Summit, a series of preparatory meetings will be held, including the India-Africa Foreign Ministers' Meeting on May 29, deliberating on key areas of cooperation between the two sides.

• The summit is a platform for dialogue with African countries and the AU Commission and towards advancing mutually beneficial collaboration. The last edition of the India-Africa Forum



Summit resulted in a major expansion of Indian development assistance and capacity-building programmes for Africa, as per the MEA.

**Do You Know:**

- Africa is the world's second-largest continent, covering about 30.3 million square kilometers, including adjacent islands. This constitutes about 20 per cent of Earth's land area and 6 per cent of its total surface area. As the second-most-populous continent, Africa's population of approximately 1.52 billion accounts for about 18 per cent of the world's population. Algeria is Africa's largest country by area, and Nigeria is its largest by population.
- Officially, it has been described as the "apex institutional mechanism for India's engagement with Africa." Established in 2008, it covers areas ranging from trade to people-to-people relations. An important player in these discussions is the African Union, the body representing the 55 member countries of the African continent
- The first summit was held in 2008 in New Delhi, which saw the adoption of the Delhi Declaration and the India-Africa Framework for Cooperation. The declaration spoke of "redefining and re-invigorating the decades-old partnership and historical and civilizational links between the African continent and India."
- The second summit was held in 2011 in Addis Ababa, Ethiopia, which is also the seat of the African Union Commission. The resultant declaration was more detailed in its scope, and noted "substantial" flows of Foreign Direct Investment and concessional loans from India to Africa in the preceding years.

#### HOW A 'LOST TRIBE' IN NORTHEAST INDIA FORGED TIES WITH ISRAEL

Around 250 members of the B'nei Menashe Jewish community of Manipur and Mizoram, who claim descent from one of the "ten lost tribes of Israel", landed in Tel Aviv on Thursday night.

**Key Takeaways:**

- The B'nei Menashe, numbering around 7,000, belong to the Mizo and Kuki tribal communities across the two states. Though thousands of community members have migrated to Israel since the 1990s, the batch that arrived in Israel on Thursday was the first to be relocated under an Israeli government relocation programme. More will follow them.
- Academic Gideon Elazar, in *Jewish Communities in Modern Asia* (2023), writes: "The identification of different groups of people in the region of upland Southeast Asia... as remnants of the tribes began with the highly successful efforts of Protestant missionaries in the mid-nineteenth century."
- Baptist missionaries are believed to have brought the Bible to a people who had long believed in messiahs. This belief became a significant factor in the spreading of Christianity, with the missionaries often identified as the restorers of culture. Elazar notes: "In the case of the B'nei Menashe, it would seem that a similar dynamic was created as part of the violent resistance to Indian control over the region in the 1960s."
- In 1951, a Mizo mystic named Chhalianthanga, or Mela Chala, claimed he had seen in a dream that Mizos, Kukis and Chins were descendants of ancient Israelite tribes, says Sayan Lodh, a PhD researcher at Presidency University. "I would guess that it was due to their dissatisfaction with



the Christianity that was being practiced there,” says Lodh, whose research focuses on Judaising movements in India.

- The Judaising movement among the Chin-Kuki-Mizo tribes in Manipur and Mizoram actively developed after the late 1970s, he told The Indian Express.

- According to Lodh, propelling the movement was an Israeli organisation called Amishav, led by a Rabbi called Eliyahu Avichail, which aimed to bring all the scattered tribes to Israel “to fulfill the conditions for the coming of the Messiah”. The group began expressing their interest in establishing ties with Jews and the state of Israel in the 1950s, and the Mizo Israel Zionism Organization was founded for that purpose in 1974. Lodh says they gradually started to research Israel, contacted the Jewish communities of Bombay and Calcutta, and even sent a letter to the Knesset (the Israeli Parliament). “By the 1980s, their transformation into Judaism was complete, with help from Amishav,” says Lodh. Much of the population in Mizoram and Manipur, however, remains Christian.

#### **Do You Know:**

- Around 722 BCE, the Assyrian empire conquered northern Israel and resettled many of the people living there. According to Jewish tradition, the banished people were part of ten tribes — Reuben, Simeon, Dan, Naphtali, Gad, Asher, Issachar, Zebulun, Ephraim and Manasseh.

- For centuries, Western Jews have searched for the descendants of these “lost tribes” around the world, including in the Indian subcontinent.

The Jewish community of Mizoram and Manipur believes it is descended from the largest of these tribes — Manasseh. B’nei Menashe literally means “sons” of Menashe or Manasseh.

The community’s members believe their exiled tribe headed east, wandering for centuries through Persia (modern-day Iran) and Afghanistan before settling in what is today Northeast India.

- In 2005 the Chief Rabbinate of Israel (the ultimate authority on Jewish religious matters within Israel) declared the B’nei Menashe the “Lost Seed of Israel”, officially recognising them as a lost tribe, based on inconclusive DNA evidence produced by scientists in Kolkata. However, scientists at the Technion-Israel Institute of Technology in Haifa rejected these results and conducted their own tests, which were also inconclusive. In both cases, traces of the Cohen modal haplotype (a genetic marker found in some individuals identifying as Cohanim) were detected in a few samples. These findings, along with the Rabbinate’s ruling, led Israel to permit the migration of the B’nei Menashe to Israel, albeit in small batches; at times the process was halted.

- During the second half of the 20th century, another Indian community claimed descent from a lost tribe — the Telugu-speaking B’nei Ephraim of Andhra Pradesh.

This community claims to be descendants of the tribe of Ephraim who arrived in India via Central Asia approximately 1,000 years ago. The identification of the group with Judaism began with a voyage made by their leader Shmuel Ya’acobi to Jerusalem in the 1980s. “The group belongs to the untouchable Dalit caste, and the claim to Jewish descent is often viewed as a means to overcome harsh caste discrimination by attracting attention from higher castes and from Jews in the United States and Israel,” writes Elazar.



- Another group often associated with the lost tribes are the Pashtun of Afghanistan and Pakistan. Many are interested in exploring traditions of their Hebrew heritage. However, unlike the B'nei Menashe, they are devout Muslims and the issue of conversion is highly sensitive.

## IN CHINESE MILITARY'S NEW ATLAS DRONE SWARM SYSTEM, MUCH TO WORRY FOR INDIA

In late March, the Chinese People's Liberation Army (PLA) unveiled its new Atlas drone swarm system (atelasi). The one-of-a-kind system combines features like simultaneous mass launch, control of nearly 100 drones, and a single human touchpoint to control them all.

### Key Takeaways:

- The system is like a mini-battlefield network on wheels, where drones are truck-launched, remotely navigated by a single operator, and capable of scouting, communicating, confusing, and attacking defence across a large perimeter. More importantly, it is a very small, independent unit that is easy to hide, camouflage, and operate from remote corners.
- The Atlas system can simultaneously launch up to 96 small- and medium-sized speed drones that can form defensive structures and precision formations, both to defend and attack.
- The launch time between drones is less than three seconds. Thus, within 300 seconds, the system can launch all 96 drones for an attack, reconnaissance, or to confuse the adversary. For context, amid the recent West Asia war, the US advanced E-3 Sentry AWACS aircraft at the Prince Sultan Airbase in Saudi Arabia was destroyed by a swarm of 29 drones and a few ballistic missiles.
- The entire Atlas system consists of three units — a Swarm-2 ground combat vehicle, a command vehicle, and a support vehicle. A single Swarm-2 ground combat vehicle can carry and launch 48 fixed-wing drones, and a single command vehicle can simultaneously control up to 96 drones in a swarm. Its size and mobility make it extremely useful for reconnaissance, interception, and attack on high-value targets.
- Currently, China's Atlas system, at least theoretically, outpaces and outsmarts all its competitors.

### Do You Know:

- In the past 50 years, China has consistently learned from others' wars. For instance, the two Gulf Wars compelled the PLA to pursue a strategy of winning local wars under informatised conditions. Similarly, China is taking notes on drone use from recent conflicts, including the Russia-Ukraine war, the Israel-Palestine conflict, India's Operation Sindoor, and the US's Operation Epic Fury.

On the ground, China has amassed a substantial number of surveillance, attack, reconnaissance, advanced, and loitering ammunition drones and drone systems. The intelligent guesswork is that China has tens of thousands of Unmanned Aerial Vehicles across all four variants — smaller drones, medium-altitude long-endurance, high-altitude long-endurance, and advanced, novel, and stealth drones.

- Commissioning the Atlas system with the PLA's Eastern and Western Theatre Commands and the Xinjiang and Tibet Military Districts could influence any future conflict's outcome at various stages. The Atlas system can confuse and overwhelm Taiwan's and India's air defences, forcing these countries to waste multiple resources on eliminating them, which is difficult given its mobility and camouflage.



Furthermore, the system's algorithm-driven kill chain and autonomous, independent target identification make it lethal against strategically valuable targets.

Especially on the India front, Tibet's advanced road and rail network enables quick deployment and launch. These swarms could also be used to disturb the Indian army's logistics and infrastructure lines by attacking the approach roads to India's forward-deployed posts. Behind enemy lines, attacks isolate the forward posts, thereby making it easier for the aggressor to coerce them.

Finally, counter-jamming these swarms is challenging since they share information and adjust formations and targets without central human intervention.

## INDIA EXTENDS OCI CARD ELIGIBILITY IN SRI LANKA TO SIXTH GENERATION

ON A two-day official visit to Sri Lanka, Vice-President C P Radhakrishnan on Sunday announced the extension of the eligibility for Overseas Citizen of India (OCI) card for the Indian community in the island nation till the sixth generation. Until now, this was limited to the fourth generation.

### Key Takeaways:

- "In the case of Sri Lanka, this will now be extended to the fifth and sixth generations of the diaspora," said Foreign Secretary Vikram Misri at a press briefing in Colombo on Sunday evening. "OCI cards would now be issued on the basis of documents that, in several cases, are issued by the government of Sri Lanka."
- The two leaders also discussed the ongoing Indian project implementation in Sri Lanka with emphasis on the \$450 million Cyclone Ditwah aid offered by India, according to the Ministry of External Affairs (MEA).
- The discussions, Misri said, underscored India's evolution from a traditional neighbour to a reliable "first responder" during regional crises. Dissanayake expressed deep gratitude for India's "Neighbourhood First" policy, citing three critical interventions that have stabilised the island nation: Economic Crisis in 2022: India's financial lifelines during Sri Lanka's debt crisis; and Cyclone Ditwah last year, as per the MEA.

### Do You Know:

- Introduced in August 2005, the OCI scheme provides for registration of all Persons of Indian Origin (PIOs) who were citizens of India on January 26, 1950, or thereafter, or were eligible to become citizens of India on the said date.
- An OCI card holder — essentially a foreign passport holder — gets a multiple entry, multi-purpose life-long visa for visiting India, and is exempt from registration with local police authority for any length of stay in the country.
- An applicant is not eligible to get an OCI card if his/her parents or grandparents have ever been a citizen of Pakistan or Bangladesh. However, the spouse of foreign origin of a citizen of India or spouse of foreign origin of an OCI, whose marriage has been registered and subsisted for not less than two years, can apply for an OCI card.

Foreign military personnel either in service or retired are also not entitled for grant of OCI.



- An OCI card holder is not entitled to vote; to be a member of a Legislative Assembly or of a Legislative Council or of Parliament; to hold Indian constitutional posts such as that of the President, Vice President, Judge of the Supreme Court or High Court. Also, she cannot normally hold employment in the government.

#### WHY SC USED ITS 'COMPLETE JUSTICE' POWERS TO FIX THE HIGHWAYS

The Supreme Court passed a significant order for preventing road accidents and issued a 13-point directive to the road departments at the centre and state level in its suo motu case, where 34 lives were lost in two separate road accidents in November 2025.

##### Key Takeaways:

— The order, dated April 13, came down heavily on road agencies National Highways Authority of India (NHAI) and state public work departments (PWDs) and said that a road, particularly a high-speed Expressway, must not become a corridor of peril due to administrative lethargy or infrastructural gaps. It also recognised that Article 21 of the Constitution, which deals with protection of life and personal liberty, also includes safety of commuters on road.

— “The loss of even a single life to avoidable hazards like illegal parking or black spots etc., represents a failure of the State’s protective umbrella. The ‘Right to Life’ enshrined under Article 21 of the Constitution of India is not merely a guarantee against the unlawful taking of life, but a positive mandate upon the State to ensure a safe environment where human life is preserved and valued,” said the court.

— The top court exercised its extraordinary powers under the Article 142 of the Constitution in the matter.

— In its directions, the court has clearly said that no heavy or commercial vehicle shall park or stop on any National Highway carriageway or paved shoulder except at a designated bay, lay-bye, or Wayside Amenity. The court said that the authorities should use Advanced Traffic Management System (ATMS) to track such vehicles, send alerts to police with GPS-timestamped photographic evidence and integrate it with e-Challan.

— These directions must be complied within 60 days from the date of the Supreme Court order. It has also prohibited the construction and operation of any new dhaba, eatery, or commercial structure within the Right of Way (ROW) of any National Highway.

— The court has ordered that District Magistrates shall enforce the demolition of all new and existing unauthorised structures. State governments shall further issue notifications within 60 days prohibiting change of land use within 40 metres (residential) and 75 metres (commercial) from the mid-point of any National Highway, the court said.

— The court has called for the constitution of dedicated highway surveillance teams of state police and transport department personnel like NHAI to ensure round the clock monitoring of highways and its adjacent areas.

— It has also asked the NHAI to completely operationalise its ATMS with TMCC cameras, VSDS speed detectors, VIDS cameras, variable message sign boards, and Emergency Call Boxes across all four and six lane highways and expressways.



— For quick response in an accident case, the court has directed NHAI to deploy BLS ambulances and recovery cranes at intervals not exceeding 75 km on every National Highway stretch, at toll plazas, Wayside Amenities, or dedicated posts.

— National Highways constitute approximately 2% of India's total road length but account for nearly 30% of all road fatalities.

**Do You Know:**

— Article 142 provides a unique power to the Supreme Court, to do “complete justice” between the parties, where, at times, the law or statute may not provide a remedy. In those situations, the court can extend itself to put an end to a dispute in a manner that would fit the facts of the case.

## ON THE YASHWANT VARMA PROBE'S FUTURE

The resignation of Justice Yashwant Varma has revived a question Indian law has not answered satisfactorily in the past 14 years. When a judge quits in the shadow of parliamentary removal, does the statutory inquiry against him fall with him? The question has arisen before. When Justice P.D. Dinakaran resigned in July 2011, the committee was wound up, despite its sittings after his resignation. Justice Soumitra Sen's case went further. His inquiry committee returned adverse findings. The Rajya Sabha voted to remove him in August 2011. He resigned on the eve of the Lok Sabha vote, and the motion was dropped as infructuous. Justice Varma has now resigned as his committee nears conclusion. The first two episodes produced no reform. The third is still in progress.

Speaker Om Birla stands at the same fork. One road leads back to the choice Vice-President Hamid Ansari made in September 2011, when he wound up the committee examining charges against Justice P.D. Dinakaran. The other was set out that year by jurist G. Mohan Gopal, a member of that committee, in a letter to his two colleagues. The letter, later obtained under the RTI Act, was read and circulated. Its reasoning prevailed within the committee, which did not bring the inquiry to an end. Mr. Ansari did.

### Constitutional provisions

Mr. Gopal's case begins with Article 124(5). The Constitution asks Parliament to enact a law regulating two exercises. The first is an investigation into whether the allegations against a judge are proved. The second is the presentation of an address seeking his removal. The first produces findings of fact and guilt. If these are established, the second results in a political decision on removal. One is owed to the truth; the other to Parliament's conscience.

The Judges (Inquiry) Act, 1968 preserves the distinction. Sections 3 and 4 govern investigative work and depend on no decision of the House. The inquiry, in Mr. Gopal's reading, is a public good in itself. It is owed to the citizenry, entitled to know whether serious charges against a high constitutional functionary stand or fall. It is owed to a judge who maintains his innocence, for whom only a formal clearance settles the record.

### The Supreme Court's observations

The Supreme Court has endorsed the dichotomy in terms unchallenged for three decades. In Sub-Committee on Judicial Accountability vs. Union of India (1991), the Constitution Bench treated the investigative stage as judicial in character. The decision to remove was political and rested only



with the two Houses. In *Sarojini Ramaswami vs. Union of India* (1992), the Court went further. Until the report reaches the Speaker, the process is statutory and open to judicial review.

If the inquiry is a statutory procedure and not a parliamentary one, its survival cannot depend on the respondent's continued tenure. A disciplinary proceeding does not collapse because the officer resigns.

The Act, read with the Judges (Inquiry) Rules, 1969 already anticipates a judge who does not participate. Rule 8, 'Effect of non-appearance', covers two situations: where notice under Rule 5 may have been served on the judge, or where it may have been published. In either case, if the judge does not appear, the committee may proceed in his absence. The rule-makers thus foresaw a respondent who might not cooperate. Their answer was to let the committee continue.

The opposite view, adopted by Mr. Ansari in 2011, carries a consequence that bears naming. If resignation extinguishes the inquiry, every judge facing statutory proceedings acquires a way to abort them. He can read the committee's direction of travel and leave office before an adverse finding is written. Evidence already gathered becomes unusable. Benefits are preserved and reputation is not formally dented. The record is sealed.

Mr. Gopal called this an "absurd situation" that the Constitution could not have intended. A removal procedure the respondent can unilaterally terminate cannot, in any serious sense, be called one. The framers designed the two-thirds majority, the two-House requirement, and the investigative threshold to make arbitrary removal difficult. They cannot have meant those safeguards to double as an easy exit.

#### **Gaps in the 2011 precedent**

Mr. Ansari gave no public reasoning for winding up the committee. The reasoning emerged only when the Rajya Sabha Secretariat replied to the RTI petition. The reply admitted that the 1968 Act provided no mechanism for dissolving a duly constituted committee. The decision, it said, had been taken "on the basis of law and precedents". The precedents named were two American cases. Judge Samuel Kent of the Southern District of Texas had resigned on 30 June 2009. Judge George English of the Eastern District of Illinois had resigned on 4 November 1926. Neither bore the load. Kent had pleaded guilty to sexual misconduct charges before quitting. English was impeached by the House of Representatives in 1926 and resigned to avoid the Senate trial. Justice Dinakaran's case resembled neither. No charge had been proved; no House had spoken. The law, on the Secretariat's own reading, was silent.

The silence the Secretariat conceded is the one Mr. Gopal's 2011 letter sought to fill. The first occasion to apply it closed before it could be tested. A second occasion is now before the Speaker.

#### **CHADHA COULD NOT HAVE DEFECTED OR SPLIT AAP – IF HIS BILL HAD PASSED**

If the first legislation he had proposed as Rajya Sabha's youngest member four years ago had become law, Raghav Chadha would not have been able to exit the AAP, along with six other party members of the House, and "merge with" the BJP, an announcement he made two days ago, citing a two-thirds majority of AAP's House strength of 10.

**Key Takeaways:**

- In fact, had his proposed Bill been enacted, Chadha would have needed the support of seven, not six, from his party to cross over. And the present team would have been barred from contesting elections for six years for splitting the party.
- Because the Constitution (Amendment) Bill that Chadha, then a trusted aide of AAP chief Arvind Kejriwal, brought to the House as a Private Member's Bill on August 5, 2022 – this was three months after he entered Rajya Sabha – sought a stiffer anti-defection law, one that would require a three-fourths majority, not two-thirds, to engineer a legitimate split.
- Citing “nefarious floor crossing by legislators in total disregard of the democratic wishes of the electorate who returned them”, Chadha’s proposed Bill sought to strengthen anti-defection norms through more stringent provisions for the Tenth Schedule of the Constitution, which pertains to disqualification of elected representatives on ground of defection.
- The proposed legislation, according to its objectives, aimed to “strengthen our democracy and help our public representatives in becoming informed lawmakers rather than political party workers” by amending Articles 102 and 191 of the Constitution and increasing the threshold for inter-party mergers from 2/3rd to 3/4th of a party’s legislative strength through an amendment to the Tenth Schedule.

**Do You Know:**

- The 91st Constitutional Amendment Act of 2003 did two things.
  - First, it said that to avoid disqualification proceedings, at least two-thirds of the members of a party in a House had to switch over to another party, something that would be seen as a merger. If the numbers were below two-thirds of that party’s strength of the House, the shifting members would be liable to face disqualification proceedings.
  - Second, the Act laid down that the total number of ministers in a government would not exceed 15% of the total strength of Lok Sabha or state Assembly, adding that the number would not be less than 12 in very small states.
- This Act strengthened the 10th Schedule as it stood after the 52nd Constitutional Amendment Act 1985 which inserted the above Schedule. However, the 10th Schedule in 1985 recognised a split of one-third of the members of a party in a House as legitimate. As this, too, was misused many times, the 91st Constitutional Amendment Act made switching over more difficult by deleting the one-third reference from the 10th Schedule, and mandating that two-thirds had to switch for a merger that would save them from disqualification proceedings.
- Article 102 (2) of the Constitution states ‘A person shall be disqualified for being a member of either House of Parliament if he is so disqualified under the Tenth Schedule.’ According to 191 (2), ‘A person shall be disqualified for being a member of the Legislative Assembly or Legislative Council of a State if he is so disqualified under the Tenth Schedule.’

**OPP SUBMITS FRESH NOTICE IN RAJYA SABHA TO REMOVE CEC**

The Opposition Friday submitted a fresh notice in Rajya Sabha seeking the removal of Chief Election Commissioner (CEC) Gyanesh Kumar, listing nine charges of “proven misbehaviour” and backed by 73 MPs from multiple parties.

**4<sup>TH</sup> FLOOR SHATABDI TOWER, SAKCHI, JAMSHEDPUR**

20

**Telegram:** [http://t.me/DreamIAS\\_Jamshedpur](http://t.me/DreamIAS_Jamshedpur)



**Key Takeaways:**

— According to sources, a new notice was submitted with “fresh grounds” for the removal of Kumar, with the coordination and collection of the notice handled by the TMC and Congress.

— “We have submitted the notice with 73 signatures today afternoon. This time, we have given fresh grounds for the removal of the CEC. We have mentioned specific instances with regard to the CEC which are grounds for his removal from the post,” said a source privy to the matter.

— Giving details of the notice, Congress communication in charge, and MP Jairam Ramesh said, — “The grounds are proven misbehaviour constituted by acts and omissions committed on and after 15 March 2026,” said Ramesh.

— “There are now nine specific charges against the CEC that have been documented in great detail and that simply cannot be denied or whitewashed away. His continuation is an assault on the Constitution. It is an absolute disgrace that the man continues to be in office to do the bidding of the PM and HM,” he added.

— The first charge against Kumar is “continued partisan asymmetry in the enforcement of the model code of conduct”, under which the Opposition has mentioned Prime Minister Narendra Modi’s address to the nation on April 18, saying that a complaint was submitted by Opposition parties, saying the address was in violation of the Model Code of Conduct and that the CEC took no action against it.

— This comes weeks after the notice for motion to impeach Gyanesh Kumar was rejected by Lok Sabha Speaker Om Birla and Rajya Sabha Chairman C P Radhakrishnan, who had both said that the allegations levelled by the Opposition members “lack the proof necessary to constitute misbehaviour which establishes a prima facie case for removal of Chief Election Commissioner”.

**Do You Know:**

— As per Article 324 (5) of the Constitution, the “Chief Election Commissioner shall not be removed from his office except in like manner and on the like grounds as a Judge of the Supreme Court.” It also says that Election Commissioners can only be removed on the recommendation of the Chief Election Commissioner.

— The article also states that this process is “subject to provisions of any law made by Parliament” on the matter. Following that, Parliament passed the Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service and Term of Office) Act, 2023 in December 2023. Section 11 of the Act provides for the resignation and removal process. It sticks to the same process as mentioned in the Constitution.

— The process for removing a judge of the Supreme Court is as per Article 124 of the Constitution and the Judges (Inquiry) Act, 1968. Article 124 (4) says that a Supreme Court judge can be removed “by an order of the President passed after an address by each House of Parliament supported by a majority of the total membership of that House and by a majority of not less than two-thirds of the members of that House present and voting has been presented to the President in the same session for such removal on the ground of proved misbehaviour or incapacity.”



## INVIDIOUS SPEECH

While Prime Minister Narendra Modi's address to the nation on April 18 differed from a speech he made at a similar election-eve juncture in 2019, it was nonetheless problematic. In 2019, following a successful anti-satellite missile test, private news channels aired a speech by Mr. Modi extolling the mission and his government's commitment to the country's technological prowess even as the Model Code of Conduct (MCC) was in force ahead of the general election. Late last week, Mr. Modi's transgression was greater as Doordarshan and Sansad TV broadcast his speech even as he accused the Congress, DMK, Trinamool Congress and Samajwadi Party of committing the "sin of foeticide" after they blocked the combined women's reservation and delimitation Bills, and suggested that women voters would punish them electorally in the Tamil Nadu and West Bengal elections on April 23. Thus far, the Opposition in Parliament as well as numerous academics and activists have written to the Chief Election Commissioner (CEC) urging that the Election Commission of India (ECI) should sanction Mr. Modi for violating the MCC. In a familiar but also increasingly dispiriting turn, the ECI has yet to respond. It is expected to act reasonably quickly, as it has against Opposition parties.

Since the facts are not in dispute in this instance and the ECI's reluctance to sanction the Prime Minister has become well-known, it is hard to believe that the delay is benign. The constitutional body allowed the Prime Minister's monthly radio programme to continue broadcasting during the State polls in 2015 and 2017 and permitted NaMo TV to air in 2019 after prior approval of its contents. In 2024, the ECI issued a notice regarding a controversial speech by Mr. Modi in Rajasthan, but addressed it to the BJP president rather than to him. After the 2019 missile test, critics argued that the ECI's refusal to sanction had created a loophole whereby major announcements could be framed as 'official', thus having an electoral impact while affording the ECI plausible deniability. As the letter to the CEC specified, Mr. Modi's violation is clear if he delivered his address without the ECI's prior approval. If the ECI did approve it, it must explain why it saw fit to grant the Prime Minister this precious privilege, investigate the speech's contents, remove it from official platforms, and sanction Mr. Modi. The ECI's inaction — rendered more pronounced by the two States voting on April 23 — only reinforces its partisan character, and undermines the fairness of polls as well as its own credibility.

## ON DELIMITATION AND PARLIAMENT SEATS

### The story so far:

The Union government had introduced the Constitution (131st Amendment) Bill to increase the maximum number of Lok Sabha seats from the existing 550 to 850. It had also introduced a Bill to set up the Delimitation Commission in 2026. However, the Constitution Amendment Bill was defeated in the Lok Sabha, and thereafter, the Delimitation Bill was withdrawn by the government.

### What are the existing provisions?

Delimitation refers to the process of fixing the number of seats and the boundaries of territorial constituencies in each State for the Lok Sabha and Legislative Assemblies. This exercise is carried out by a Delimitation Commission set up through an Act of Parliament. Such exercises have previously been conducted based on the 1951, 1961, and 1971 Censuses. The number of Lok Sabha seats, based on the 1971 Census, was fixed at 543 when the population was 54.8 crore. The number has been frozen, based on the 1971 Census, to encourage population control measures.



As per the current constitutional provisions, this number is to be readjusted based on the 2027 Census.

In 2023, through the 106th Constitutional Amendment, Parliament provided for one-third reservation of seats for women in the Lok Sabha and State Legislative Assemblies. This would be through delimitation based on the next Census.

#### **What are the Bills?**

The 131st Constitution Amendment Bill proposed three key changes. First, to increase the maximum number of Lok Sabha seats from 550 to 850. Second, to empower Parliament to determine the Census based on which delimitation would be carried out. Third, to delink one-third reservation for women from the next Census in 2027 and to enable the same based on delimitation as per the last published Census of 2011.

The Delimitation Bill, 2026, provided for the setting up of a Delimitation Commission from time to time by the Union government. This Commission would allocate Lok Sabha seats among the States and Union Territories based on the latest Census figures. Had the Bill been passed and a Commission immediately constituted, the allocation would have been based on the 2011 Census.

#### **What are the issues?**

The government argued that increasing the number of Lok Sabha seats by around 50% (from 543 to 816) would enable the seamless implementation of one-third reservation for women in an expanded House. This would have resulted in approximately 272 seats being reserved for women.

Union Home Minister Amit Shah gave an oral assurance that the number of seats in each State and Union Territory would be increased by 50% on a pro-rata basis, thereby not altering the current proportion of their representation in the total strength of the Lok Sabha.

However, the Opposition raised several objections. Firstly, there was no need to bundle women's reservations with delimitation. The 106th amendment in 2023 enables one-third reservation for women within the existing 543 seats. Second, the draft Bills did not contain an explicit provision for a pro-rata 50% increase in seats for each State or Union Territory. In fact, the Delimitation Bill provided that the allocation of seats would be as per the latest Census population. Third, the Opposition contended that such an important and sensitive subject requires detailed discussions and should not be rushed through in a brief session.

#### **What can be the way forward?**

Democracy implies government by the people. It follows that the government is elected by the majority with the broad principle of 'one citizen-one vote-one value'. This principle has been diluted in the interest of population control since 1976, when the delimitation exercise was frozen based on the 1971 Census. Given the federal nature of India's polity, the next delimitation process has to take into consideration the variation in population growth across States.

Mr. Shah offered to include an explicit provision to guarantee a 50% pro-rata increase in seats for each State and Union Territory. It was unclear whether this would have been provided in the Constitution Amendment or the Delimitation Bill. If it had been provided in the Constitutional Amendment, any future changes for the same could have been effected only by a two-thirds majority. However, if it had been provided in the Delimitation Bill, amendments could be made by a simple majority.



Article 81(2) of the Constitution provides that the ratio between the number of seats and the population of each State should, as far as practicable, be the same across States. While a 50% pro-rata increase may offer a middle ground between democratic and federal principles, it would still be appropriate to discuss the same in more detail through parliamentary committees. The other urgent reform needed in our democracy is to empower the local bodies of Panchayats and Municipalities, which engage with the citizens on a daily basis.

#### U.P. POLICE CHASING COUPLES, INVESTIGATING MARRIAGES INSTEAD OF PROBING CRIMES: HC

Terming it a “disturbing trend”, the Allahabad High Court criticised the Uttar Pradesh Police for “chasing couples and virtually investigating marriages” instead of focusing on crimes with which “their hands are full”.

A Bench of Justices J.J. Munir and Tarun Saxena was hearing a petition filed by a couple seeking the quashing of an FIR lodged by the police in Saharanpur on a complaint by the woman’s father, who had alleged that his daughter was abducted by the man she married. The Bench, in its order dated April 21, directed the State Director General of Police (DGP) to take corrective steps to address practices in which police chase young couples who have married out of their own will.

“We find a disturbing trend these days where the police, as in the present case, are registering FIRs and chasing couples, virtually investigating marriages, instead of investigating crimes with which their hands are full. They are wasting their time in a business that is not theirs,” the Bench noted.

After reviewing the facts and examining the marriage certificate issued by the Uttarakhand government, which recorded the couple's marriage in a temple, the court noted that filing an FIR in response to a missing person complaint was unjustified. Upon interacting with the woman, who stated her desire to live with her husband, the Bench ruled that the police action amounted to a “serious violation of her personal liberty”.

The court, hence, quashed the FIR and underscored that adults have the fundamental right to decide where and with whom they live, marry, or spend their lives. It added that the legal status of adulthood must be respected, along with the constitutional values that protect individual liberty.

The Bench also strongly criticised police conduct, stating, “The police are doing a great disservice by registering FIRs such as these, and more than that, chasing young couples, sometimes with ulterior motives to forcibly separate them and send the bride back to her parents or family. These actions are absolutely illegal, and some of them are offences.”

#### KARNATAKA CABINET APPROVES SUB-CLASSIFICATION FOR SC QUOTA

In yet another formula arrived at to fork out internal reservation among the 101 Scheduled Castes in Karnataka, the Congress government on Friday announced a matrix with 5.25% each to Category 1 (Madigas and allied castes/Dalit left) and Category 2 (Holeyas and allied castes/Dalit right), and 4.5% to Category 3 (Bhovi, Lambani, Korama, Koracha and 59 nomadic communities) within the 15% reservation for SCs.



The government's decision, announced during a special Cabinet meeting, has come amid concerns and opposition raised by the Dalit right (Category 1) and "touchable" communities in Category 3 that have felt the sub-classification restricted their opportunities in public education and employment avenues.

"It is a historic decision and the Cabinet unanimously agreed to the formula. The party had committed to internal reservation through the Chitradurga convention and election manifesto in 2023," Chief Minister Siddaramaiah said, post-Cabinet briefing. "I believe that all Dalit groups will agree to it," he added.

This is the second sub-classification attempted by the State, which earlier had apportioned 6% each to Dalit left and Dalit right communities and 5% to "touchable" communities and Alemaris within the 17% reservation for Scheduled Castes.

#### **On nomadic groups**

The government, however, dropped plans to initiate recruitment process with 17% reservation for SCs and 7% for STs after facing legal hurdles over breaching the 50% cap on reservation.

Specifically addressing the concerns of 59 nomadic (Alemari) communities, who have been included in Category 3 along with relatively better off communities, the CM said that one in every five posts reserved for the Category 3 will be reserved to Alemari communities. "If a candidate is not available from the Alemari communities, it will remain within Category 3 that will be available to other communities." Incidentally, the Alemari communities have approached the Karnataka High Court against the earlier sub-classification within 17% reservation.

Friday's decision was based on a report submitted by the technical committee headed by the Chief Secretary, who had provided options to the government.

#### **Recruitment to begin**

The Chief Minister said that the process to fill up 56,432 posts will be rolled out immediately with the new internal reservation matrix. "The earlier notifications issued with 6:6:5 ratio will be withdrawn and new notifications will be issued as per the Cabinet's decision. Recruitment process will start immediately."

Reiterating the government's commitment to implement 17% reservation to Scheduled Castes and 7% reservation to Scheduled Tribes after clearing legal hurdles, Mr. Siddaramaiah said, "As many as 6% posts (2% for SCs and 4% for STs) will be kept as a backlog till the time the Karnataka High Court decides on the case."

Currently, the High Court is hearing the case on 56% reservation, which has breached the 50% cap fixed by the Supreme Court in Indira Sawhney Case of 1992 after Mandal Commission report was implemented.

### WHAT TELANGANA'S SURVEY SHOWS ABOUT CASTE INEQUALITY

For decades, Indian policymakers have relied on income as the measure of disadvantage. A landmark government report from Telangana, based on one of the largest population surveys ever conducted in the country, offers a stark correction: when caste itself is measured, the gap is not incremental — it is exponential.



The Telangana Socio-Economic, Educational, Employment, Political and Caste (SEEEPC) Survey 2024, a cross-sectional, census-scale enumeration covering 97% of the State's population (35 million people), introduces a rigorous Composite Backwardness Index (CBI). The findings, published in a government report funded by the Government of Telangana with no external conflicts of interest, show that Scheduled Castes (SCs) and Scheduled Tribes (STs) are not merely "disadvantaged." They are structurally locked in.

### **A gap too wide to ignore**

Using 57 main questions along with several sub-questions, administered through household visits across the State, the survey calculated CBI scores on a scale where higher values indicate greater backwardness. The results are stark.

An SC community scores 96 out of 100 on the backwardness index, while a general caste (GC) community scores 31. In other words, by the government's own multidimensional metric — covering education, occupation, living conditions, assets, and social integration — the average SC household is three times more backward than the average upper-caste household. The gap is not a margin of error; it is a chasm.

Perhaps the most politically consequential finding concerns scale. The survey assessed 242 distinct castes across Telangana. Of these, 135 castes, a staggering 67% of the State's population, recorded a CBI score higher than the State average.

The report explicitly notes that "not all backward castes are equally backward." There is significant heterogeneity within the Backward Classes category: some groups score close to SCs, while others approach GC levels. This finding destroys the utility of treating any broad category, SC, ST, or BC, as a monolith. Policy cannot be one-size-fits-all.

### **Inequality across spaces and systems**

The survey disaggregates outcomes across rural and urban areas. While urbanisation improves absolute outcomes, a Dalit family in Hyderabad may fare better than one in a remote village. However, urban-rural disparities persist sharply in education, income, and housing quality. Upper castes disproportionately benefit from city growth, while SC/ST households remain concentrated in urban informal settlements with amenities barely superior to rural slums.

The survey also identifies high educational backwardness among ST communities, even relative to SCs. This suggests that tribal communities face distinct barriers, including geographic isolation, language, and cultural distance from mainstream institutions, that require targeted, not generic, interventions.

### **What the data demands from policy**

The Independent Expert Working Group behind the SEEEPC report is unequivocal in its recommendations. The single most crucial lever is education — but not merely access.

"Strengthening government school systems and ensuring quality education is crucial," the report states. This is a pointed rebuke to the current policy obsession with school enrolment (which has improved) over learning outcomes (which remain abysmal for disadvantaged castes). Without functional, high-quality government schools in SC/ST-majority areas, the cycle of occupational segmentation documented in the SEEEPC report will continue across generations for some more time.



The report is not without limitations. The data are self-reported, which may introduce bias: respondents could under-report discrimination or misrepresent social practices. Moreover, certain forms of untouchability were not explicitly captured, suggesting that the extent of social exclusion may be even greater than documented.

### **Growth without equity**

Telangana is among India's fastest-growing States. Its GDP is rising, its cities are expanding, and poverty rates are declining.

Yet the SEEEPC Survey proves that economic growth and caste inequality operate on separate tracks. An SC household remains three times more backward than a GC household, not because of income but due to structural exclusion embedded in education, labour markets, and social systems.

The message to policymakers is simple: income-based targeting has failed the math test. Only caste-sensitive, multidimensional, and rigorously targeted interventions, beginning with government schools, can begin to close a gap of this magnitude.

## **REAL EQUITY GAP IN HIGHER EDUCATION**

The new University Grants Commission (Promotion of Equity in Higher Education Institutions (HEIs)) Regulations, 2026, have sparked considerable debate and protests within academic circles and among the general public, both in support of and in opposition. Although the Supreme Court has stayed their implementation, observing that they are vague and potentially open to misuse, the issue has raised several important academic questions — particularly regarding the empirical aspects of equity, discrimination, and caste-based crimes.

### **Equity in HEIs**

One of the most important measures of equity is the representation of various social groups in employment and education at different levels within HEIs. A look at Table 1, based on the UGC Annual Report 2023, reveals four key trends in Central universities.

First, compared to the constitutionally mandated reservations for SC (15%), ST (7.5%), and OBCs (27%), the share of these social groups across all levels of teaching and non-teaching jobs is lower. Second, this gap is larger at higher levels of employment than at lower levels. Third, unlike in employment, representation in admissions at all levels (UG, PG, M.Phil, and Ph.D.) for all social groups is more or less close to the reservation mandated by the Constitution. Fourth, encouragingly, ST representation in admissions is 1.5 to 2.7 times higher than the mandated level, except at the undergraduate level, where it is slightly lower.

Overall, this suggests that, at the macro level, inequity is more of a problem in employment than in admissions.

It is worth noting that gaps in admissions can be filled within a year, but the same is not true for employment. Even with the strict implementation of reservations, bridging this gap will take many years, as it depends on the retirement of employees who were appointed when reservations were not properly implemented.



### Data on discrimination in HEIs

Comprehensive data on discrimination-related complaints across all social groups in HEIs is not available, limiting objective and comparable analysis. However, according to data submitted by the UGC to a parliamentary panel and the Supreme Court, 378 complaints were reported by Equal Opportunity Cells (EOCs) and SC/ST Cells in 2023-24 across 704 universities and 1,553 colleges.

Since a breakdown of EOC complaints by social groups is unavailable, a holistic assessment is constrained. Nonetheless, even if one assumes that all EOC complaints are caste-based, the total number of such cases amounts to approximately 3.7 per one lakh students and about 0.16 per institution (assuming an average enrolment of 4,000 students per HEI). Moreover, the disposal rate for complaints related to SC/ST issues was as high as 90%, an important and often overlooked point.

### NCRB data on caste-based crimes

Data on crimes against SCs and STs are published by the NCRB, which classifies all crimes committed against these groups by “Others” as caste-based crimes, which is not accurate. Moreover, the NCRB reports only those crimes against SCs and STs committed by individuals outside these communities. It does not provide disaggregated data on crimes occurring within SC and ST communities, as well as comparable data for other social groups. This limits the scope of comparative analysis.

According to NCRB data for 2023, crimes against SCs and STs committed by “Others” account for about 0.9% and 0.2% of total recorded crimes, respectively. However, given the limitations of the available data, it may be assumed that the distribution of crimes committed against different social groups broadly reflects their share in the population.

Assuming that crime distribution broadly reflects population shares, SCs (16.6%) and STs (8.6%) would account for 16.6 and 8.6 crimes out of every 100, respectively, with the remaining 74.8 attributed to Others.

It follows from this proportional exercise that the likelihood of a person belonging to SC/ST committing a crime against someone belonging to the SC is roughly 52 times higher than that of a person from other groups. Similarly, the likelihood of a person belonging to SC/ST committing a crime against someone belonging to the ST is roughly 125 times higher than that of a person from other groups.

If we go by the assumption that the share of crimes against SC and ST exceeds their population share, any such excess would necessarily be reflected in crimes occurring within SC/ST communities, since the share of crimes committed by Others is already known and fixed.

### Issue of underreporting

An important caveat is the underreporting of crimes, especially against SC and ST, by Others. However, even if one assumes, purely hypothetically, that the actual number of such crimes is 100 times the reported figure (an extremely high multiplier), the likelihood of crimes against SC and ST committed by members of their own communities would still be 3.2 and 14.3 times higher, respectively, than those committed by Others.



Moreover, chargesheeting rates in cases involving crimes against SC and ST are 81.2% and 79.5%, respectively, compared to an overall average of 72.7%. This suggests comparatively stronger procedural follow-through in cases involving crimes against SC and ST than in Others.

These results are not surprising, as crimes tend to occur among individuals in close social and geographic proximity. Conversely, a very low crime rate against a particular social group, compared to the average, may indicate social segregation rather than harmony.

### **Problems with the regulations**

The regulations suffer from three major shortcomings. First, the analysis suggests that the primary challenge in HEIs lies in achieving equity in employment — particularly at leadership levels — rather than in admissions or reported discrimination.

Second, the regulations seem to confuse equity with anti-discrimination.

Equity entails providing targeted support to ensure fair outcomes, whereas anti-discrimination focuses on identifying and penalising discriminatory conduct, typically through complaint-resolution mechanisms. Interestingly, the title refers to “promotion of equity” and the preamble emphasises both equity and eradication of discrimination, the operative provisions, particularly points 4 (Duty to Promote Equity), 6 (Equity Helpline), and 7 (Measures for Promotion of Equity), are confined largely to the latter. Third, the regulations appear to assume the complete elimination of crimes based on identities. While desirable, this is unrealistic without a broader reduction in overall crime. Overly stringent measures may even risk reinforcing social segregation.

### **What can be done?**

Efforts should focus on promoting equity by increasing the representation of reserved categories in employment in HEIs, especially at higher levels, while fostering integration across social groups. Over time, growing interactions may lead the rate of crime against SC/ST to converge with the average crime rate, which could initially result in some increase in reported cases against SC/ST. Therefore, reducing the general crime rate, rather than addressing crimes in isolation, is essential for strengthening social cohesion and building a more inclusive environment.

Since HEIs shape societal values, the UGC should promote measures that foster mutual respect and understanding, while curbing student politics that encourage factionalism and teach young minds to exploit every opportunity for narrow or petty gains.

## **LONG UPSC PREP CYCLES TAKE A TOLL ON ASPIRANTS' MENTAL HEALTH**

For lakhs of young Indians, the national civil services examination is not just a test: it becomes part of who they are. More than 10 lakh aspirants take the examination every year. Many spend several years preparing, often relocating to coaching hubs such as Delhi and Hyderabad.

With only around a thousand positions on offer, the examination is among the world's most competitive. Experts are concerned that this prolonged, high-stakes process is also reshaping aspirants' sense of self.

For many aspirants, preparation is marked by long hours of study and constant anxiety about outcomes. One aspirant who requested anonymity said the uncertainty is worse than the workload: “My biggest fear is not performing to my full potential despite consistent effort.”

**4<sup>TH</sup> FLOOR SHATABDI TOWER, SAKCHI, JAMSHEDPUR**



### Hidden psychological cost

Passing the qualifying exam for the Union Public Services Commission (UPSC) comes with a sustained form of psychological strain. In a 2024 study involving UPSC aspirants, Madiha Fatima, PhD scholar and senior research fellow at the University of Lucknow's Department of Psychology, found that 70% of aspirants reported moderate to severe distress.

"The pressure of uncertainty whether one will qualify, the vast syllabus, fear of forgetting, and the ever-changing exam pattern all contribute," she said. Persistent self-doubt, she added, often leaves aspirants questioning whether they are capable or simply wasting their time.

"Privileged students don't face the same stress. Underprivileged aspirants struggle to afford courses or materials. Some work part-time, reducing rest and study time," Ms. Fathima said.

Years of repeated failures also erode self-confidence, leading to avoidance and isolation that affects psychological health. She pointed to delayed answer keys, unpredictable paper patterns, and the vast seat-to-aspirant gap as structural stressors.

According to independent psychiatrist A.K. Mishra, such prolonged identification reshapes how aspirants perceive setbacks: "Aspirants often begin to anchor their sense of self-worth almost entirely around the examination."

### Chronic stress, burnout

The psychological experience of preparing for the UPSC examination differs from other competitive examinations, including the Joint Entrance Examination (JEE) for the IITs and the National Eligibility cum Entrance Test (NEET) for medical education. This is because aspirants typically prepare for the UPSC exam for several years, which leads to chronic rather than short-term stress.

According to Dr. Mishra, such protracted preparation shifts stress from an acute phase to a persistent background state of cognitive load, decision fatigue, and reduced recovery. He also said prolonged uncertainty can produce "chronic anticipatory stress", where repeated attempts without success diminish the individual's sense of control and also contribute to emotional exhaustion.

Abhishek Pathak, a psychiatrist in Lucknow, also said long-term preparation shares features with chronic stress and burnout. Prolonged uncertainty can lead to "anticipatory anxiety and identity fusion." However, he noted that the impact is bidirectional — it enhances risks in some people and promotes growth in others — and that early support can mitigate adverse outcomes.

Prolonged uncertainty is particularly challenging for young adults in their 20s, a phase typically associated with career formation and financial independence. When many years in this stage of life are instead devoted to a single exam, the stakes can become intensely personal.

### Why the dream endures

Psychology alone can't explain the toll that preparing for the UPSC exam takes. Sociologists have argued that the appeal of the civil services is rooted in India's social structure, where the bureaucracy has long held authority and prestige and families widely perceive the services to be a path to upward mobility.



South Asian University sociologist Sumedha Dutta traced this aspiration to the colonial origins of India's civil services. After independence, the prestige that came with a member of the civil services, including the high salary, job security, housing, and pension, remained intact. "Civil servants are part of the power elite," she said.

The yearning for government jobs didn't decline even in the post-liberalisation era even as the private sector burgeoned. "Private sector jobs, despite high salaries, do not match up in terms of stability, numerous perks, pension, power, and prestige," Dr. Dutta said.

She pointed to matrimonial advertisements where civil servants rank highly, plus the media's role in valorising successful aspirants, as factors that reinforce the exam's status in the collective imagination.

The aspirant ecosystem surrounding the exam in fact reflects this collective aspiration. Entire neighbourhoods in Delhi and Prayagraj are dedicated to coaching institutes, libraries, and hostels, forming a parallel education economy.

Among them, coaching institutes — while they are central to this ecosystem — remain largely unexamined in shaping or mitigating psychological distress. The aspirant quoted earlier said, "Coaching centres benefit financially from prolonged preparation cycles. There is no accountability, no oversight."

Within this ecosystem, aspirants form tightly knit peer groups and share educational materials, attend lectures together, and discuss current affairs late into the night. While these networks offer support, they can also intensify pressure through constant comparison. As Dr. Dutta said, this in-group solidarity is also shaped by a sense of collective superiority.

"UPSC aspirants already envision themselves as part of the elite group which runs the administration of the nation state," she explained. "They believe other career pathways are 'mere professions' while civil servants are the ones who decide the fate of other professionals in many ways."

This shared imagination of a secure, prestigious future, she added, can also help aspirants navigate the hardships that come with prolonged preparation.

#### **Inside the system**

Psychologists have stressed that while ambition and perseverance are valuable, preparation ecosystems must also recognise the emotional risks of prolonged uncertainty. Access to counselling, peer support, and realistic career guidance could help reduce this burden.

Harivansh Chaturvedi, director-general of the Institute of Integrated Learning in Management, New Delhi, said that while many aspirants spend years preparing, doing so reflects individual choice within a highly aspirational system rather than a purely systemic failure. However, he acknowledged that unsuccessful attempts can still result in significant personal loss of time and effort.

To this end, he suggested faster evaluation, more frequent preliminary exams, streamlined selection, and specialised undergraduate programmes aligned with public administration.



Ms. Fatima said most research studies have been descriptive: they have identified problems, not solutions. She also argued that the scale of aspiration needs rethinking and suggested encouraging youth towards other professions or startups.

Dr. Mishra added that preparation could, over time, take a maladaptive form in some cases, particularly when it loses flexibility and proportionality. “Key indicators include persistent distress, neglect of alternative roles, inability to reassess goals, and compulsive continuation driven by fear of disengagement,” he said.

At the same time, sociologists argue that the popularity of the civil services exam reflects deeper structural issues in India’s employment landscape. Dr. Dutta said the UPSC ecosystem “unravels India’s development inadequacies”. Rising GDP hasn’t matched jobs, the informal sector offers little security, and there is a major skill gap.

For many graduates, particularly from smaller towns, the civil services thus remain one of a few career options seen as both prestigious and secure.

## WHY HAS PUNJAB INTRODUCED A NEW LAW ON SACRILEGE?

### The story so far:

On April 13, the Punjab Assembly unanimously passed the ‘Jaagat Jot Sri Guru Granth Sahib Satkar (Amendment) Bill, 2026’, aimed at harsher punishment for sacrilege of the Guru Granth Sahib, including life imprisonment. It proposes to amend the 2008 law enacted under the Shiromani Akali Dal-Bharatiya Janata Party government. A series of so-called sacrilege incidents in recent years prompted successive governments to pursue legislation. In 2016, the SAD-BJP government passed two amendment bills — The Indian Penal Code (Punjab Amendment) Bill, 2016, and The Code of Criminal Procedure (Punjab Amendment) Bill, 2016 — prescribing life imprisonment for desecration of the Guru Granth Sahib, but the Centre returned them, asserting that all religions must be treated equally under India’s secular framework. In 2018, the Congress government again introduced two amendment bills, but they did not receive Presidential assent. Last year, the Aam Aadmi Party government tabled the Punjab Prevention of Offences against Holy Scriptures Bill, which was subsequently sent to a select committee for review.

### What is the Bill’s objective?

The State government argues that recent incidents have attempted to disturb peace and communal harmony in Punjab. It says the amendment seeks to deter such acts by ensuring stringent punishment, including life imprisonment, for those found guilty.

### What does it propose?

The proposed legislation states that anyone committing sacrilege of the Guru Granth Sahib can face imprisonment of not less than seven years, which may extend to 20 years, along with a fine between ₹2 lakh and ₹10 lakh. In cases involving criminal conspiracy with the intent to disrupt peace or communal harmony, the punishment ranges from a minimum of ten years to life imprisonment, with fines between ₹5 lakh and ₹25 lakh.

All offences under the law will be cognisable, non-bailable, and non-compoundable. Those aiding sacrilege will be treated as equally culpable.



The proposed law also includes a clause that holds the guardians of an offender legally accountable for acts of sacrilege. The definition of ‘custodian’ has been introduced, making each custodian fully responsible for the safe custody, protection, and prevention of misuse or loss of Guru Granth Sahib. The offence shall be investigated by a police officer, not below the rank of Deputy Superintendent of Police or Assistant Commissioner of Police, as the case may be, says the amendment Bill.

Punjab Chief Minister Bhagwant Mann termed the legislation as a ‘historic correction,’ saying it closes long-standing loopholes left by previous governments. “I assure the August House that this bill marks the end of desecration in the future as it will ensure that no one will ever dare to indulge in such a heinous crime,” he said.

#### **How does the Bill define sacrilege?**

The Bill defines sacrilege as any wilful and deliberate act intended to desecrate the Guru Granth Sahib. This includes physical damage, defacing, burning, tearing, or theft of the saroops of Guru Granth Sahib or part, or through words, either spoken or written, signs, visible representations, or electronic means that are intended to hurt the religious sentiments of those persons professing the Sikh faith.

#### **Why are critics raising concerns?**

Critics argue that the amendment departs from the original purpose of the 2008 Act, which was aimed at regulating the printing, publication, and distribution of the Guru Granth Sahib to preserve its sanctity. Expanding it to include stringent criminal penalties such as life imprisonment may make the law legally vulnerable.

Former Punjab Advocate General A.P.S. Deol points to a key legal issue: “while the State does have the authority to prescribe life imprisonment, as criminal law falls under both the State list and the Central list governing the Bharatiya Nyaya Sanhita (earlier Indian Penal Code), a State government cannot impose a sentence exceeding what is already laid down in the BNS/IPC. Under Section 295A of the IPC or 299 of BNS, the punishment for sacrilege is capped at three years. By prescribing life imprisonment through this amendment, it is bound to create a direct conflict between Central and State law, in which the Central law would prevail, making the current amendment difficult to defend on legal grounds”.

## **IS INDIA’S MAOIST INSURGENCY FINALLY OVER?**

#### **The story so far:**

On May 21, 2025, Nambala Keshava Rao alias Basavraj, then general secretary of the banned CPI (Maoist), was killed in an encounter in Chhattisgarh’s Abujmarh area. The operation was led by the District Reserve Guard and the CRPF’s CoBRA unit. His successor, Thippiri Tirupati alias Devji, surrendered by February 2026 along with cadres and weapons. With most Central Committee leaders killed or arrested, the organisation is now largely leaderless. With these developments, can the five-decade-old Maoist movement be considered “finished,” as Home Minister Amit Shah has claimed, in line with his March 31 deadline to end the insurgency?



### Is the Maoist movement over?

Recent developments suggest that the banned Left-Wing Extremist (LWE) movement has been effectively wiped out. Since the launch of Operation Kagar (Black Forest) in 2024, coordinated operations across LWE-affected States have led to approximately 3,840 surrenders, 2,220 arrests, and 600 deaths. Among these were seven Central Committee or Politburo members who were arrested or surrendered, and 12 who were killed.

By late 2023, Central Committee membership had already shrunk from around 40 to 21. Today, only two members remain.

Yet, the Maoists cannot be written off entirely. They have shown remarkable resilience before. In 1991, when they were known as the People's War Group (PWG), they were reduced to a single dalam. By 2000, they had bounced back, establishing a "Red Corridor" spanning nearly 12 States — from Kerala to the Nepal border. When the Maoist Communist Centre (MCC) joined hands with the PWG to form CPI (Maoist) in 2004, they set up a "Janatana Sarkar" (people's government) across large parts of Chhattisgarh.

Information within the organisation has always been tightly controlled. For instance, Madvi Hidma's induction into the Central Committee was not publicly known until around 2020. Despite the recent losses, the party's internal structure was never openly discussed.

What can be said with certainty is that their dominance in armed conflict has nearly ended. In 2013, they controlled about 180 districts. Today, their armed presence is largely confined to just two districts in Chhattisgarh — Bijapur and Sukma.

### Why did the movement start, and how did it grow?

The movement traces its roots to the peasant uprising led by Charu Majumdar in 1967 in north Bengal. It began in Naxalbari, in Darjeeling district — hence the term "Naxalite".

Majumdar propagated Marxism-Leninism wrapped around Mao Zedong's principle that revolution should be driven by rural, landless peasants through protracted armed struggle, rather than by urban industrial workers. He advocated Mao's idea that "political power grows out of the barrel of the gun." Feudal landlords and authorities supporting them were termed "class enemies."

The Naxalbari movement was quickly crushed, but not before Majumdar broke away to form the All India Coordination Committee of Communist Revolutionaries. The movement spread to Srikakulam in Andhra Pradesh, where leaders such as Vempatapu Satyanarayana and Adibhatla Kailasam led an uprising between 1967 and 1970, seeking to implement "land to the tiller".

By 1972, leaders, including Majumdar, had been killed, and the movement subsided — until Kondapalli Seetharamaiah and Dr. Kolluri Chiranjeevi revived it by forming the People's War Group in the Telangana region, which was then part of the whole Andhra Pradesh.

Kondapalli took the party to new heights by recruiting young minds from colleges, universities, and NITs.

With the formation of CPI (Maoist) under Muppala Lakshmana Rao alias Ganapathi, the movement became what then Prime Minister Manmohan Singh called "the single biggest internal security threat." The Maoists created wings including the PLGA under Central Military Commission, transforming into a full-force guerrilla army trained with modern weapons. Trained by the LTTE,



they became experts with IEDs and wreaked havoc until about 2018, killing hundreds of security personnel and branding tribals as police informers.

#### **What led to their downfall?**

From Majumdar's days, the Naxalites have faced internal strife — one reason for their splintering into about 40 groups. The rift centred on ideological issues: one faction favoured violent individual annihilation, while another emphasised mass mobilisation. These tensions also led to leadership changes, with leaders such as Kondapalli eventually being sidelined by younger leadership.

Once they committed to militarisation, they achieved some brutal successes. From 2005 to 2013, the Maoists reigned in Chhattisgarh, with 700 to 1,000 casualties annually. However, the narrative gradually changed. By 2004, the Maoists had already been pushed out of Andhra Pradesh by the elite Greyhounds force. Every LWE-affected State then formed similar special forces. Operation Kagar delivered the final blow, decimating their strongholds.

The Maoists also faced a “tribal vs non-tribal” conflict. Though tribals from Chhattisgarh comprised the main fighting force, the leadership remained largely non-tribal. This created a rift, leading to Madvi Hidma's promotion as a tribal representative.

Another factor was their outdated ideology. With government welfare schemes reaching tribal heartlands, the concept of “class enemy” lost relevance.

A document by Ganapathi acknowledged these problems, urging cadres to reconnect with intellectuals and identify new issues. Some leaders had even advocated dialogue with the government as early as 2010. Senior leader Cherukuri Rajkumar alias Azad was reportedly seeking peace talks when he was killed in an encounter in 2010. Reports also suggest they approached then Chhattisgarh Chief Minister Bhupesh Baghel to negotiate entry into mainstream politics. However, declining recruitment, sustained security pressure, and the relative success of democratic protests undermined the case for armed struggle.

#### **Is a revival possible?**

A revival of armed insurgency seems difficult. However, a prominent Hindi daily in Chhattisgarh reported that many surrendered to focus on rebuilding their base underground. Surrendered leaders such as Mallojula Venugopal alias Sonu and Devji remain under constant surveillance. Much depends on the rehabilitation process.

Legal challenges also persist. Many surrendered cadres face multiple serious charges, including murder. Families of slain security personnel or other victims could file protest petitions against the withdrawal of prosecution. The courts must be convinced before prosecution can be withdrawn — and aggrieved parties always have superior rights.

### **INDIA'S POST-LWE FUTURE, FROM RED SUN TO NEW DAWN**

Fourteen years ago, in West Midnapore in West Bengal and Simdega in Jharkhand — two districts worst affected by Left Wing Extremism (LWE) — young tribal girls often practised hockey with battered sticks and boundless resolve, even juggling footballs on uneven earth amid sal forests. As Prime Minister's Rural Development Fellows with the Ministry of Rural Development, our close work with the District Magistrates in both districts, and, many other initiatives, helped set up an



astroturf hockey academy and a block football training centre under the central government-financed Integrated Action Plan.

Today, Salima Tete carries forward Simdega's hockey legacy as captain of the Indian women's hockey team, and Mamta Hansda from that same rugged football centre in West Midnapore is now part of the Indian women's senior football team. These are sweat-soaked fields which speak a thousand words.

### **A change in the arc**

In 2009, Prime Minister Manmohan Singh identified LWE as the most serious internal security threat facing the nation. In April 2010, India witnessed its deadliest Maoist attack on security forces, resulting in the loss of 76 Central Reserve Police Force personnel in Dantewada (Chhattisgarh). For years afterward, the violence did more than claim lives; it hollowed out the state's everyday legitimacy, crippled routine governance across vast areas, and normalised an abnormal reality in which citizens lived in fear of both gunfire and encounters.

Sixteen years later, on March 30, 2026, during the Budget session of Parliament, Union Home Minister Amit Shah informed the House that India is now free of Maoist insurgency. It is important to acknowledge what this has required — and what it signals. There has been visible political commitment, improved coordination, and a willingness to work closely with State governments across political parties, through joint strategic and operational planning, institutional focus and an insistence that security gains are consolidated. But if security has delivered a decisive outcome, governance in LWE-affected regions must now deliver a decisive transformation. Over the last decade and a half, in our work with dedicated governance action plans in some of these difficult regions, one lesson stands out: security gains do not complete the journey; they create an opening. What secures the peace dividend is governance credibility led by an empathetic and focused political and executive leadership.

For a post-LWE future, that credibility must translate into local value economies in erstwhile affected districts and blocks that have long lived with the double bind of extractive development and a resource curse. Learnings from dedicated area-based plans — Jungle Mahal in West Bengal; Saranda and Budha Pahad in Jharkhand; Malkangiri in Odisha; and the recent multi-year Bastar plan in Chhattisgarh — point to a common direction; a community-centred, diversified economic strategy that strengthens local consumption, attracts patient public and private capital, and restores community stewardship over the commons. These plans have mattered not because they are perfect, but because they signalled a necessary shift — from episodic interventions to sustained reconstruction, with the state showing up not occasionally, but reliably.

### **The foundation to build on**

That shift must now be deepened by strengthening forest produce systems with fair procurement and local processing; agroforestry and allied livelihoods; incentives for small and medium enterprises through capital support; community-led eco-tourism; and regional economic plans that enable stable employment close to home. Designed with safeguards, and ensuring benefit-sharing and genuine local ownership, these measures can lead to dignified livelihoods that end insecurity and fear.

However, this economic transition will be achieved only if administrative presence sustains beyond the strategic "area domination" exercise. Rural roads, schools, health services, banking access, women's collectivisation, nutrition systems and accountable frontline delivery must be



pursued swiftly and predictably, alongside patient community listening and respectful citizen engagement — treating people not as “beneficiaries” but as rights-bearing stakeholders.

This is why the post-LWE moment is not an end in itself, but a moral threshold. We must acknowledge the paradox at the heart of the “red corridor” — the tribal citizen. The Adivasi household in a forested hamlet beyond the last motorable road has lived for decades between the state and the non-state — between the gun and the encounter, the slogan and the raid, forced levy and forced silence. A citizen, yet invisible; a rightful claimant of the Constitution, yet peripheral in its everyday delivery. When policy language speaks of “incidents” and “districts”, it often forgets that the unit of pain is a human being: a mother whose son was recruited; a schoolgirl whose hostel barely functioned; forest-dwelling communities whose rights claims still await clearance; a young man who learnt to fear the uniform and the insurgent alike. These sons and daughters of red earth cannot be mere statistics; and peace is not merely the absence of firing. The danger now is quieter: as violence recedes, policy attention can recede too. But the harder work of legitimacy-building demands sustained presence. Thus, a humane post-LWE approach, we feel, should signal a new dawn.

### **The framework**

First, forthcoming policy focus in LWE areas should enable stronger rights, credible justice, functioning institutions and visible opportunity — with dignity as the organising principle. U.S. conflict expert John Paul Lederach’s idea of conflict transformation is relevant here: conflict is not simply a malfunction to be suppressed; it signals broken relationships that must be rebuilt through institutions, trust and fairness.

Second, initiate a structured, region-specific post-LWE transformation action plan for identified districts and blocks, jointly designed and executed by the Union government and respective States, that ties outcomes to finance. Our public policy does not lack schemes; it lacks convergence and accountable delivery in hard and complex geographies. We propose the AIEEEE governance framework for this transition — accountability, innovation, evidence, equity, empathy and efficiency.

This framework can drive focused convergence — the Aspirational Districts and Aspirational Blocks framework for monitoring; tribal-first missions such as Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyaan (PM-JANMAN) and Dharti Aaba Janjatiya Gram Utkarsh Abhiyan (DAJUGA) for saturation and inclusion; the Adi Karmayogi Abhiyan for capacity-building of field systems; and constitutional provisions such as Article 275(1) and Tribal Sub Plan (TSP) grants, backed by 16th Finance Commission-enabled devolution — to close last-mile gaps at the panchayat level.

Third, the humane state must show up through a small set of non-negotiables, beginning with rights with respect. Justice must be believable: this requires humane policing, effective grievance redress, faster case disposal, legal aid, and a principled review of prolonged undertrial cases and minor-offence burdens disproportionately borne by Scheduled Castes and Scheduled Tribes.

Finally, harness and consolidate youth aspirations towards a secure future. Sport has proved its quiet power in these landscapes — discipline, pride, pathways, belonging — but aspiration must extend beyond sport into higher education scholarships, residential schooling, skilling aligned to local economies and women-led enterprises.

The final mile in India’s LWE journey is as much psychological as it is administrative, and this closing chapter must build strong structural confidence in the state and governance. These regions



are not India's periphery; they are India's core, and the true spirit of cooperative federalism must enable a shift from counter-insurgency coordination to inclusion-led, post-conflict transformation.

## CYCLE OF VIOLENCE

Ethnic quagmires are among the most difficult situations for governments to untangle, given the violence and persistence of hostilities — even for those committed to restoring peace. The reason is the intransigent nature of ethnic divides, where hostile elements resist any efforts at normalisation. Any space for empathy is restricted as every incident is ethnicised. The situation is compounded when the government of the day fails to nip the descent into ethnicised hostilities in the bud, making it even more difficult for civil society and subsequent governments to restore peace and normalcy. This is the kind of situation that Manipur finds itself in. Even a relatively moderate Chief Minister such as Yumnam Khemchand Singh, who has sought — at least through nominal gestures — to rise above the ethnic fray, has found the going tough. Violence has flared up again following a bombing attack on April 7 that killed a five-year-old boy and an infant girl in Bishnupur district. Reports of the alleged involvement of a Kuki extremist organisation in bombing attacks — denied by Kuki groups — triggered a series of protests in the valley and renewed violence led to more deaths. With disinformation and rumour-mongering adding fuel to the fire, Manipur has returned to a cycle of violence and hardening stances among groups in its persistent ethnic quagmire.

The Bharatiya Janata Party initially believed that the resignation of former Chief Minister N. Biren Singh, efforts to curb violent ethnic organisations, and the passage of time would help restore normalcy. After a spell of President's Rule, and in an apparent effort to promote a more moderate form of governance before elections are due, the BJP formed a new government under Mr. Khemchand Singh. However, the inadequate involvement of political leaders — including from the Union government — in a genuine peace-building exercise shows that the situation has not improved despite these nominal changes by the BJP. A more thoroughgoing carrot and stick approach, empowering civil society leaders willing to advance peace and punishing those promoting and engaging in violence, would have certainly helped. But political variables focused more on retaining power than achieving peace appear to have kept those seeking to advance hardline views in positions of influence on both sides of the divide. A more pro-active role by the Home Ministry and a genuine effort by the BJP to involve all political actors in easing tensions should help. This should be supplemented by a strategy that empowers security agencies to crack down on hardline elements engaging in wanton violence such as bombings. Short of these measures, Manipur will continue to convulse with recurring incidents of violence, reactions and reprisals.

## THE PRICE OF NEGLIGENCE

In yet another gruesome explosion at a fireworks unit on April 19 in Tamil Nadu's southern Virudhunagar district, 25 workers were killed and eight others injured. The number of injured went up to 20, including policemen and firefighters, after another explosion occurred at the unit later. In the past four years, at least 134 people have died and 89 have been injured in such explosions in the district, which is known for its concentration of fireworks units. It is an outright misnomer to describe this type of explosion as an accident, as any preliminary investigation would reveal. Accidents are associated with elements of surprise and unanticipated occurrence. But in the case of Virudhunagar, it is known to every worker — even if no separate sensitisation course



is conducted — that the firecracker industry is hazardous and that any negligence of safety norms can result in disaster. Moreover, such explosions have occurred at regular intervals in the district, claiming the lives of scores of workers, most of whom come from economically weaker sections of society. Beyond expressing condolences and announcing solatium, the authorities at the Union and State levels have done little of substance to reduce, if not eliminate, the risk of such explosions. What they should and could have done is intensify meaningful monitoring, the absence of which is now and then felt in the form of explosions.

The Virudhunagar incident has brought into focus the role of law enforcement authorities in ensuring proper supervision, as the unit in question was operating on a Sunday — observed as a holiday by the fireworks industry — apparently without permission. Contrary to the norms specified in the licence issued by the district authorities, which allow only a dozen people to work in any fireworks unit at any given time, 40 people were present at the unit at the time of the explosion on Sunday. These two aspects, judging by the frequency of such explosions, are not unique to this particular fireworks unit. Official inspections may have taken place but they would have been carried out more as a ritual than as a meaningful exercise. There have, of course, been reports of a manpower shortage within the monitoring authorities. While coming down heavily on wrongdoers, including unlicensed units and those working regularly in violation of safety norms, the officials should also ensure that, in the name of tighter supervision, legitimately functioning units are not subjected to harassment. They should also not gloss over the economic reality of the district where the industry provides employment to lakhs of people in a region that is largely arid and dependent on rain-fed irrigation. Sober elements in the industry should consider ways to increase the use of automation and reduce human involvement.

#### **Do You Know:**

- Scientifically, there are four components in a firecracker: An oxidiser, fuel, 'stars' and a binder.

—Burning requires oxygen. The oxidisers in fireworks are chemicals that release oxygen to allow the explosion to take place. The most commonly used oxidisers are nitrates, chlorates and perchlorates. Burning also requires fuel. The core explosive is generally black powder, a mixture comprising 10% sulfur, 15% charcoal, and 75% potassium nitrate.

—The oxidiser breaks down the chemical bonds of the fuel, releasing energy and heat — in other words, causing the explosion.

—The 'stars' are solid chemical lumps that are responsible for creating the bright colours and light we usually associate with a firework. Aluminium compounds produce brilliant whites, barium nitrate produces greens and the addition of copper results in blue light.

—Binders are used to hold the mixture of the firecracker together in a paste. Binders don't actually begin to work until the firework has been lit.

- The ignition mechanic is an age-old process. Take the case of an aerial firework.

—When the fuse or wick is lit, heat travels through the shell — the main part of the firework — which is housed inside a mortar (essentially a steel tube).

—The spark then reaches the "lift charge" — the black powder mentioned above. The ignition of this powder displaces enough gas to propel the shell out of the tube and into the atmosphere.



—Upon reaching a certain height, a timed second fuse ignites, activating the “burst charge”. This burst charge is responsible for setting off the chemical ‘stars’ housed in the shell.

—The ‘stars’ are densely packed with heavy metals such as barium, strontium and copper. When these compounds combust or are mishandled during assembly, they aerosolise into toxic, microscopic pollutants.

—The entire process is essentially a reaction involving powerful chemicals. This makes the process of manufacturing, handling and storing fireworks inherently risky.

## WHAT ARE SAFER FIREWORKS ALTERNATIVES?

### The story so far:

As hundreds gathered to experience the grand fireworks display at the Thrissur Pooram festival in Kerala last year, a heavily caparisoned and disoriented elephant, Uttoly Raman, suddenly ran amok, leaving 42 people injured. The previous day, another parading elephant, Chirakkara Sreeraman, had attacked its mahout. “Elephants, like other animals, get disoriented not just by decibel levels, but also by the structure and frequency of noise,” said Manjari Jain, Associate Professor, Department of Biological Sciences, IISER Mohali. In response to an RTI request filed by The Hindu, the Kerala State Pollution Control Board stated that noise levels during the 2025 festival peaked at as much as 122.4 decibels in one area. This was just under the Central Pollution Control Board’s ‘Noise Standards for Firecrackers’, which prohibit “the manufacture, sale or use of fire-crackers generating noise level exceeding 125 [decibels]... at 4 metres distance from the point of bursting.”

### What are the risks to hospitals?

As for permissible ambient noise levels, the National Ambient Noise Monitoring Network recommends 45-55 decibels in residential areas and 40-50 decibels in “silence zones” such as hospitals and educational institutions — far lower than the legal cap of 125 decibels for fireworks.

Eminent social scientist Rajan Gurukkal has raised concerns about the proximity of Thrissur’s fireworks to hospitals, especially those with neonatal intensive care units, and their impact on infant brain development. “The way the festival is conducted in Thrissur violates ICU norms. Many facilities do not have soundproof windows, and the district hospital is minutes away from the fireworks,” he told The Hindu. The World Health Organization notes that noise pollution is the third most hazardous environmental threat to human health, after air and water pollution.

### What are the noiseless alternatives?

“It is time to go noiseless,” said Professor Gurukkal, on April 21, when 13 people were killed and 40 injured in a blaze at a fireworks manufacturing unit in Mundathikode near Thrissur. “We do not need to reinvent the wheel, cold spark technology is available, but not yet scaled up.”

This technology, unlike traditional fireworks, uses a chemical combustion reaction of very fine granulated metal alloy powders of titanium and zirconium, explained Samrat Ghosh, Assistant Professor at the Frugal Innovation Lab for Societal Benefit, Department of Chemical Sciences.

The ‘cold sparkular’, for instance, is a gun-like device equipped with a heater and a fan. The heater warms the fine alloy powder to increase its activation energy, while the fan blows the fine granulated metal alloy powders out. “When these fine powders eject out of the barrel of the hand-



held gun, the heated fine powder reacts with the oxygen in the air and undergoes a rapid exothermic reaction that emits light with a sparkler-like effect as seen in traditional fireworks — but with no noise,” Dr. Ghosh explained.

They can prevent burn injuries. While traditional sparklers emit temperatures of around 1,200 °C, cold sparklers and cold anars operate at 60-100°C, he added.

Though already available commercially online, these pyrotechnics remain expensive — a single ‘cold anar’ can cost around ₹400 — and are largely manufactured in China. “We have plenty of scope in India as the technology is well known and one can indigenously make these nano-powders,” Dr. Ghosh said.

Prof. Gurukkal emphasised that what is needed is “professionalism and management.” Contemporary stage technologies show that we can create in-house spark fountains and colourful spark-circles on the floor, he said, adding that televisions routinely employ cold spark systems that generate bright, upward jets of sparkling light without explosive combustion, heavy smoke and high-decibels “but giving the same, if not a superior, visual effect”.

“It is possible to deploy arrays of dozens or hundreds of spark units across open grounds, arranged linearly, radially, or in clusters, with sequential triggering of waves, expanding bursts, and cascading effects,” he said. These could even be mounted on temporary towers to extend the visual field, “creating the illusion of vertical expansion into the night sky”.

#### **What is the way forward?**

Delhi, which celebrated its loudest Diwali in three years, could also benefit from cold spark technology. As for Thrissur, Prof. Gurukkal said there should be an incremental transition strategy in Kerala, but that it would be ideal “to start with the Thrissur Pooram, the greatest among occasions that use parasols of intense air pollution with sound and smoke”.

Initial integration of large-scale cold spark-based displays should be tested in Thrissur, the district famed in the country for its high-quality air, he said. “It is the responsibility of the Thrissur Corporation to substitute the existing method.”

## HIGH HEAT

India’s summers are known to be hot, but this year the high heat has arrived noticeably early. The India Meteorological Department has sounded heat alerts in central and south India, including in Vidarbha, Chhattisgarh, Odisha, Telangana and Kerala. Parts of Andhra Pradesh and Gujarat have also scaled the 40°C mark, with Tamil Nadu and Karnataka not far behind. Local conditions in coastal areas, in particular, could be worse due to humidity and the urban heat island effect. Warmer nights also delay physiological recovery, increasing the local health-care burden. Such temperatures are usually encountered in May-June but have become apparent in April. While pre-monsoon heatwaves are common in India, they are becoming larger and more intense. This year, a lack of western disturbances and thunderstorms, along with lower convective activity, has also done away with natural cooling, with residual effects of the previous El Niño adding to the heat. Persistently high heat is linked to a significantly higher risk of death from cardiovascular causes. Some 247 billion work-hours were lost in 2024 to heat, according to The Lancet Countdown Global Report, with workers in construction and agriculture the most affected. Heat stress is an ongoing concern for farmers during the rabi harvest. Hot weather accelerates crop maturity, threatening food security and feeding inflationary pressure.



Experts have complained that most heat action plans (HAPs) — India’s primary institutional response to heat — focus on emergency response and lack funds for structural interventions such as urban re-greening and mandatory heat-safety legislation for workers in the informal sector. They have thus failed to address underlying vulnerabilities. On April 23, in the Tamil Nadu and West Bengal polls, and Gujarat and Maharashtra by-elections, lakhs of electors had to brave the heat. Concerns about voter turnout in the heat prompted the Election Commission of India to keep polling booths open longer during the 2024 general election; such reactive measures alone will not suffice this year. If warming continues along current trajectories, more than a few parts of India will begin approaching human survivability limits. HAPs desperately need sufficient, long-term funding while public systems must roll out mobile health units and doorstep delivery of essential services during peak heat to reduce the income penalties that deter access. Colombia has convened a coalition of roughly 50 countries to explore a faster transition away from fossil fuels in a parallel ‘climate conference’. India should join it, not least because of the greater access to climate adaptation finance it could afford.

#### WHY BELOW-AVERAGE RAINS DON’T RULE OUT FLOOD THREAT

This year’s monsoon season is likely to bring below-normal rainfall. The India Meteorological Department (IMD) has said the country as a whole was expected to receive only 92% of normal rainfall this season. This forecast, however, does not capture the intra-seasonal and regional variations in rainfall that are a standard feature of Indian monsoon. These would become evident only at a later stage.

##### Key Takeaways:

- The below-normal rainfall forecast, for example, is no indicator of the number of extreme rainfall events that are likely to occur this coming season. These kinds of events have been steadily increasing over the last decade or two, and have routinely turned into, or triggered, large-scale disasters. Several studies have linked the increasing trend of such incidents in recent years to climate change.
- In the past decade or so, starting with the Kedarnath tragedy in 2013, India has seen at least one major rainfall-related disaster every year. In some years, like 2023, there have been multiple such incidents. The overall extent of monsoon rainfall over the country as a whole has had no bearing on the frequency or severity of extreme rainfall events. Such disaster-inducing rainfall incidents have happened even in the years when the overall rainfall during the season was relatively low, like in 2015, 2018 or 2023.
- Such extraordinarily high rainfall is extremely difficult to predict. In many such instances, IMD is able to see the chances of very heavy rainfall and issues appropriate alerts, but whether the eventual rainfall would be in the range of 250 mm or 500 mm is something that cannot be said with any reasonable degree of certainty. This is an inherent limitation of the weather science itself. Weather is an extremely chaotic system, with very small changes in initial conditions giving rise to big differences in the end result.

##### Do You Know:

- IMD classifies any rainfall above 21 cm in a 24-hour period as extremely heavy rain. Typically, these account for less than 0.1% of all recorded rainfall events in the country. But their number seems to be increasing. In the four-year period between 2008 and 2011, for example, the



maximum number of extremely heavy rainfall events in any season happened to be 64 (in 2008), according to IMD's Annual Monsoon Reports.

- In 2024, as many as 181 extreme rainfall events were recorded, while last year this number was 160.
- For more than a decade now, India has seen at least one major rainfall-induced disaster during the monsoon season. Some of these, like the Jammu and Kashmir flooding of 2014, the Chennai urban flooding of 2015 and the Kerala floods of 2018, have been record-breaking, once-in-a-century, or once-in-50-years, kind of events.

#### THE MAHANADI RIVER DISPUTE

— The Mahanadi originates in Chhattisgarh's Dhamtari district and flows through Odisha, finally draining into the Bay of Bengal. It is a key river system in the region and has led to water-sharing disputes between the states since 2016.

— Odisha has alleged that Chhattisgarh has "unilaterally constructed" at least eight barrages along the river, which have impacted its flow into the state during the non-monsoon period. Odisha has termed the river a lifeline for the state, given its significance for agriculture, fisheries and power generation. According to official data, Mahanadi has a total catchment area of 1,41,600 sq km, of which 45.73% falls in Odisha, 53.9% in Chhattisgarh and a small patch in Madhya Pradesh.

— Chhattisgarh, on the other hand, has argued that given the large catchment area in the state, it was within its rights to use the river water. Chhattisgarh also pointed out that Odisha had commenced certain major and medium projects without informing it as the upper riparian State.

— Almost six months after Odisha and Chhattisgarh agreed on an "amicable solution" to resolve the long-pending Mahanadi water dispute, the tribunal formed to adjudicate the matter has given the states a last opportunity to devise a settlement formula.

— In its April 20 order, the Mahanadi Water Dispute Tribunal (MWDT) warned that it will proceed on merits if the two states are unable to finalise the settlement formula and 'place on record' any consensus on the issues by May 2.

— Headed by former Supreme Court judge Justice Bela M Trivedi, the tribunal also expressed its displeasure with the manner in which the proceedings of the references are being conducted.

#### MARINE SPATIAL PLAN: ODISHA'S BID TO STRENGTHEN CLIMATE RESILIENCE

The Odisha government recently signed a memorandum of understanding with the National Centre for Coastal Research (NCCR) under the Union Ministry of Earth Sciences to launch a Marine Spatial Plan (MSP) in the state for integrated coastal and marine planning.

##### **Key Takeaways:**

- Sustainable ocean planning has been underway in India since 2019, with collaboration between India and Norway. In the first phase, it was taken up in two Union territories, Puducherry and Lakshadweep. Odisha has become the first state in the country to implement the MSP in the second phase.



- Odisha has a huge coastline of more than 550km and the coastline is defined in many ways, featuring lagoons, mangroves and estuaries. According to Chithra Arumugam, additional chief secretary, science and technology department, Odisha, the NCCR will study the components of the water in the entire ocean adjoining Odisha's coast as part of the MoU.
- In August 2025, the Odisha government launched the Odisha Marine Biotechnology Research and Innovation Corridor (OMBRIC) to promote the use of biotechnology for marine environmental protection and economic development.

**Do You Know:**

- The MSP is a tool for sustainable and integrated ocean management aimed at boosting the blue economy and strengthening climate resilience. It helps for sustainable utilisation of marine resources in energy, economic activities like developing ports, harbours, setting up industries, environment, fisheries, aquaculture and tourism and to formulate policies accordingly.
- As part of the process, the experts analyse the coasts and specify areas for human activities in marine areas to achieve ecological, economic and social objectives. This is a part of the Indo-Norway Integrated Ocean Initiative under the Memorandum of Understanding signed between the two countries in 2019. This aligns with the Centre's emphasis on the blue economy as one of the ten core dimensions of growth.

**MITIGATE ARSENIC AND FLUORIDE CONTAMINATION IN GROUNDWATER: NGT INSTRUCTS STATE GOVTS**

The National Green Tribunal (NGT) has instructed the state governments to mitigate the arsenic and fluoride contamination of groundwater, asking the Centre to monitor the measures being adopted across the country.

**Key Takeaways:**

- Hearing a suo motu matter, the principal bench of the NGT was examining the groundwater contamination issue based on news reports and it has impleaded all 28 states, directing them to submit data on arsenic and fluoride contamination across districts, villages and blocks. The green court has also directed the Central Ground Water Authority (CGWA) to regularly monitor the mitigation measures adopted across states and ensure remedial action.
- The bench, comprising NGT chairperson Justice Prakash Shrivastava and expert members A Senthil Vel and Afroz Ahmad, took on record the remedial measures suggested by CGWA, directed their implementation in an April 17 order.
- Consumption of the arsenic through drinking water is a major health concern, causing arsenicosis, with symptoms such as skin lesions and abnormal pigmentation, and even cancer in case of chronic exposure. Fluoride exposure, meanwhile, impacts bone and teeth health adversely.
- The court filings revealed a higher presence of arsenic in eastern and south-eastern regions, and a higher fluoride presence in central, eastern, and parts of southern and western states.
- The state-wise data filed before the court also paints a grim picture. In its order, the tribunal shared that arsenic is present in 4,709 wards and fluoride in 3,789 wards in Bihar. In West Bengal, arsenic and fluoride affect eight and seven districts respectively, and 16 districts each in Uttar



Pradesh. Similarly, arsenic has contaminated the ground water in 20 villages in Karnataka, and fluoride over 2,083 villages.

- Among leading causes of the contamination are industrial pollution, use of fertilisers and pesticides, and natural processes such as weathering of rocks and soil erosion, the CGWA submitted to the court. It submitted that in Bihar, West Bengal, Assam and Uttar Pradesh, the presence of arsenic is primarily associated with alluvial formations found in the Ganga and Brahmaputra river basins.

**Do You Know:**

- India is the largest consumer of groundwater in the world, extracting approximately 230 cubic kilometres each year, which accounts for more than one-fourth of the world's annual groundwater extraction. Furthermore, nearly 85 per cent of the country's drinking water needs are being fulfilled by groundwater sources.

The Central Ground Water Board (CGWB) and the State Governments annually assess the dynamic groundwater resources of the country, which is divided into a total of 6,762 Assessment Units (Blocks/Taluks/Mandals). Their 2025 report suggests that the country has a total of 448.52 Billion Cubic Meters (BCM) of annual groundwater recharge – an increase from 432 BCM in 2017 – and 247.22 BCM has been extracted in the same year.

#### ARMED FORCES EYE BIOGAS, SOLAR TO CUT FUEL USE AMID WEST ASIA CRISIS

India's Armed Forces are exploring various measures to conserve Liquefied Petroleum Gas (LPG) and fuel amid the ongoing global energy crisis triggered by the Iran war — from procuring alternative cooking sources, preferably biogas in the short term, to exploiting solar and wind energy on a larger scale over the next few months, senior officials told The Indian Express.

**Key Takeaways:**

- Orders to procure biogas stoves are in the pipeline and will be initiated soon by the Army, the officials said.
- With the focus on conserving fuel, it is also being discussed whether the movement of large Army convoys for administrative purposes can be restricted to 400 km, while maximising the use of the rail network beyond that.
- “Implementing limited restrictions on the routine movement of Army vehicles without affecting operational efficiency is being deliberated upon. This includes the pooling of vehicles and combining duties, such as the collection of rations, stores, and transportation of troops, wherever feasible. Furthermore, the use of CNG or electric civil hired transport will be encouraged where possible,” an official said.
- Officials said some of these measures are in place, and others are in the process of being implemented. Other initiatives will be incorporated soon as part of the energy conservation efforts, and special drives towards their implementation are likely to be held over the next few weeks, they said.
- According to officials, the conservation efforts will not impact operational flying although routine flights might be optimised. Operational flying can include those for recce, casualty evacuation, emergent relocation of troops, and transportation of ration and equipment. They said



other measures to conserve fuel, oil and lubricants will also be encouraged at unit levels. Currently, 125-135 gm of gas is authorised per day for each soldier, for cooking food.

**Do You Know:**

- At present, every unit of the Army has four to six cookhouses feeding close to 125 to 150 soldiers every day, making cooking gas an essential commodity for troops deployed in various fields and peace units.
- Officials indicated that approximately 156,000 kg of cooking gas is consumed daily in the Army, and about 20 per cent of that can be saved through biogas, amounting to 30,000 kg per day.
- Besides, the Army alone has approximately over two lakh vehicles of various types, which are used regularly for administration, training, operations and maintenance, including transportation of stores, equipment, troops and rations.
- In December last year, The Indian Express reported that the Armed Forces are planning to optimise thousands of acres of unutilised defence land across the country over the next three to five years for various projects — particularly those focusing on green energy initiatives, such as establishment of solar and biogas plants.
- An estimated 46,000 acres of defence land are available for such projects, and options that were being explored include setting up solar plants, biogas plants, and afforestation and floriculture to earn carbon credits.
- In October 2024, NTPC partnered with the Army to establish a solar hydrogen-based microgrid at Chushul in Ladakh to provide stable power supply at off-grid locations.

## SKYROOT AEROSPACE FLAGS OFF VIKRAM-1, INDIA'S FIRST PRIVATE ORBITAL LAUNCH SOON

In a major boost to India's space industry, Skyroot Aerospace is likely to become the first private company to launch an orbital space rocket. On Saturday, Skyroot flagged off the payload fairing for its Vikram-1 rocket in Hyderabad, with the launch of the rocket slated for later this year.

**Key Takeaways:**

- The payload fairing — the upper nose cone of the launch vehicle that houses the satellites — is now headed for India's only spaceport in Sriharikota, where it will be integrated with the rest of the launch vehicle.
- Telangana Chief Minister A Revanth Reddy, also present at the flag-off event, said that it was a key milestone in the state's pursuit of becoming a global leader in the aerospace sector.
- Telangana is among a handful of states with their own space policy — the first step towards creating space manufacturing hubs, such as the launch vehicle hub in Tamil Nadu and a satellite hub in Gujarat.
- The launch of India's first privately manufactured PSLV (polar satellite launch vehicle) — ISRO's workhorse launcher — is also likely to take place this year.



— Among Skyroot’s many small launch vehicle projects, Vikram-1 is a multi-stage launch vehicle with solid and liquid fuel-based engines designed for launching satellites weighing up to 350kg to low earth orbit. The low earth orbit is the region of space from 160 km to 2,000 km above the surface of Earth. The number of satellites being launched in this region has skyrocketed in recent years, with many being the Starlink communication satellites.

— What makes Vikram-1 different is that the rocket is made of carbon composite instead of metals, and houses a 3D-printed indigenously made engine — making its manufacturing and assembly easier, quicker and cheaper.

— The launch vehicle has been named to honour Dr Vikram Sarabhai, considered to be the father of the Indian space programme, and its propulsion systems honour several other scientific greats — the solid propulsion system is called Kalam, the liquid Raman, and the cryogenic Dhawan.

— “The launch of this orbital rocket will mark a major milestone for India’s emerging private space-tech industry. With Vikram-1, we aim to open up space by enabling on-demand satellite launches for a fast-growing global market,” said Pawan Kumar Chandana, co-founder and CEO, Skyroot Aerospace.

— Skyroot was also the first private company to carry out a single-stage sub-orbital flight in 2022, followed by another company, Agnikul. A sub-orbital flight is launched at a slower speed than the orbital velocity, so it reaches outer space but cannot get into an orbit around Earth.

**Do You Know:**

— Satellite Launch Vehicle-3 (SLV-3) was India’s first experimental satellite launch vehicle which successfully launched Rohini Satellite into a Near-Earth Orbit on July 18, 1980. It became the base structure for major Launch Vehicles like Augmented Satellite Launch Vehicle (ASLV), Polar Satellite Launch Vehicle (PSLV), and Geosynchronous Satellite Launch Vehicles (GSLVs).

— The PSLV is the third generation of Indian satellite launch vehicles. PSLV development started in 1982, and its maiden successful launch took place in October 1994. Most significantly, it marked India’s entry into the Big Rockets league, as it could carry a payload of up to 1,000 kg. It has also been called “the workhorse of ISRO” for consistently delivering various satellites into low Earth orbits (less than 2,000 km in altitude) with a high success rate.

**GOVT. ADDS 14 SEAPORTS FOR E-VISA ENTRY, WIDENS IMMIGRATION ACCESS**

The Union Home Ministry has designated 14 more seaports — half of them in Gujarat — as immigration check posts for foreign nationals who hold e-visas.

Electronic visa facilities have been operational since March 19 at Alang, Bedi Bandar, Bhavnagar, Porbandar, Hazira, Pipavav, and Mandvi seaports in Gujarat; Cuddalore, Nagapattinam, and Thoothukudi in Tamil Nadu; Kakinada and Krishnapatnam in Andhra Pradesh; and Paradip and Dhamra in Odisha, an official said.

There are altogether 114 immigration check posts (ICPs) across air, sea, land, rail and river routes, catering to international traffic. At present, there are 37 ICPs at seaports.

E-visa holders are allowed to enter India only through the 32 designated airports and 33 seaports.



The e-visa — often confused with visa-on-arrival — is available to citizens of 207 countries, excluding China, Pakistan, Yemen and Iran. The e-visa categories are tourist, business, medical, medical attendant, student, family, transit, miscellaneous and production investment, with validity ranging from a month to five years.

In a related development, the Ministry revised modalities for granting tourist visas to Chinese nationals. The Indian Embassy in Beijing had announced on July 23, 2025, that tourist visas would be issued to Chinese nationals after a gap of five years.

After the 2020 COVID-19 pandemic and the Galwan Valley incident, in which 20 Indian soldiers were killed in clashes with the Chinese army, both countries had suspended flights and most visa services between them.

China restored visa applications for Indian students in 2022 and later for business and tourism.

On March 30, the MHA amended the tourist visa guidelines for Chinese tourists by liberalising conditions for Buddhist pilgrims and family members of Chinese diplomats.

The Centre, on October 2, 2025, also gave the green signal to resume direct flights between India and China after a gap of five years. On Tuesday, Air China resumed its non-stop Delhi-Beijing flight, reconnecting the flight services between the two capitals after five years.

### GOVT TO TIGHTEN AI LABELLING RULES FOR SOCIAL MEDIA OVER 'UNSATISFACTORY COMPLIANCE'

The Ministry of Electronics and IT (MeitY) has proposed that social media companies like YouTube, Instagram and X will have to 'continuously' display labels on content generated through artificial intelligence (AI), further tightening a recently notified rule which required such labels be applied "prominently," without specifying a time duration.

#### Key Takeaways:

- A senior government official told The Indian Express that the changes are being proposed on account of "unsatisfactory compliance" by platforms.
- In amendments proposed to the IT Rules, 2021, Tuesday, the ministry said that intermediaries, like social media platforms, will have to ensure "continuous and clearly visible display of such label(s) throughout the duration of the content, in a visual display."
- This would effectively apply to videos created through AI.
- In February, MeitY had notified the requirement to display these labels prominently, as part of broad amendments to the IT Rules, but had diluted an earlier proposal to apply a label to content generated through AI tools to cover at least 10% of the space.
- The proposed amendments have been released for public consultation and comments can be sent to the ministry until May 7. Queries sent to MeitY, Google and Meta remained unanswered until publication.
- As per the IT Rules, the definition of synthetically generated information (SGI) has carveouts for assistive and quality-enhancing uses of AI. Routine and good faith editing of audio, video or audio-visual content is excluded from the definition of SGI.



- The pitfalls of AI generated content were on full display earlier this year when Grok, the AI service of X (formerly Twitter) started creating, prompted by user requests, pictures of women in revealing clothing, casting a shadow on their dignity and privacy.
- The episode drew global criticism from governments, including India. Following the furore which led to Grok being banned in some countries, X modified its filters to prevent the creation of such images.

**Do You Know:**

- On 22 October 2025, the Ministry of Electronics and Information Technology introduced the draft amendments to the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules 2021 to regulate the circulation of synthetically generated information (which includes deepfakes) on the internet. In its explanatory note accompanying the draft amendment, the government framed the rationale in these words: “To curb the spread of misinformation, damage reputation, manipulate and influence elections or commit financial fraud.”
- The framework envisages labelling of synthetically generated information, which can be defined as any information “artificially or algorithmically created, generated, modified or altered using a computer resource” in a manner that it appears to be authentic. Such content, under the new rules, must be prominently labelled using a permanent unique metadata or identifier, covering at least 10 per cent of the total surface area of visual content and 10 per cent of the total duration of audio content.
- In case of social media platforms such as Facebook or Instagram, before uploading any content, (a) a user must declare if such content is AI-generated; following which (b) reasonable and appropriate technical measures will be deployed by such platform to verify accuracy of such declaration; and once confirmed, (c) the said content will be displayed with an appropriate label indicating that such content is synthetically generated.

**ONLINE GAMING RULES EXPAND COMPLIANCE, LEAVE ROOM FOR ESPORTS**

India’s long-awaited reckoning with its online gaming sector has finally arrived. The government on Wednesday notified the rules to operationalise the Promotion and Regulation of Online Gaming Act, paving the way for the sector’s digital-first regulator and setting out a framework that will not require mandatory registration or prior classification for most online social games.

**Key Takeaways:**

- The Promotion and Regulation of Online Gaming Rules, 2026, which MeitY finalised after extensive inter-ministerial consultations, are scheduled to come into force on May 1. Its parent Act, passed last year, had put a definitive stop to the burgeoning real money gaming sector in the country, which impacted highly valued start-ups like Dream11, PokerBaazi, Winzo, and Mobile Premier League, among others.
- India’s online gaming market has expanded rapidly in recent years, with hundreds of millions of users and increasing monetisation through real-money formats. However, concerns over addiction, fraud, and regulatory arbitrage — with different states following different rules — prompted the Centre to step in with a unified national framework.



- The rules establish the Online Gaming Authority of India (OGAI) as the sectoral regulator, housed under the MietY.
- This authority has wide-ranging powers, including determining whether a game qualifies as an Online Money Game (played after depositing user fees/based on monetary stakes), Online Social Game (not involving staking money), or esports (competitive organised games involving skills like physical dexterity and strategic thinking).
- It can also issue directions, hear complaints, and impose penalties. Its composition is entirely government-led, with representatives from ministries including Home Affairs, Finance, Information & Broadcasting, Sports, and Law.

**Do You Know:**

- A key feature of the framework is the “determination and registration” system, which is not universally mandatory. Games are required to seek formal determination only in specific cases — such as when directed by the regulator, when offered as esports, or when the government notifies certain categories based on factors like transaction value or scale. Similarly, registration becomes compulsory only under notified conditions or for esports offerings. Determination decisions are game- and provider-specific, and remain valid unless the game’s payment structure changes.
- The rules also significantly expand the compliance perimeter by bringing financial institutions directly into the regulatory net. Banks, payment gateways, and other intermediaries must verify a game’s regulatory status before facilitating transactions. In the case of online money games, which are banned, they are required to act on OGAI directions — including suspending or restricting payments — effectively making the payments layer a key enforcement tool.
- On user-facing aspects, the framework mandates a two-tier grievance redressal system. Gaming platforms must first provide an internal mechanism, after which users can escalate complaints to OGAI, with a further appeal available to an Appellate Authority within the government.
- The rules also introduce data localisation obligations, requiring gaming platforms offering social games or esports to store traffic and related data within India. At the same time, OGAI is empowered to issue future directions on areas such as advertising, user safety, and operational compliance, leaving significant room for regulatory evolution.
- The rules also introduce the concept of user safety features — technical, procedural, operational, behavioural or system-related safeguards appropriate to the risk profile of the game. These include age verification and age-gating, time restrictions, parental controls, user reporting tools, counselling support, and fair-play and integrity monitoring. Service providers are required to disclose their user safety features and internal grievance mechanisms at the time of application for determination or registration.

**META ‘AUTOMATICALLY’ BLOCKS GOVT.-FLAGGED CONTENT IN INDIA**

India is now among a set of “limited countries” where Facebook and Instagram “automatically restrict content, at scale and based on local law requirements,” a company source told The Hindu.

Meta, the parent firm of both social media platforms, has complied with censorship orders on a large scale in recent weeks, as the firm has been hit with a barrage of takedown notices from State



police authorities as well as the Union government. Precise numbers of local law-related takedowns on the platforms will only be published by the firm in the second half of 2026.

The Sahyog portal, which provides a web link for authorised police officials around the country to send takedown notices to social media platforms, operates under Section 79(3)(b) of the Information Technology Act, under which social media platforms could lose “safe harbour” for content posted by users, and end up defending themselves in court alongside the people whose content has been targeted by authorities.

Meta did not provide written responses to questions from The Hindu. The firm’s receptivity to non-binding takedown notices appears to have increased since the IT Ministry in February reduced timelines from 36 hours to a maximum of three hours.

Non-compliance within this timeline would lead to a loss of safe harbour. Meta did not respond to a question on whether it conducts human rights evaluations on such takedowns. The help documentation on its site says it does such evaluations.

X, formerly Twitter, has challenged the Sahyog portal in the Karnataka High Court, and does not comply with police takedown notices when it believes the content they target is lawful.

#### **‘Lasting censorship’**

Meta’s response, however, is to instantaneously restrict access in response to content that has been sent through this mechanism, giving police authorities wide powers of immediate and lasting censorship that they can exercise by merely filling out an online form.

“Various apparatuses of the government have been issuing notices (not orders) providing ‘actual knowledge’ of violations of Indian law to platforms under Section 79(3)(b), most of which, when scrutinised, do not actually disclose any violation of any Indian law by the users,” Pranesh Prakash, co-founder of the Centre for Internet and Society, who is now a tech law and policy consultant, told The Hindu. Mr. Prakash said that users are seldom acted against personally in court, with the matter ending in the content takedown, which “show[s] ... that the platforms would not be held liable either.”

“Yet, instead of fighting for their users, Meta is unthinkingly removing content it is legally not even required to remove,” Mr. Prakash said.

### **GOVT’S ONLINE CONTENT BLOCKING ORDERS DOUBLE TO 24,000 IN A YEAR, OVER HALF ON X**

The number of online content blocking orders passed by the Ministry of Electronics and Information Technology (MeitY) has doubled in the past one year, with authorities pointing to the surge of deep fakes on social media as well as objectionable posts and content generated by Artificial Intelligence on a variety of platforms.

#### **Key Takeaways:**

- Officials in the Ministry said that currently, roughly 60% of orders for blocking URLs were for content on X (formerly Twitter); 25% for Facebook and Instagram; and 5% for YouTube.



- While Parliament had, in 2023, been informed that an average of 6,000 blocking orders were being passed by MeitY, senior officials told The Indian Express that this number increased to around 12,600 in 2024 and 24,300 in 2025, both till December.
- Requests to MeitY for blocking online content and subsequent blocking orders peaked during Operation Sindoor in May 2025 and has remained “very high” ever since. Sources said more than half the requests and complaints came from nodal officers in the Ministry of Home Affairs and Ministry of External Affairs, and the rest from other Ministries, Departments and individuals.
- According to sources, several of these blocking orders were for taking down URLs of Instagram, Facebook and YouTube posts of political parties and politicians. Some politicians have also complained to the Home Ministry or MeitY about fake social media posts using their name and images.
- The most recent “high-profile” complaint to the Home Ministry and MeitY came earlier this month from Congress MP Shashi Tharoor. Speaking to The Indian Express, Tharoor said deep fake videos of him had emerged. “It was best that I put up my complaints in writing. The fake content was apparently being generated from Pakistan and I am told, at least in India the fake content has been blocked,” he said.

**Do You Know:**

- The blocking orders are passed under provisions of Section 69A of the Information Technology Act 2000, which empowers the Government to block public access to computer resources on any of these five grounds: maintain the country’s sovereignty and territorial integrity; safeguard its defence and security; maintain friendly relations with foreign states; preserve public order; and investigate offences.

- Similar to rules and guidelines for the interception of electronic communications, Section 69A stipulates the procedure before a final blocking order can be passed:

—MeitY has a Designated Officer to head the “Blocking Committee”. The Committee includes representatives, or “nodal officers”, from the Ministries of Law and Justice, Home and Information and Broadcasting, and the Indian Computer Emergency Response Team (CERT-In), as its members, either of Joint Secretary rank or above.

—Each blocking order passed by the Committee needs final approval of the Secretary, MeitY.

- Section 69A also has an “emergency” clause whereby the Designated Officer has to put down in writing as to why the “interim measure” of issuing an urgent blocking order was being issued without the sitting of the Committee. The order then has to be approved by the Committee within 48 hours.

• Information on the extent of blocking of “objectionable” URLs has been coming in bits and pieces, with the Government refraining from providing the complete data even to Parliament and via RTI. In 2023, the then IT Minister of State Rajeev Chandrashekhkar informed Parliament that his Ministry had blocked 36,838 URLs between January 2018 and October 2023, roughly 6,000 a year.

- Deepfake is a portmanteau of “deep learning” and “fake”. It is an Artificial Intelligence (AI) software that superimposes a digital composite on to an existing video (or audio). The origin of the word “deepfake” can be traced back to 2017 when a Reddit user, with the username “deepfakes”, posted explicit videos of celebrities. “The term first rose to prominence when



Motherboard reported on a Reddit user who was using AI to superimpose the faces of film stars on to existing porn videos, creating (with varying degrees of realness) porn starring Emma Watson, Gal Gadot, Scarlett Johansson and an array of other female celebrities,” a report in The Guardian said.

## 10% OF INDIAN HOUSEHOLDS CAN RISE TO A HIGHER ECONOMIC CLASS JUST BY QUITTING TOBACCO: STUDY

Over 20.49 million households — 10.6% of all households in the country — could rise to a higher economic class just by stopping spending on tobacco and redirecting that money to other needs, as per a new study published in BMJ Global Health.

### Key Takeaways:

- The study led by researchers at ICMR National Institute of Cancer Prevention and Research (ICMR-NICPR), Noida, and Tata Institute of Social Sciences (TISS), Mumbai, is the first to quantify at national scale the households using tobacco in different forms.
- The poorest households, the study finds, spend 6.4% of their entire monthly income on tobacco, the study found. “Tobacco is not just a health burden — it is a poverty trap. We have now shown, with the most rigorous national data available, that 20 million households could move up an economic class simply by quitting.
- For a rural family already spending nearly 7% of all its income on tobacco, this is not an abstraction — this is the difference between poverty and dignity. Tobacco cessation must be treated as a poverty alleviation strategy, not merely a health message,” Dr Prashant Kumar Singh, Senior Scientist, ICMR-NICPR, Noida, and corresponding author told The Indian Express.
- India carries one of the world’s largest tobacco burdens. With over 267 million tobacco users, which is nearly a quarter of the adult population, tobacco is the single largest preventable cause of death and disease in the country, responsible for over a million deaths every year.
- Its established links to cancers of the mouth, throat, lung, and oesophagus as well as to heart disease and stroke, have long made it a central concern of public health policy.
- Drawing on 2,61,746 nationally representative households from the 2022-23 survey on Household Consumption Expenditure, the study found that the poorest families are paying the highest price.
- According to the study (The economics of quitting: estimating the uplift potential of Indian households through tobacco cessation), a family in the lowest income group spends 6.4% of its entire monthly income on tobacco. A family at the top spends just 2%. Among the poorest households, 5.62 million (12.4%) could escape their income class entirely through cessation, the study suggests.

### Do You Know:

- India is the second largest consumer and producer of tobacco globally. Tobacco products account for nearly 1.35 million deaths every year (3,700 deaths every single day). India also accounts for 70% of the global burden of smokeless tobacco, and 27% of all cancers in India are attributable to tobacco use.



- Nearly 9 out of 10 adults who use tobacco started before age 18 when the brain is still developing, making young people far more susceptible to nicotine dependence.
- Among adolescents specifically, tobacco prevalence among those aged 13-15 was 8.5% in 2019 according to the Global Youth Tobacco Survey. In India, 9.6% of boys and 7.4% of girls use tobacco, it said.
- According to the researchers, 17 million rural households could move up an economic class through tobacco cessation, compared to 3.5 million urban households. Rural families spend a larger share of income on tobacco (6.6% vs 5.6% in cities) and have far fewer financial safety nets. The rural uplift rate is 60% higher than in urban areas. Also 7.12 million lower-middle-income households (16.8%) could advance to a higher income bracket through cessation.

#### USE ASHWAGANDHA ROOTS, EXTRACTS ONLY, FSSAI TELLS FOOD-PRODUCT FIRMS

The Food Safety and Standards Authority of India (FSSAI) has told companies to ensure that Ashwagandha used in products is done in compliance with the notified standards. It has directed food business operators to ensure only roots of Ashwagandha and its extracts are used in the products and at prescribed limits. It emphasised the use of the herb's leaves and extracts was prohibited.

Besides Ayurvedic medicines, Ashwagandha (*Withania Somnifera*) is used in a variety of products such as nutraceuticals and supplements.

Recently, it has been used in functional food products like herbal teas and wellness beverages.

#### **'Not permitted'**

In its latest advisory, the FSSAI said it had come to its attention certain manufacturers were using Ashwagandha leaves and extracts in products. It pointed out "use of Ashwagandha leaves in crude or extract or any other form is not permitted" under the notified regulations.

The FSSAI said it had specified the standards for health supplements, nutraceuticals; food for special dietary use, food for special medical purpose under the Food Safety and Standards (Health Supplements, Nutraceuticals, Food for Special Dietary Use, Food for Special Medical Purpose, Functional Food and Novel Food) Regulations, 2016. The regulations provide the list of plants or botanicals permitted for use in such products. "As per Schedule IV of aforesaid regulations, only the roots and extracts of Ashwagandha are permitted for use in these categories of products, subject to compliance with the prescribed limits," it said.

The Ministry noted available scientific studies "reported possible safety concerns for Ashwagandha leaves due to higher concentrations of reactive withanolides, particularly Withaferin-A".

#### WHY HINDI IS BEST UNDERSTOOD NOT AS A MUGHAL LANGUAGE

Hindi is often described as a language born in Mughal barracks, as if it were simply the speech of imperial camps. This is an attractive phrase, but it is historically incomplete. The story of Hindi is much older, far wider, and far more layered. To understand how Hindi evolved, students must look not only at the Mughal world, but also at the older Indo-Aryan roots of north India and the crucial role played by the Deccan.



The foundations of Hindi were laid long before the Mughals arrived in India. Its grammar and basic structure descend from the ancient linguistic chain of Sanskrit, Prakrit, Apabhramsha, and then the early vernaculars of north India. The speech forms of the Ganga-Yamuna doab, especially around Delhi and western Uttar Pradesh, gradually evolved into what scholars call Khari Boli and Hindavi. These dialects were in existence centuries before the Mughal empire was established.

#### **Why grammar of Hindi remains firmly Indo-Aryan**

What the Delhi Sultanate and Mughal periods did was to accelerate the spread of a shared spoken language across northern India. Persian-speaking rulers, Turkic and Afghan soldiers, Indian recruits, merchants, and Sufi teachers all needed a common language. In markets, camps, and towns, local north Indian dialects mixed with Persian and Arabic vocabulary. This produced Hindustani, a flexible contact language used in everyday life.

But vocabulary is not the same as grammar. The grammar of Hindi remains firmly Indo-Aryan. Its sentence structure, pronouns, gender rules, and verb forms all come from older Indic traditions. For example: Ram ne khana khaya. Sita ghar gayi. Here, the use of ne in the past tense and the gender agreement in gayi are clear markers of Indo-Aryan grammar. This grammatical skeleton comes from the Sanskrit-Prakrit lineage, not from Persian, Arabic, or Turkish.

#### **Deccan's contribution**

Now we come to the Deccan, whose role is often ignored. When political power moved southward under the Delhi Sultanate and later the Bahmani and Deccan Sultanates, this northern Hindavi speech travelled with soldiers, traders, poets, and Sufi saints into the Deccan plateau. There, it encountered Marathi, Telugu, Kannada, and other regional languages. This contact produced Dakhni, or Deccani, an early and vibrant form of Hindustani.

Ironically, before Hindustani became a major literary language in the north, it had already flourished in the Deccan. Courts in Bijapur and Golconda patronised poetry, romance literature, and Sufi works in Dakhni. In many ways, the Deccan gave Hindustani its first major literary identity. This is where the Deccan's contribution becomes historically decisive.

The Deccan influenced pronunciation, style, and vocabulary. Words and idioms still heard in Hyderabad speech today preserve this memory. Yet even here, the grammatical frame remained Indo-Aryan. The Deccan enriched the language, but did not replace its core structure.

#### **Hindi's grammar tells the story of its origin**

The same can be said of east Indian languages. Bengali, Assamese, and Odia belong to the Indo-Aryan family, yet their grammatical sensibilities are quite different. Bengali, for instance, does not mark grammatical gender in the way Hindi does.

Hindi continues to distinguish between masculine and feminine forms in verbs and adjectives. This shows that standard Hindi did not absorb eastern grammatical patterns in any major way.

So, students should remember this distinction: Hindi's words tell the story of contact. Hindi's grammar tells the story of its origin. Its words reveal Persian courts, Mughal armies, Deccan bazaars, and multilingual urban life. But its grammar still points back to the older north Indian linguistic tradition.



### Hindi is best understood as an Indo-Aryan language

Modern Standard Hindi emerged much later, in the nineteenth century, during British rule and the rise of nationalism. It was a more Sanskritised form of the broader Hindustani language, written in Devanagari and distinguished from Urdu, which retained stronger Persian vocabulary and Perso-Arabic script.

So, the evolution of Hindi is not the story of one empire or one region. It is the story of an ancient north Indian language that travelled through courts, camps, and markets, was refined in the Deccan, enriched by contact, yet retained its original grammatical spine.

That is why Hindi is best understood not as a Mughal language, but as an Indo-Aryan language shaped by centuries of cultural exchange across the subcontinent.

### A 2,500-YEAR-OLD SITE THROWS UP A CURIOUS BURIAL PATTERN—UPSIDE-DOWN POTS

An ongoing excavation at a megalithic site in Virli Khandar has revealed distinctive burial architecture, rare artefacts and unusual pottery arrangements, offering fresh insights into ancient funerary practices in Vidarbha.

#### Key Takeaways:

— The site, located in Pauni tehsil of Bhandara district, in Maharashtra was first reported in 2008 by researchers from Rashtrasant Tukadoji Maharaj Nagpur University and is currently being excavated under archaeologist and Head of Department of Ancient Indian History, Culture, and Archaeology, RTMNU, Dr Prabash Sahu.

— According to Professor Sahu, the site was selected for three reasons, including its unique burial pattern. “We have stone circles and within them menhirs (tall stone set upright), making it a composite megalithic structure — a combination of two burial types,” he said.

— So far, researchers have documented 69 megalithic burials using drone mapping and field surveys. Of these, four have been selected for excavation, including two stone circles with menhir in periphery and boulders, and two with only boulder circles.

— While skeletal remains have not yet been conclusively identified, excavations are ongoing. Significant artifacts have been recovered from one of the burials, including copper objects such as a necklace, iron implements like axes, chisels, ladles and arrowheads, semi-precious stone beads, notably etched carnelian beads, and a gold earring. Fragmentary bone remains have also been recovered alongside these finds.

— One of the most striking discoveries is a unique cluster of pottery, not previously reported in the Vidarbha region. In one burial, nearly 50 pots were found arranged systematically, with larger bowls covered by inverted bowls.

— At least 23 such pairs – amounting to 46 pots – were documented in a single cluster, along with additional red and black-and-red ware pots and associated iron objects.

— Sahu noted another peculiar feature: almost all pots, including larger vessels, were placed in an inverted position, with one pot covered by another from above.



- “None of the pots were found upright. It appears they were deliberately placed upside down within the burial context,” he said. The exact reason for this arrangement is yet to be established and will be studied further.
- Archaeologists believe the pots may have originally contained food, grains or liquids as part of burial offerings. Samples have been collected for residual and chemical analysis to determine their contents.
- The pots were carefully placed over a layer of black cotton soil laid above the natural lateritic (murum) base. The sticky nature of this soil helped stabilise the vessels, keeping them largely in position despite breakage caused by the weight of overlying soil.
- Explaining burial practices, Sahu said such structures were prepared by digging pits where skeletal remains, if present, were placed along with “grave goods” – objects associated with the deceased, reflecting beliefs in life after death.
- In another significant find, charcoal remains discovered at the site are expected to help determine its age through Accelerator Mass Spectrometry (AMS) dating. Preliminary observations suggest the site could be at least 2,500 years old.
- Archaeologists believe the findings at Virli Khandar could significantly contribute to understanding megalithic cultures in the region and their broader cultural practices.

#### INDIA GEARS UP FOR 2030 CWG, BUT UNPAID BILLS, COURT CASES OF 2010 LINGER

As India gears up to host the 2030 Commonwealth Games in Gujarat, financial dues of the games’ Delhi edition held in the country for the first time two decades back in 2010, continue to linger.

##### **Key Takeaways:**

- An outstanding liability of Rs 28.05 crore was cleared in 2025-26. An estimated Rs 50 crore has been set aside for 2026-27. More than Rs 13 crore spent on legal and arbitration fees. And 29 cases are still being heard at various courts.
- Four years from now, Ahmedabad will welcome more than 70 nations in 2030 in what will be the centenary year of the Commonwealth Games. Earlier this month, a Commonwealth Sport delegation led by president Donald Rukare and chief executive Katie Sadlier toured venues across Ahmedabad, Gandhinagar, Vadodara and Ekta Nagar, praising the “scale of planning” and “quality of venues”.
- Yet the legal and financial fallout of the scandal-tainted 2010 Delhi Games continues to drag on, according to details obtained by The Indian Express under the Right to Information (RTI) Act and from public records.
- Responding to RTI requests seeking details of the outstanding liabilities of the erstwhile Organising Committee of the 2010 CWG, the Ministry of Youth Affairs and Sports said it cleared dues to the tune of Rs 28.05 crore in 2025-26. This payment was made to MTNL.
- A parliamentary committee report tabled in the Lok Sabha on March 18 estimated that Rs 50 crore will be required in 2026-27 to clear remaining liabilities. However, the ministry did not confirm the figure in its RTI reply.



— Some of the major vendors listed are Nussli Switzerland, which was awarded a contract of Rs 128 crore for games overlays, according to a 2011 report by the Comptroller and Auditor General (CAG). The list also includes Electronics Corporation of India for a contract approved at Rs 346 crore.

— According to the CAG report, the estimated cost of the 2010 CWG had ballooned from Rs 297 crore, mentioned in a Cabinet note of May 2003, to Rs 18,532.31 crore in October 2010. The final financial burden may take years to fully emerge as cases continue in courts.

— The country has now set its sights on hosting the 2036 Olympics, with the 2030 Commonwealth Games seen as a key platform to restore credibility. For the 2030 Games, operational costs are projected between Rs 3,000 crore and Rs 5,000 crore, alongside a broader 'Amdavad 2030' infrastructure push spanning transport, hospitality and sports facilities.

**Do You Know:**

— Twenty years after the controversy-ridden Delhi Games, India is set to host the Commonwealth Games again in 2030. They might be the Games that few want, going by the troubled 2022 and 2026 editions and fairly muted response for 2030. But for India, hosting the Commonwealth Games will still be beneficial.

— Purely from a sporting point of view, hosting the CWG can provide a boost to the ecosystem at a time when the performance of Indian athletes across sports is stagnating.

**SHORT NEWS**

**US SECRET SERVICE**

— A man armed with multiple weapons stormed through a security checkpoint at the Washington Hilton hotel, which hosted the annual White House Correspondent Dinner with US President Donald Trump on April 25.

— The episode has raised concerns about political violence in the US, coming after multiple security incidents involving Trump, in particular. Less than two years ago, he was shot at in a campaign rally, which led to the resignation of the then Director of the US Secret Service, Kimberly Cheatle.

— The Secret Service is the agency primarily tasked with protecting the US president. But this was not always the case; in fact, the agency was initially founded to combat counterfeiting of US currency. Today, it is best associated with sunglasses-wearing agents and the armoured limousine attached to the president, called The Beast, but its day-to-day role involves a large number of complex tasks.

— It was founded in 1865 and is one of the world's oldest federal investigative law enforcement agencies. Its mandate changed after President William McKinley's killing, who was the third US president assassinated after Abraham Lincoln and James A Garfield in 1865 and 1881, respectively.

— It assumed full-time responsibility for the safety of the US president in 1902. It works under the Department of Homeland Security and "employs approximately 3,200 special agents, 1,300



Uniformed Division officers, and more than 2,000 other technical, professional and administrative support personnel”, according to its website.

### SPG

In India, the Special Protection Group (SPG) was established in 1985 — a year after the assassination of Prime Minister Indira Gandhi — to provide security cover to the Prime Minister, former Prime Ministers and their immediate family members. They work in collaboration with the Intelligence Bureau and local police forces.

## ENGINEERING GOODS EXPORTS TO WEST ASIA DROP BY 50%

India’s engineering goods exports to the West Asia and North Africa (WANA) region slipped by 50% to \$864 million in March against the same period last year, dragged down by Iran war and subsequent closure of the Strait of Hormuz, data released by the Engineering Exports Promotion Council (EEPC) said. Engineering goods comprised nearly a quarter of the total goods that India exported globally in the financial year 2025-26 (FY26). While for the WANA region, the share was nearly 10%.

## PREMATURE RELEASE

— The Delhi High Court on April 16, 2026 criticised the Sentencing Review Board’s (SRB) latest rejection of Santosh Kumar Singh’s plea for premature release.

— The SRB, comprising senior state officials, including the DG of Prisons, the Police Commissions, and the Chief Secretary, is the body that must first examine each case and pass its recommendation to the government.

— Premature release allows life convicts to be released early if they are deemed to be reformed, rehabilitated and no longer a threat to society. The powers of clemency are derived from both constitutional and statutory frameworks.

— Section 473 of the BNSS (and Section 432 of the CrPC) grants state governments the power to remit sentences “at any time”.

— This is separate from the power of the President and the Governor to remit sentences under Articles 72 and 161 of the Constitution respectively.

— One of the restraints placed on the state government’s power of remission can be found under Section 475 of the BNSS (and Section 433A of the CrPC). For convicts serving a life sentence and have been found guilty of an offence punishable by death, the state cannot release them from prison until at least 14 years imprisonment have been served.

## CONGRESS MOVES PRIVILEGE NOTICE AGAINST PM MODI

— The Congress on 21st April moved a privilege notice against Prime Minister Narendra Modi for allegedly “having cast aspersions” on the “independence and integrity” of elected Members of Parliaments during his address to the nation on 18th April night.

— Parliamentary privileges are certain rights conferred to the MP for conducting the business of the Parliament. There is no codified list of the exact privileges, but it includes the right of free



expression in the course of Parliamentary debates and MP will not be liable for court proceedings for this.

— According to the Constitution of India, Articles 105 and 122 outline the privileges of Parliament, while Articles 194 and 212 pertain to the privileges of state governments.

— If there is a belief that such a privilege has been breached, a motion can be raised by any member. It can be admitted by the Chairman. They can then refer it to the Privileges Committee.

#### **Committee of Privileges**

It examines all questions involving breach of certain rights, privileges, and immunities enjoyed by MPs. It is a Standing Committee. It examines the cases of breach of the privileges of the House and its members and recommends appropriate action. The Lok Sabha committee has 15 members, while the Rajya Sabha committee has 10 members.

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#### **NARCOTICS ANALYSIS & RAG-BASED INVESTIGATION TOOL (NARIT-AI)**

— The Gujarat Police has developed the NARIT-AI tool to help police make tighter cases under the Narcotics Drugs and Psychotropic Substances (NDPS) Act to ensure conviction.

— The tool, designed to help law enforcement agencies in handling complex narcotics cases under the NDPS framework.

— It will integrate legal provisions, case laws, and investigative procedures to provide real-time analytical support to investigating officers (IOs).

— NARIT-AI was developed using Retrieval-Augmented Generation (RAG) technology.

— RAG is an AI framework that improves the accuracy of a large language model (LLM) by referencing trusted knowledge bases before generating responses, which in this case are laws, circulars, cases, and judgments on narcotics cases in India.

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#### **CORPORATE SOCIAL RESPONSIBILITY (CSR)**

— Corporate Social Responsibility (CSR) spending by companies listed on stock exchanges registered a sharp rise of 23% in FY25, reaching Rs 22,212 crore compared with Rs 18,011 crore in the previous financial year. The increase has been attributed largely to robust corporate profitability.

— CSR is a management framework through which companies incorporate social and environmental considerations into their business operations and interactions with stakeholders. It represents a long-term, structured commitment to societal development and welfare.

— According to the National CSR Portal, “Ministry of Corporate Affairs had issued ‘Voluntary Guidelines on Corporate Social Responsibility, 2009’ as a first step towards mainstreaming the concept of Business Responsibilities.

— This was further refined subsequently, as ‘National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business, 2011’.”



— Later, the Companies Act, 2013, made it mandatory for listed and unlisted organisations of a certain size and net worth to spend at least 2 per cent of their average net profit towards CSR.

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#### PAYTM PAYMENTS BANK

— More than two years after barring Paytm Payments Bank from accepting deposits or top-ups, the Reserve Bank of India (RBI) recently scrapped its banking licence with immediate effect.

— The central bank said the bank’s operations were conducted in a way that was “detrimental to the interest of the bank and its depositors.”

— Paytm Payments Bank has been under regulatory scrutiny since 2018 owing to multiple compliance concerns. The central bank identified violations related to know-your-customer (KYC) norms — rules designed to verify customer identities and prevent financial fraud.

— One of the key issues flagged by the RBI was that the bank had linked a single Permanent Account Number (PAN) to multiple customer accounts. This raised serious red flags, as such practices can potentially be used to bypass regulatory safeguards.

Additionally, the RBI observed that the bank was allowing transactions beyond the prescribed limits for certain accounts, which heightened concerns around possible money laundering risks.

— Payments banks in India are tightly restricted — they can accept deposits only up to Rs two lakh per customer and are not allowed to offer loans or credit cards.

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#### AMOC, OR ATLANTIC MERIDIONAL OVERTURNING CIRCULATION

— It is part of a giant loop of water that snakes through the world’s oceans. It carries warm, salty water from the tropical Atlantic up past the Eastern Seaboard and toward Europe. There, the water releases its heat into the air and helps moderate the weather in Britain and the Nordic countries.

— In the process, the water cools, sinks and heads back south, where it goes on to influence rainfall patterns in Africa, South America and beyond.

— In a study published Friday in the journal *Science Advances*, researchers show that, under certain conditions, building a 50-mile-long dam across the Bering Strait—the shallow waterway that separates Russia and Alaska—could prevent a collapse of the AMOC, which plays a central role in regulating Earth’s climate.

— The AMOC (pronounced AY-mock) has weakened in recent decades, and a growing body of evidence suggests human-caused warming could someday cause it to shut down or slow significantly, with grave effects on the weather on multiple continents.

— Warming from greenhouse gases in the atmosphere is disrupting this vast oceanic conveyor belt. As temperatures rise, the Arctic gets rainier and Greenland’s ice sheet melts, more fresh water is pouring into the North Atlantic, making its surface less salty. That prevents the water of the AMOC from sinking at the loop’s northern end, which in turn causes it to draw less warm water northward from the tropics.



— Should the belt stop turning altogether, Northern Europe would grow colder, deprived of the warmth the AMOC brings. With less water moving north through the Atlantic, more of it would slosh toward the U.S. East Coast, raising sea levels there. Tropical rainfall patterns would be rearranged, parching some areas while dousing others.

#### EXTREME EVENTS COULD IMPACT 36% OF LAND ANIMAL HABITATS BY 2085, SAYS NEW STUDY

— By 2085, over a third of wildlife habitats on land could suffer multiple types of climate-driven extreme weather events, such as heatwaves, wildfires, and floods, if warming continues to rise in the second half of the century, according to a new study published in the Nature Ecology & Evolution journal.

—The study, led by researchers at the Potsdam Institute for Climate Impact Research (PIK), Germany, analysed the impact of climate change in a medium-high emission scenario on nearly 34,000 vertebrate species.

—The most widespread impact will be from extreme heatwaves, the study found. By 2050, 74% of animal habitats on land will be exposed to heatwaves, 16% to wildfire, 8% to droughts, and 3% to floods if warming continues into the latter half of the century, the study said.

#### FOUR CHEETAHS FROM S AFRICA ARRIVE AT BANNERGHATTA BIOLOGICAL PARK

Bengaluru's Bannerghatta Biological Park on Saturday announced the successful arrival of four Cheetahs, including two females from South Africa. The animals from Induna Primate and Parrot Park in South Africa reached Kempegowda International Airport at approximately 1.15 am on Saturday under an approved animal exchange programme in accordance with the Wild Life (Protection) Act, it said. According to a statement issued by Bannerghatta Biological Park (BBP), this initiative aims to strengthen conservation efforts, enhance genetic diversity within captive populations, promote visitor awareness, and support scientific research.

#### ASHOK KUMAR LAHIRI

— The government has reconstituted the NITI Aayog, appointing Ashok Kumar Lahiri as its vice chairman and four new full-time members. Lahiri, a former Chief Economic Advisor (CEA) and a member of the 15th Finance Commission, will take over from Suman Bery, whose term ends later this month.

— NITI Aayog is composed of a Chairperson (Prime Minister), a Vice-Chairperson appointed by the PM, a Governing Council (CMs of all states and Lt. Governors of UTs), and a Chief Executive Officer.

— According to Niti Aayog's official website, "NITI Aayog serves as the apex public policy think tank of the Government of India, and the nodal agency tasked with catalysing economic development and fostering cooperative federalism through the involvement of State Governments in the economic policymaking process using a bottom-up approach."



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## JOHN TERNUS

— Apple has named John Ternus as its new chief executive to take over from Tim Cook, who is stepping down after 15 years of leading the technology major. Cook has been at the helm since 2011 after co-founder Steve Jobs resigned for health reasons, just before his passing. Ternus, who is currently the head of hardware engineering, will take over on September 1.

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## ATHLETICS FEDERATION OF INDIA (AFI)

— The Athletics Integrity Unit (AIU) Board, an autonomous body set up by World Athletics, has downgraded the Athletics Federation of India (AFI), flagging concerns over the “extremely high” doping risk among athletes in the country.

— AFI has been downgraded to Category A, the highest-risk bracket for doping in international athletics.

— It means India’s track and field athletes will now have to comply with more stringent anti-doping stipulations, with all national team members having to undergo tests before major championships.

— Between 2002 and 2025, India was among the top two in the list of countries with the most Anti-Doping Rule Violations (ADRVs) in athletics, according to data presented in the AIU statement.



**DreamIAS**



## BUSINESS AND ECONOMY

### WELCOME TO THE AGE OF ENERGY SHOCKS

The past decade has brought a rapid succession of global energy crises, driven by military conflict, extreme weather and supply-chain snarls. As today's highly interconnected oil and gas markets become more fragmented and the low-carbon transition accelerates, recurring shocks maybe becoming the norm.

First came the post-pandemic inflationary surge in 2021, quickly followed — and amplified — by Russia's invasion of Ukraine in 2022. Now, four years later, comes the Iran war, which has sparked the greatest disruption to oil and gas supplies in history. Three shocks of such magnitude in such a short span far exceed the historical norm. Broadly speaking, the world has average done major energy crisis per decade since World War Two.

More worryingly, the underlying causes of the recent crises — geopolitical and trade fragmentation — suggest the world may face more frequent shocks in the decades ahead.

Today's energy markets are more globalised than ever. That is largely the result of a shift in the centre of gravity in energy demand in recent decades away from Western economies and toward Asia, particularly China.

Global oil imports surged by 55% between 2000 and 2024 to around 70 million barrels per day, according to the Energy Institute's Statistical Review. China's imports alone grew six-fold over that period to 13.4 million bpd. At the same time, global energy flows have been dramatically redrawn by the transformation of the U.S. — the world's No. 1 oil consumer - from one of its biggest energy importers into the top oil and gas producer and exporter.

Between 2000 and 2026, U.S. oil exports rose more than 12-fold to about 12 million bpd — roughly 11% of the global market — putting Washington in direct competition with traditional exporting powerhouses such as the Organization of the Petroleum Exporting Countries and Russia. Meanwhile, skyrocketing U.S. exports of liquefied natural gas (LNG) added to that globalisation - improving efficiency, spurring growth and strengthening ties between producers and importers.

For a time, all of this worked.

The war in Ukraine exposed both the benefits and the vulnerabilities of that model. Europe's dependence on Russian energy left it scrambling after Moscow's invasion and the subsequent Western sanctions. The continent was forced into a painful reassessment of energy security and diversification.

The Iran war has shattered yet another long-standing assumption: the idea that Gulf producers would never engage in conflict that would seriously impede energy flows. Tehran's decision to block the critical Strait of Hormuz — through which 20% of the world's oil and gas previously flowed — and attack its Gulf neighbours' energy infrastructure overturned decades of tacit restraint among Middle Eastern producers.

This “new normal” may sow the seeds for future regional tensions. More broadly, the ease with which Iran disrupted the world's energy supplies raises uncomfortable questions about the security of other critical choke points — from the Red Sea to the South China Sea.



### Trade under strain

Alongside the rise in military conflicts is the growing prevalence of trade conflicts, which have upended the post-war ambition to foster peace through multilateral cooperation. U.S. President Donald Trump's decision last year to impose sweeping tariffs on most trading partners intensified those strains. His explicit use of America's energy dominance as a negotiating tool heightened concerns over the long-term reliability of the U.S. as a supplier, reinforcing calls elsewhere for greater energy self-sufficiency. China's rise as an industrial and economic powerhouse has further weakened the old trading order and helped create a two-tier oil and gas market. Beijing has openly flouted Western sanctions — which have expanded greatly over the past decade — importing large volumes of oil and gas from Russia, Iran and Venezuela. It has also accelerated the emergence of alternative trade, payment, insurance and shipping networks that fragment global markets.

Then there is the energy transition. Renewable power now accounts for nearly half of global electricity generation capacity, following a record surge in solar installations last year. The shift is apt to accelerate following recent crises because reducing dependence on fossil fuels increasingly overlaps with governments' efforts to bolster energy security. The European Union made the point explicitly in a plan aimed at shielding consumers from volatile oil and gas prices.

But the transition also introduces new vulnerabilities. Reduced reliance on fossil fuels could morph into heavy dependence on imports of low-carbon technologies — from solar panels to battery storage - that are highly concentrated in China. That dependency is already emerging as a major source of trade and industrial tensions between Beijing and Western governments. Slowing demand is also likely to intensify competition for market share among major producers - Gulf states, Russia and the U.S. alike. This increases the risk that energy becomes an even more potent geopolitical weapon.

And even if the energy transition slows climate change, it won't reverse it. Rising global temperatures and more frequent extreme weather events — droughts, floods, hurricanes, heatwaves — are already disrupting energy production, transport and powergrids.

## WHAT LED TO THE NOIDA WORKERS' PROTEST?

### The story so far:

The Noida workers' protest, which escalated into widespread violence on April 13, has become a significant crisis for the Uttar Pradesh government. The unrest, primarily driven by demands for higher wages and improved working conditions, paralysed parts of the city's industrial zones and triggered a massive security response. On April 14, domestic workers in high-rise buildings such as Cleo County also began protesting for higher pay. The administration took a dual approach of crackdowns and concessions. In a direct response to the unrest, the Uttar Pradesh government announced a 20-21% increase in minimum wages, effective retroactively from April 1. As Uttar Pradesh heads towards the election, the situation has given the Opposition an issue to corner the government on.

### Why did workers take to the streets?

The most direct trigger was the Haryana government's decision to raise its minimum monthly wage by 35%, from approximately ₹14,000 to ₹19,000. Workers in Noida, doing similar work just across the border, questioned why they were earning significantly less (around ₹11,000-₹13,000) for the same labour. The State typically revises wages twice a year based on the Variable Dearness



Allowance (VDA), but workers argued that these routine adjustments were insufficient and left them with lower pay than in Delhi and Haryana, which also have a BJP government at present. A long-standing wage gap became an urgent survival issue due to the sudden rise in LPG cylinder prices and essential food items, driven by the West Asian crisis.

Protesters also highlighted systemic violations of the eight-hour workday norm, arguing that 12-hour shifts have become standard in many Noida industrial units. Many workers reported being forced to work extended hours without a corresponding pay increase or any weekly off.

Another major grievance is the informalisation of the workforce. Even in large registered factories, many workers lack written contracts or job security. They blamed middlemen/contractors for pocketing portions of their wages, with some being made to sign for double shifts but paid only for single shifts. Difficulties in accessing Employee Provident Fund (EPF) and insurance benefits, along with the absence of formal trade union representation, also came to the fore.

#### **How are the wages decided?**

Minimum wages in Uttar Pradesh are determined through a structured legal framework combining a fixed base wage with dynamic allowances. The process is governed by the Minimum Wages Act, 1948, and the Uttar Pradesh Minimum Wages Rules, 1952, though the transition to the new Code on Wages is influencing current decisions.

Under the Code on Wages 2019, the Centre must set a national floor wage — a binding minimum benchmark. No State can go below it, though they set their own rates, often varying.

The core wage structure is calculated based on norms established by the 15th Indian Labour Conference (ILC), which ensures a worker can support a family of three consumption units (self, spouse, and two children).

#### **What are workers' demands?**

The primary demands include a minimum wage of ₹20,000 to ₹26,000 per month for unskilled workers to match the rising cost of living, and direct company hiring to prevent contractors from skimming wages.

Workers are also demanding strict implementation of double pay for every hour worked beyond the standard shift, immediate clearance of pending bonuses from the previous financial year, and retrospective payment of wage arrears. They have called for a significant increase in House Rent Allowance, citing the skyrocketing rents in Noida sectors and villages.

They also insist that any work beyond eight hours be voluntary and compensated as overtime, along with guaranteed paid weekly holidays. Additionally, they seek the establishment of functional Internal Complaints Committees to address workplace harassment and verbal abuse by managers, as well as the withdrawal of FIRs and unconditional release of those arrested during the April 13 protests.

#### **How is the government responding?**

While the protests have pushed the Centre to hasten the process of deciding the national floor wage, the Uttar Pradesh government is prioritising the resumption of production to protect Noida's image as a safe investment zone, while using wage hikes to pacify the core workforce.



Chief Minister Yogi Adityanath fast-tracked an interim wage increase of 20-21% specifically for the Noida and Ghaziabad regions. By making this retroactive, he aimed to put cash directly into workers' pockets to offset war-driven inflation in fuel and food.

To address concerns about temporary fixes, the State has announced plans to form a Wage Board tasked with developing a long-term salary structure that reflects regional cost-of-living differences, potentially narrowing the gap with Delhi and Haryana.

The Labour Department has begun audits of industrial units to identify contractors who skim wages or fail to deposit EPF/ESI contributions. Sources say the government is pushing for direct bank transfers to ensure workers receive their full pay without middleman interference.

The district administration has established sector-wise grievance committees where factory owners, worker representatives, and labour officials meet weekly to resolve local disputes.

Industry bodies have noted that while some worker grievances are genuine, micro, small and medium enterprises are also under pressure due to global tensions, urging the government to maintain balance while addressing labour concerns.

## COSTS AND WAGES

The ongoing factory workers' protests in Noida's industrial belt are one of the largest industrial labour mobilisations in recent times. Violence has been documented as well: stone-pelting and attempts to breach police barricades, as well as a brutal police lathicharge. After Haryana hiked wages for workers by 35% following protests in Faridabad, Gurugram, and Manesar, workers in Noida realised that their own wages were lower, a situation exacerbated by the pinch in LPG supplies. Trade unions have demanded ₹18,000 to ₹25,000 a month — which the Uttar Pradesh government's interim hike of around 21% did not meet — and fixed working hours and holidays and overtime pay. The new Labour Codes that the Union government enforced from late 2025 allow a 12-hour single workday and specify wage floors but not actual wages, leaving them to the States. As a result, the Codes have allowed employers in certain States to extract more work from the longer workday at or near the statutory minimum pay. The share of contract labour in the formal manufacturing sector in India is the highest since 1997-98. Ironically, the provisions of the Labour Codes encourage the sector to persist with contract labour rather than appreciate job security, while also imposing limits on worker strikes. These, together with the energy crisis and increasing food prices, precipitated the protests.

In 2024, the Samsung workers' strike in Sriperumbudur, Tamil Nadu, was similarly over low wages, unpaid overtime, and the company's refusal to recognise unions. More recently, workers at the IOCL Panipat refinery went on strike demanding an eight-hour workday, better wages, and safer working conditions, as did workers at the NTPC plant in Patratu, and Adani's Raikheda plant in Raipur. This is practically a wave in the Labour Codes regime, showing that labour rights are paper tigers — exacerbated by Yogi Adityanath's claim that the protests were a conspiracy, followed by the interim hike. A worker who spends one-sixth of his monthly income on cooking costs alone does not need to be radicalised to understand that his wage is insufficient. Further, neither the State nor the Centre responded substantively to residential societies barring domestic workers who had joined the protests by displaying their photographs at the gates — a serious civil rights infraction. The Indian Labour Conference has not convened since 2015, and the Codes were passed without the tripartite consultation that it would have facilitated. The solution to the agitation, in sum, is simple: institute humane working hours and wages, and institute genuine



labour reform that is well enforced. The problem only looks complicated because the government is dragging its feet.

#### DRAFT RULES FOR ROLL-OUT OF ETHANOL 85 FUEL TO BE NOTIFIED SOON

- The government is expected to issue draft rules soon for rolling out E85 fuel.
- E85 is a blend of up to 85% ethanol and 15% petrol.
- It will be introduced as a separate fuel grade, distinct from E20 petrol.
- The push for E85 has gained urgency due to energy security concerns highlighted by the West Asia crisis.
- Key benefits
  - reduced dependence on imported oil
  - lower vehicular pollution
- Using E85 will require:
  - vehicles with compatible engines
  - separate dispensing infrastructure at fuel stations
- Engines designed for E85 can also run on **lower ethanol blends** like **E60 and E50**.
- The government says India currently has **surplus ethanol**, despite other demands such as aviation blending.
- Meanwhile, **E20 petrol has already been mandated nationwide from April 1**.

#### FOSSIL-BASED POWER DECLINES GLOBALLY AS CLEAN POWER IN INDIA GROWS: REPORT

Record power generation from clean energy sources in India in 2025 resulted in a rare decline in production of electricity from fossil fuels not just in India but also globally, a new report has revealed.

##### Key Takeaways:

- India's fossil fuel-based electricity production in 2025 was about 52 TWh (52 billion units) less than the previous year, the global energy think tank Ember said in its annual Global Electricity Review. China also reported a similar decline in fossil-based electricity, producing about 56 TWh lesser power than 2024.
- The combined effect of declines in these two countries drove down global fossil electricity generation, the Ember report said. It was only the fifth time this century, and the first time since the COVID-19 pandemic, that fossil fuel-based electricity generation did not show a year-on-year increase, it said.



- “The global fall in fossil (fuel-based power) generation was driven by a historic reversal in fossil trends in China and India, the largest and third-largest fossil power countries globally. 2025 was the first year this century when fossil generation fell in both countries,” the report said.
- The year 2026, however, could be very different, despite projections of India adding even more renewable capacity than previous year.

**Do You Know:**

- India added almost 38 GW of new solar energy capacity in 2025. This was the first time that India had installed more solar capacity than the United States in a year. The US added about 33 GW of solar capacity in 2025.
- India also added more than 6.3 GW of wind power and about 4 GW of hydropower capacity. The total renewable energy capacity added in the year happened to be more than 48 GW.
- Due to a relatively tepid growth in electricity demand, thanks to good monsoon and a milder summer, the increase in power generation from renewables more than covered for the increase in demand. Compared to 2024, India needed additional electricity of just about 49 TWh, while renewable energy produced about 98 TWh more than the previous year.
- Low rainfall during this year’s monsoon season could reverse the situation witnessed in 2025. The Met department has predicted below normal monsoon rainfall, which could lead to a rise in power demand to meet the potential increase in irrigation and air-conditioning needs. Fossil fuel-based electricity generation is likely to increase again this year.
- The findings of the Ember report are in line with some other estimates of the 2025 trends in India’s power sector released earlier this year.

## HOW CERC PLANS TO MAKE ‘ONE GRID ONE PRICE’ A REALITY IN POWER SECTOR

In a step toward restructuring electricity trading in the country, India’s top electricity regulator has issued draft regulations for market coupling — a process that matches bids from all power exchanges to discover a uniform market-clearing price.

**Key Takeaways:**

- Generally, electricity generators or gencos have used long-term pacts called power purchase agreements or PPAs to sell electricity to distribution companies (DISCOMs) and large power consumers in India. But, power exchanges facilitate short-term electricity trades to meet demand fluctuations, where gencos can sell their surplus power independently of PPAs at market price.
- Power markets are hosted on power exchanges, and currently, each of the three major power exchanges in India sets its price based on supply and demand to purchase electricity, resulting in price variations across exchanges. The new framework aims to change this decentralised system.
- It proposes the Grid Controller of India (Grid India) as the central operator for price discovery. It has also proposed to entrust Grid India with implementing the market coupling process. Comments from stakeholders on the draft amendments are to be sought by May 16.
- In the draft regulation, named the Central Electricity Regulatory Commission (Power Market) (Second Amendment) Regulations, 2026, the regulator proposed various amendments to the



CERC (Power Market) Regulations, 2021, in which the concept of market coupling was first introduced.

- Generally, market coupling can also help act as a reliable reference price for policymakers. It can lead to more efficient price discovery, reduced price disparities across regions, and increased market stability. The move is seen as a continuation of the regulator's order issued in July last year, which directed the phased implementation of market coupling across power exchanges in the Day-Ahead Market (DAM) segment from January 2026.

**Do You Know:**

- Electricity generators usually enter into long-term pacts called PPAs that typically span 25 years to sell electricity, while power exchanges facilitate short-term electricity trades. This market-driven approach enables generators to optimise their output and revenue, while helping utilities meet variable power demands more efficiently through bids and offers. The market-clearing price — the price at which electricity is traded — is determined by the equilibrium of demand bids and supply offers.
- Power markets are categorised based on the electricity delivery timing and the duration of contract. The spot market includes the real-time market (RTM) for near-immediate delivery and the intraday market for same-day trades, hours before delivery. The day-ahead market (DAM) deals with closed auctions for 15-minute time blocks for the following day, while the term-ahead market (TAM) handles trades from 3 hours to 11 days in advance.
- In India, the short-term power market is expanding gradually, with the total volume of short-term transactions of electricity increasing from 65.90 Billion Units (BU) in 2009-10 to 238.35 BU in 2024-25.
- In its draft regulation, CERC proposed that Grid India would function as the market coupling operator (MCO) and would be responsible for the operation and management of market coupling.

**RURAL ROADS SCHEME EXTENDED, OUTLAY INCREASED BY RS 3,727CR**

The Centre on Saturday decided to extend the Pradhan Mantri Gram Sadak Yojana-III (PMGSY-III) beyond March 2025 till 2028-29, with an increase in the outlay by Rs 3,727 crore to Rs 83,977 crore. A decision to this effect was taken during the meeting of the Union Cabinet, which was chaired by Prime Minister Narendra Modi.

**Key Takeaways:**

- Briefing the media on Cabinet decisions, Information and Broadcasting Minister Ashwini Vaishnaw said that the government has decided to extend the PMGSY-III till March 2028 for the completion of roads and bridges in plain areas and roads in hilly areas and extension of timeline till March 2029 for completion of bridges in hilly areas.
- As per an official statement, the outlay of the scheme has been revised to Rs 83,977 crore from the original outlay of Rs 80,250 crore.
- The first phase of the PMGSY was launched on December 25, 2000, by the then NDA government headed by Prime Minister Atal Bihari Vajpayee. The second phase was launched in 2013.



— After these two phases, another component of the PMGSY—Road Connectivity Project for Left Wing Extremism Affected Areas (RCPLWEA)—was launched in 2016 for constructing rural roads in the LWE areas. The third phase was launched in 2019, with a sanctioned road length of 1,15,446 km.

— In September 2024, the Centre had approved the implementation of the PMGSY-IV during the financial year 2024-25 to 2028-29, with an outlay of Rs 70,125 crore.

**Do You Know:**

— Last year, the Union Ministry of Rural Development (MoRD) asked states to attach QR codes on all maintenance information display boards for roads built under the Prime Minister Gram Sadak Yojana.

— On September 11, 2024, the Central government approved PMGSY-IV to provide all-weather road connectivity to 25,000 unconnected habitations of population size 500+ in plains, 250+ in northeastern and hill states/UTs, special category areas (Tribal Schedule V, Aspirational Districts/Blocks, Desert areas) and 100+ in LWE-affected areas (notified by the Ministry of Home Affairs in nine states), as per Census 2011.

— Starting as a totally Centrally Sponsored Scheme, the funding pattern was modified from 2015-16 to 60:40 between the Centre and states (except for northeastern and Himalayan states).

#### WHY 3D GLASS SEMICONDUCTOR PROJECT IS INDIA'S TOP CHIP BET

The foundation stone for India's first advanced 3D chip packaging unit was laid in Bhubaneswar, a project which IT Secretary S Krishnan said can put the country "on the map" in terms of advanced chip packaging, and one the government will be watching "very closely".

**Key Takeaways:**

- Last year, under its Rs 76,000 crore India Semiconductor Mission (ISM), the government had approved a Rs 1,934 crore 3D glass chip packaging facility in Odisha, led by US-based 3D Glass Solutions, will produce glass substrate panels and advanced 3D heterogeneous integration (3DHI) modules, with applications spanning artificial intelligence, 5G, defence and data centres. The project has received investments from Intel, Lockheed Martin, and other VC and PE funds.
- It is among the ten plants that have been approved under the ambitious scheme, including a chip fabrication plant being built by the Tata Group, and a number of other assembly and testing plants including the US-based Micron Technology, among others.

**Do You Know:**

- Launched in 2021 with a Rs 76,000-crore outlay, the India Semiconductor Mission was conceived as a state-backed push to build a full-stack chip ecosystem, from fabrication and packaging to design and display manufacturing. Under the scheme, ten semiconductor projects have been approved so far across six states, drawing investments of over Rs 1.6 lakh crore. These include fabrication plants, OSAT (assembly, testing, packaging) units and design-linked incentives.
- The government is understood to be working on the next iteration of the plan, and could approve a scheme with an outlay of around \$11 billion, The Indian Express had earlier reported. However, under the revised scheme, the priorities of the government might change. While ISM 1.0 focused



on attracting chipmaking infrastructure to India, ISM 2.0 is likely to offer greater support to ancillary industries such as gases, chemicals and capital goods, among others.

## NON-DELIVERABLE DERIVATIVE (NDD)

### Why it matters

The Reserve Bank of India (RBI) on Monday (April 20) partially eased curbs on certain rupee derivative trades that had been introduced earlier this month to prevent the currency from hitting successive record lows. On April 1, RBI has barred banks from non-deliverable derivative (NDD) contracts in the rupee, marking a decisive shift toward tighter control and transparency in the foreign exchange market.

### Core Concept:

— Before knowing about the NDD, let's first understand what derivatives are. 'Derivatives' refers to the financial instruments that derive their value from an underlying security or financial instrument. The underlying products can be equities, commodities, currencies, etc. Derivatives are primarily used by investors for hedging their position and minimizing the price risk.

— NDDs, which are typically traded outside India in financial hubs like Singapore, Hong Kong, London or Dubai, allow participants to bet on the rupee's direction without actual delivery of the currency.

— An NDD is a derivative contract where two parties agree on a future exchange rate for the rupee, but settle the difference in cash, usually in US dollars.

— The NDD market is widely used by foreign investors, hedge funds and global banks who cannot freely access and play in the Indian rupee market, as well as by firms looking to hedge currency risk. These trades take place offshore, outside the control of the RBI.

### Futures, Options and Swaps

— The common derivatives are Futures, Options and Swaps.

— A Futures Contract is an agreement to make or take delivery of a specified quantity at an agreed price on a future date in the underlying market. Futures contracts exist in commodities, equities, equity indices, interest rates and currencies.

— An Option is a right but not an obligation to make or take delivery of a specified quantity of an underlying asset at an agreed price on a future date. Option contracts also exist, just like future contracts, on different underlying assets or rates such as equities, currencies and interest rates etc.

— A Swap contract represents an exchange of two streams of payments between two parties.

## WHY MIS-SELLING TAKES PLACE

When a policy is sold under the fog of misinformation, ignorance is being taken advantage of. Also your trust, preconceptions and urgency.



It is a deception from which you will wake up only months or years later. That's when you notice the returns are not as implied, exclusions turn apparent, exit options carry a price tag or premium is more than you expected. Buying an insurance policy is not a decision you can reverse easily. If you are in the claims zone, it may be too late. You are one unhappy customer, but hardly the only one. Why does this happen? Why sell on pretence? Follow the money, said a famous detective. Mis-selling is to maximise sellers' commissions, for incentives and to reach insurer's product-specific goals .

#### **Hidden agenda**

The seller is handling a 'difficult-to- sell' product under pressure to earn commission. His income and career depend on the sale even if under a pretence. There could be a hidden agenda in the way commissions are structured. Not all policies are equally profitable for the seller. Endowments, money-back and certainly unit-linked covers get more commissions than term covers. The policy pushed may be the one fetching more commission.

The hidden agenda could originate with the insurer. Targets are stiff and can often be product specific. For example, a newly-launched product everyone is under orders to sell.

Sellers don't receive a fixed salary and what they sell determines earnings. Sales goals are unforgiving and agents can lose licence for underperforming. Hence, insurance is hard-sold and the seller is persistent.

#### **Non-monetary benefits**

Reaching targets brings non-monetary benefits such as recognition and opportunities to attend professional conventions and meetings. Success opens doors within the insurer and industry to the world of prospective clients. Networking is everything in sales and insurance, a prime example.

And then there are the priorities of the insurance company itself. New products are introduced with premium rates calculated on several assumptions, including break-even sales levels. The best opportunity to reach the number is in the launch phase since a new policy/scheme gets maximum advertising and marketing attention and the sales teams are pumped up with enthusiasm.

#### **Hype, misinformation**

Misinformation is rarely far behind when hype is involved. This combined with target pressure makes mis-selling an easy way to succeed.

Aren't there checks and balances in the system? Definitely. The regulator speaks out against mis-selling. Suitability norms, systemic checks and documentation have been put in place to curb them.

Customers have to sign declarations about disclosure and agents are evaluated on persistence of portfolios not only sales volumes.



## LIFE AND SCIENCES

### GALACTIC COSMIC RAYS

#### Why it matters

Step outside on a clear night and look up. You're watching light that has travelled billions of years to reach your eyes. But something else is raining down on you constantly, something you can't see, can't feel, and have probably never thought about: galactic cosmic rays. They are one of the most fascinating phenomena in nature.

#### Core Concept:

— Despite the name, cosmic rays aren't rays at all. They're particles: mostly protons, but also helium nuclei, electrons, and occasionally heavier atomic nuclei stripped bare of their electrons.

— They travel through interstellar space carrying enormous amounts of energy packed into something far smaller than an atom. When they slam into Earth's atmosphere, they trigger cascades of secondary particles that shower down to the surface like invisible confetti. Roughly one cosmic ray particle passes through the palm of your hand every second.

— Where do cosmic rays come from? For the lower-energy variety, scientists believe the main culprits are supernova remnants, the glowing, expanding debris clouds left behind when massive stars explode. Within these turbulent remnants, magnetic fields accelerate charged particles like a cosmic game of pinball, each bounce adding more energy.

— Because cosmic rays are charged particles, they don't travel in straight lines. Magnetic fields – both inside our galaxy and beyond – bend their paths, scrambling their directions over the vast distances they travel.

— Solar cosmic rays (cosmic rays from the sun) originate in the sun's chromosphere. Most solar cosmic ray events correlate relatively well with solar flares.

— According to the National Oceanic and Atmospheric Administration, scientists have postulated that cosmic rays can affect the earth by causing changes in weather. Cosmic rays can cause clouds to form in the upper atmosphere, after the particles collide with other atmospheric particles in our troposphere.

— The process of a cosmic ray particle colliding with particles in our atmosphere and disintegrating into smaller pions, muons, and the like, is called a cosmic ray shower. These particles can be measured on the Earth's surface by neutron monitors.

### HOW AI COMPANIES ARE QUIETLY BECOMING THE WORLD'S CYBERSECURITY GATEKEEPERS

When Anthropic launched Project Glasswing earlier this month, it did so with the kind of announcement that sounded like public service and read like a market consolidation.

The initiative brought together Amazon Web Services (AWS), Apple, Broadcom, Cisco, CrowdStrike, Google, JPMorgan Chase, the Linux Foundation, Microsoft, Nvidia, and Palo Alto Networks — essentially the who's who of the global technology industry — under a single



coordinated effort to secure the world's most critical software using an unreleased AI model called Claude Mythos Preview.

On the surface, it is a noble coalition. But looked at from another angle, it is a cartel of the most powerful technology companies on earth jointly deciding who gets access to the most capable cyber tools ever built.

Mythos Preview, Anthropic's new frontier model, has demonstrated an ability to find and exploit vulnerabilities hidden for decades in software that powers everything from operating systems to web browsers to the open-source code underpinning much of the internet.

#### **Exploiting hidden weakness**

To understand why this matters, a brief explanation of the terminology is useful. A "zero-day vulnerability" is a flaw in software that nobody knew existed until someone spots it, and so developers have zero days to fix it. An "exploit" is the actual weapon built from that flaw, a piece of code that lets an attacker break into a system, steal data, or crash critical services.

Previously, finding zero-days and turning them into working exploits required expert human researchers working for days or weeks. Mythos Preview, according to Anthropic's own technical documentation, can do both autonomously, overnight, and at a fraction of the cost.

Anthropic claims the model identified a 27-year-old flaw in OpenBSD, an operating system specifically built with security as its primary design principle. It found a 16-year-old bug in FFmpeg, a video processing library so widely used and so thoroughly tested that research papers have been dedicated to how best to audit it. In one case, automated testing tools analysed a vulnerable line of code five million times over the years and missed it entirely. But Mythos Preview spotted it.

Anthropic says its model has already surfaced thousands of critical vulnerabilities and is still working through an extensive list of open-source codebases.

#### **Building a cyber defence network**

The stated mission of Project Glasswing is defensive: find bugs before bad actors do, notify developers, and fund open-source maintainers, who are usually independent programmers who need time and resources to fix flaws in the software.

Anthropic has committed \$2.5 million to the Open Source Security Foundation and Alpha-Omega, and \$1.5 million to the Apache Software Foundation. Free access to Claude subscriptions is being offered to verified open-source developers.

While these are meaningful gestures, the structure of the initiative raises a pertinent question about why Anthropic has decided, unilaterally, that Mythos Preview will not be made generally available. The most powerful bug-finding tool in existence is being distributed exclusively through a coalition that Anthropic convened and controls. And the companies gathered under Project Glasswing are also the ones best positioned to profit from a software breakdown.

#### **Google's cybersecurity game**

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This initiative comes less than a month after Google completed its acquisition of Wiz, an Israeli cybersecurity firm, in a \$32 billion deal, marking the largest acquisition in the company's history. Wiz built its reputation by offering a platform that scans cloud environments for vulnerabilities and misconfigurations.

Together, Google Cloud and Wiz will now offer what they describe as an AI-powered cybersecurity platform combining Google's Threat Intelligence and Security Operations with Wiz's Cloud Security Platform, designed to detect, prevent, and respond to threats across all environments. The deal positions Google not merely as a cloud provider that happens to offer security tools, but as a vertically integrated security company with the AI backbone to run it.

For Google, the move is widely seen as a way to differentiate its offering through a security-first cloud strategy. In other words, cybersecurity is no longer a feature Google offers alongside its cloud services; it is the competitive differentiator. Microsoft made a similar bet years ago, quietly building its security division into a business that now generates over \$20 billion in annual revenue. Vertically integrating cybersecurity into cloud services provides hyperscalers with a new category of enterprise power.

#### **A conspicuous absence**

While Google, which offers its own rival model Gemini, is a part of Project Glasswing, OpenAI is conspicuously absent from the partner list. The company whose name is most synonymous with the public face of the AI revolution was not invited to Anthropic's table. But the ChatGPT-maker has moved quickly. Just a week after Glasswing was announced, the company expanded its own Trusted Access for Cyber (TAC) programme and released GPT-5.4-Cyber, a version of its latest model purpose-built for defensive security work with fewer restrictions for verified users.

The launch directly responds to Anthropic's Project Glasswing, with OpenAI's benchmark data showing just how fast these capabilities are advancing: its models went from scoring 27% on capture-the-flag security challenges in August 2025 to 76% just three months later.

But the more structurally interesting question about OpenAI is not its cybersecurity product roadmap. It is the nature of the company's infrastructure bets and what they mean for its ability to compete in a field increasingly defined by the integration of AI, cloud, and security.

Its Stargate infrastructure project gives it unparalleled scale for model development, and its partnership with Microsoft provides some enterprise security reach. But it lacks a platform like Wiz that sits inside enterprise cloud environments, watching for threats in real time. In cybersecurity, that kind of embedded presence is enormously difficult to replicate through model releases alone.

Anthropic has made the first move and formed a solid alliance with the most important names in the world of tech. That leaves OpenAI with fewer options. It could possibly attempt an acquisition of its own in the security space or deepen its relationship with Microsoft to the point where its models become the intelligence layer beneath Microsoft's security stack.

But OpenAI has said it does not think it is "practical or appropriate to centrally decide who gets to defend themselves," positioning its approach as broader and more democratised than Glasswing's curated coalition.

#### **The new-age cybersecurity firms**



So, with Anthropic's Project Glasswing a system is emerging where the same firms that develop the AI models capable of finding vulnerabilities at unprecedented scale will also be the firms selling the platforms that protect against those vulnerabilities.

They convene the coalitions that decide who gets access to the most advanced tools. They fund the foundations that maintain the open-source software those tools scan. And they do all of this while their models grow more capable by the month.

While their goal is rational and, in isolation, defensible, the aggregate effect will lead to a concentration of cybersecurity power in a handful of firms that is difficult to overstate.

This could possibly lead to a cartel-like behaviour sans price fixing as these firms will become companies whose structural position means that the rest of the world's ability to secure its digital infrastructure increasingly runs through their products, their platforms, and their decisions about who gets access to what.

#### HUMAN JUDGMENT REMAINS VITAL FOR SAFE ROBOTIC SURGERY

Elon Musk recently claimed that in three years, there will be more expert surgical robots than surgeons on the earth. The statement generated considerable excitement, speculation, and outrage in equal measure. While medicine is a deeply personal enterprise, it is also rooted in science.

The fundamental challenge in surgery is not precision but adaptability. Surgery in a young child is vastly different from that in an elderly person, even when the pathology and procedure are the same. This fact is further confounded by previous treatment, underlying health issues, and variations in anatomy and physiology.

The closest comparison for automation is driving and commercial aviation. Autonomous driving has had nearly 15 years of real-world testing, hundreds of millions of kilometres, and billions of dollars in investment in a relatively structured environment — yet it still operates without a federal approval framework in the U.S. and is confined to state permits in a handful of cities. In aviation, artificial intelligence (AI) remains limited to predictive maintenance and pilot assistance.

These limitations exist not because automation fails conceptually but because of unpredictable results in edge cases — situations outside the range of conditions the system was designed to handle. Surgery is fraught with them, and, unlike with a car, there is no safe emergency stop.

A July 2025 study by Johns Hopkins University researchers showed that an autonomous robot could perform gallbladder removal across non-uniform anatomical conditions, with tissue appearance altered by blood-like dyes, based on a 17-step task chain. Although it was a remarkable proof of concept, a systematic review of autonomous surgical robots approved by the U.S. Food and Drug Administration found that most robots demonstrated only level 1 autonomy (basic assistance), with four level 2 systems (specific task autonomy) and three level 3 systems (conditional autonomy) in clinical use. No semi- or fully autonomous systems are deployed anywhere.

AI-assisted robotic surgery, where the system guides rather than replaces the surgeon, is a different matter. Studies have shown reductions of 25% in operative time and 30% in intraoperative complications compared to conventional methods.



Surgery is more than completing a technical task. AI systems trained on historical datasets risk being misguided when the anatomy is anomalous or the context departs from the training data, and may mask the intuitive signals that inform experienced surgical judgment.

When an error occurs in autonomous surgery, the distribution of responsibility between manufacturing defects, medical negligence, and software failure is also unresolved, with no clarity on how stakeholders will share liability. Even if a consensus is reached, enforcement requires new legislation and regulatory frameworks, with applicable case law across every jurisdiction. Standard metrics to evaluate these systems are lacking, making clinical trial design difficult. And there is no quick fix for any of these problems on the horizon. Next, running a large vision or language model to guide a complex operation in real time is computationally intensive.

The scarcity of large open-source surgical datasets, plus the challenge of creating sufficiently realistic tissue environments for training and validation, has prevented the field from scaling at the same rate as other AI domains. Even rough estimates suggest that training an autonomous system to perform a single straightforward procedure could exceed the annual operating budget of a medium-sized hospital, even before regulatory costs are factored in. How this expenditure will be absorbed into existing healthcare systems, particularly resource-constrained ones, remains unanswered. The comparison currently favours human expertise.

The most credible near-term scenario is augmentation, not replacement. AI will improve at executing pre-specified tasks like dissecting tissue, sounding proximity alerts near critical structures, providing anatomical overlay, providing surgical navigation, and objectively evaluating techniques.

The systems are likely to remain human-dependent, with autonomy expanding incrementally rather than through a step change.

The aviation analogy holds: autonomous systems will handle cruise conditions but surgeons will still be needed for take-off, landing, and judgment calls that fall outside the training envelope. Medicine rarely obeys timelines set by press conferences.

The evidence suggests AI will make surgery safer, expand access through telesurgery, and compress the treacherous learning curve of complex procedures. In doing so, it will make surgeons who understand these tools considerably more effective than those who do not.

## VITALID

### Why it matters

A new technology called VitalID promises to revolutionise how we log into different apps and websites, especially those offering an immersive digital experience. Instead of entering passwords or scanning our faces, we can use the subtle movements generated by our own bodies to log in. With the growing importance of emerging authentication technologies, knowing about VitalID and extended reality becomes important.

### Core Concept:

— VitalID technology uses the vibrations generated by our breathing and heartbeats. These subtle movements travel through the neck and into our skulls. Because every person's bone structure and tissue are slightly different, these patterns are unique— much like fingerprints.



— The system was introduced at the 2025 ACM Conference on Computer and Communications Security and is designed primarily for extended reality environments. According to researchers, it does not require any additional hardware. Instead, it relies on motion sensors already built into many modern headsets.

— Extended reality: Abbreviated as XR, Extended reality comprises virtual reality, augmented reality, and mixed reality technologies. XR technologies combine the physical world with digital elements. XR technologies are mostly used in gaming platforms such as Viture, Meta Quest, and Oculus Rift. However, the use of XR technologies has been increasing.

— Biometrics: It refers to technology that identifies individuals using unique physical characteristics such as fingerprints, facial features, iris patterns, or voice. Biometric authentication is widely used for device unlocking, banking, and secure access systems, offering higher security and convenience compared to traditional password-based methods.

— Whereas VitalID uses internal physiological signals (heartbeat and breathing vibrations through the skull), captured via motion sensors, making it passive, continuous, and harder to spoof, Biometric Authentication relies on physical or behavioural traits (such as fingerprint, face, iris, or voice), which may involve active or passive scanning and are widely used.

## THE GREEN AND CRIMSON CHEMISTRY OF THE WATERMELON

The summer season is on and the fruit market is flush with the watermelon ('turbuz' in Hindi, 'vathakkai' in Tamil, 'tormuj' in Bengali, and *Citrullus lanatus* in botany), with its green-yellow striped skins and reddish interiors studded with dark seeds. The watermelon came to India from Africa, and is now ranked alongside apples, bananas, oranges, and grapes as one of the top five most cultivated fruits on the planet.

Given the climatic conditions in India, watermelons have become completely Indian over the centuries. It is a delicious fruit and is easily cultivated, marketed, and consumed in rural and urban areas. In his book *A Historical Dictionary of Indian Food* (1998), K.T. Achaya noted the traditional use of many gourds, including the watermelon, in daily foods and as fruits.

According to the Indian Institute of Horticultural Research, many States across India, where the land is green, fertile, and well lit by sunlight, grow the fruit both for domestic consumption and for export. Uttar Pradesh leads with an annual production of about 7.07 lakh tonnes of the fruit. The other States that grow the plant include West Bengal, the Northeastern states, Odisha, Andhra Pradesh, and Tamil Nadu.

India also exports watermelons and their products to the UAE, Qatar, Oman, the Maldives, Bangladesh, and some other countries, fetching a sizable income.

### Medicinal values

In a 2017 paper in the Indian agricultural technologies journal *Popular Kheti* (vol. 5, issue 2, eISSN:2321-0001), Reetu and Maharishi Tomar, of the ICAR-National Bureau of Plant Genetic Resources, New Delhi, and ICAR-Central Potato Research Institute, Shimla, respectively, described the nutritional benefits of watermelons. It is rich in dietary fibres, vitamins A and C, antioxidants, and anti-inflammatory agents, has anti-cancer properties, and is easily digested.



The fibre in the fruit helps keep digestion regular and healthy. The lycopene protects against heart diseases and the seeds contain iron and zinc compounds, which help bolster immunity. Rural physicians in several parts of India promote the use of the fruit and its parts as medicines. The fruit and its parts are also used in West Asia and Africa as health promoters.

A group led by Ahmed Attariha from Nigeria has been using parts of the watermelon as part of traditional medicine to help manage diabetes, urinary tract infections, and kidneys.

Another group from the University of Health Sciences in Ghana, led by David Negio, have elucidated the antioxidant and antimicrobial effects of watermelon skin, rind, pulp, and seeds. (DOI: 10.1016/j.sciaf.2020).

The rind is the greenish outer layer that we throw out when we cut the fruit for its red interior. The Ghanaian study also reported that the rind and the seeds have more antioxidant and antimicrobial effects than the rest of the fruit. Yet we discard them while we enjoy the fruit.

Even the juice has health benefits. According to one estimate vetted by doctors, one cup of raw, diced watermelon has 46 calories, some protein and fat, and substantial amounts of vitamins A and C, potassium, and manganese. Including some watermelon in our diet can thus help reduce inflammation and oxidative stress.

So the next time you cook, do not throw away the rind but use it and the seeds in your curries, and enjoy the benefits they offer, in addition to the juice that you enjoy these summer days.

## FORTY YEARS SINCE THE DISASTER, CHERNOBYL IS A STORY THAT KEEPS FINDING NEW RETELLINGS

The Bhopal gas tragedy killed more people. The Soviet Union's nuclear tests in Semipalatinsk irradiated a larger area over a longer period. Why then has the Chernobyl disaster endured so pronouncedly in the popular imagination?

During a flawed safety test, the nuclear reactor at the heart of the Chernobyl disaster entered an unstable state, culminating in explosions at 1:23 a.m. on April 26, 1986. The first firefighters arrived at the plant within minutes, expecting an ordinary fire. By then, the reactor core had exploded. When the personnel climbed on the roof, they stepped on blast debris. They didn't know what it really was.

Two lieutenants led teams that managed to prevent the fire from spreading to adjacent units. But within a few hours, they were vomiting, and most of them died within weeks.

### **An illusory prestige**

In *Chernobyl: History of a Tragedy*, Serhii Plokhy, a noted historian of Eastern Europe, established that scientists had warned about the reactor's instability. The Soviet leadership had ignored these warnings in the interest of what Plokhy called "atomic prestige" — the international status that came with taming nuclear power in the post-war era. The Communist leadership could trumpet this prestige within the country, considering nuclear physics was believed to sit at the top of a hierarchy of knowledge.

The events at Chernobyl in 1986, however, exposed this prestige to be illusory. The power plant was located near Prypiat. The city, until then a statement of Soviet modernity, quickly became a ghost town. The disaster also happened around the same time that Mikhail Gorbachev was

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ramping up industrial output. The expectation resulted in senior staff at the plant being caught between the obligation to deliver dangerous levels of power and the desperation not to face the consequences of non-compliance. In his 2019 book, *Midnight in Chernobyl*, the British journalist Adam Higginbotham diagnosed this trap as an obsession with scale that outpaced safety.

The desperate efforts to safeguard the reactor came to be called the Battle of Chernobyl, with a twist: the enemies here — more immediately, radiation, and more importantly, the state — were invisible. The plant was in Ukraine but 70% of the radionuclides fell in Belarus. The government didn't evacuate Prypiat for two days. The Kremlin only issued a statement on April 28, when radiation triggered alarms at a nuclear plant in Sweden. Gorbachev even encouraged citizens to participate in May Day parades — an act Plokhly argued was the moment Ukrainians became permanently disillusioned with the state.

## HOW ALTERED MOSQUITOES COULD RESHAPE MALARIA CONTROL

For decades, malaria control has worked by reducing the number of mosquitoes and treating infected people. As a result bed nets, indoor insecticide spraying, and effective medicines have saved millions of lives. Yet malaria remains one of the world's deadliest infectious diseases, killing more than half a million people each year, most of them children in sub-Saharan Africa.

Anti-malaria efforts have also slowed in many regions as mosquitoes become more resistant to insecticides and the malaria parasite evolves resistance to drugs.

These setbacks have led scientists to reconsider a long-held assumption: that the only way to fight malaria is to kill mosquitoes.

For more than 20 years, researchers have explored an alternative: modifying mosquitoes so they no longer carry malaria parasites.

### 'Transmission Zero'

This idea is now moving closer to reality through a genetic technology called a gene drive. A series of studies over the past few years has shown that gene drives can spread through mosquito populations under increasingly realistic conditions.

One recent study published in *Nature*, led by Tibebe Habtewold and Dickson Lwetoijera at the Ifakara Health Institute in Tanzania, working with collaborators at Imperial College London, demonstrated for the first time that genetically modified mosquitoes can block malaria parasites circulating in endemic African settings.

The work forms part of 'Transmission Zero', a Tanzania-led and internationally supported project developing genetic mosquito control.

### How gene drives work

An organism normally has a 50% chance of passing a specific gene to its offspring. A gene drive alters this rule.

Using the gene-editing tool CRISPR-Cas9, scientists design a genetic system that copies itself onto the partner chromosome during reproduction. As a result, far more than half of the offspring inherit the modified gene, often over 90%. Over multiple generations, this biased inheritance allows a gene to spread rapidly through a population.



Researchers are developing two main types of mosquito gene drives.

The first is population suppression. These drives disrupt the genes essential for female mosquitoes to develop or become fertile. As the drive spreads, more females become sterile, causing mosquito populations to shrink or collapse.

The second approach is population modification, also called replacement. Here, mosquitoes remain alive but carry genes that prevent the malaria parasites from developing inside their bodies. This strategy thus reduces the mosquitoes' ability to transmit malaria.

Between 2015 and 2020, multiple research teams showed that CRISPR-based gene drives could spread through small laboratory cages of mosquitoes. Suppression drives targeting a gene called doublesex caused entire caged populations to collapse within a few generations. Other studies engineered mosquitoes to produce molecules such as antimicrobial peptides or antibodies to harm the malaria parasites.

As small cages provide an overly simple environment, researchers built large indoor cages that allowed mosquitoes to swarm, mate, feed, and reproduce in more natural ways.

In 2021, researchers at Imperial College London and partner institutions described experiments designed to mimic real mosquito populations. A small number of mosquitoes carrying a doublesex suppression gene drive were released into stable populations of *Anopheles gambiae*.

Over eight to ten months, the drive steadily increased in frequency, egg production collapsed, and every experimental population eventually died out. Importantly, the researchers didn't detect any genetic changes that would both block CRISPR-Cas9 and allow mosquitoes to evade the gene drive while remaining viable.

The experiments indicated that gene drives could work safely in messy real-world settings as well.

### **The Tanzania study**

While suppression drives aim to cut mosquito numbers, the Tanzania study focused on population modification.

The team built a high-containment insectary in Bagamoyo in Tanzania that allowed advanced genetic work to be carried out in a malaria-endemic country rather than having to develop the technology elsewhere, then importing it to Tanzania.

The researchers engineered local *Anopheles gambiae* mosquitoes to produce two antimicrobial peptides in their midgut after taking a blood meal.

Instead of using laboratory parasite strains, the team collected blood samples from children with malaria in three nearby villages. Both modified and unmodified mosquitoes were fed on this blood, and the team tracked the development of parasites.

In ordinary mosquitoes, parasites develop normally and reach the tissues linked to the salivary glands, starting transmission. In the modified mosquitoes, the parasites were severely impaired and often failed to reach the infectious stage. In some experiments, none of the modified mosquitoes carried potentially transmissible parasites.

The researchers also demonstrated a split gene drive. One mosquito line carried the anti-malaria genes while another provided the Cas9 enzyme. When combined, about 94% of offspring inherited



the protective trait, allowing the researchers to test the protective genes without immediately deploying a fully self-propagating drive.

#### Several directions

The study showed that genetically modified mosquitoes can suppress malaria parasites from real-world infections, not just laboratory cultures. It also reported that advanced mosquito genetic engineering can be carried out in malaria-endemic regions, helping build local scientific expertise and regulatory capacity.

The results support population modification as a realistic alternative to population suppression, with potentially fewer ecological risks because it doesn't aim to eliminate an entire species.

At the same time, researchers acknowledge some major challenges. Developing effective anti-parasite genes is difficult. Different pathogens, and even different strains of the same parasite, may require different or combined molecular weapons to prevent resistance. This is why gene-drive research is moving in several directions.

Researchers are also exploring self-limiting and reversible gene drives, as well as molecular 'off switches' that could slow or stop spread.

Most scientists have emphasised that gene drives can't be a standalone solution. Eliminating malaria will still depend on bed nets, spraying, medicines, vaccines, surveillance, and strong health systems. Gene drives, if proven to be completely safe and acceptable, could be an additional tool.

In the final analysis, no gene-drive mosquitoes have yet been released into the wild to control malaria; whether it will one day depends on extensive ecological risk assessment, regulatory review, and community engagement.

## A WEAKENING WIND

### Q: How is global warming affecting the sea-land breeze?

A: During the day, land heats faster than the sea, pulling cool air onshore. At night, the land cools faster, so the air flows offshore. This is called the sea-land breeze.

A new study in Nature Climate Change has reported that as the oceans become warmer, the sea-land breezes around coastal megacities are becoming weaker. Urban planners consider these breezes to be essential to cool urban areas and improve air quality.

The study authors simulated conditions around 18 major coastal cities, finding that global warming is heating the oceans significantly, thus reducing the thermal contrast — the temperature difference between the land and the sea — significantly. Since the sea-land breeze is driven by this temperature gap, the breeze becomes weaker and occurs less often.

The analysis also showed that historical ocean warming has reduced the number of breeze days by 3% in most of the cities the team studied. Mid-latitude cities such as London, New York, Shanghai, and Buenos Aires have had the most dramatic declines.

Looking ahead to 2050, the study warned that if carbon emissions remain high, these breezes could potentially weaken 4.5-times faster than historical rates. They concluded that this 'erosion'



of sea breeze is an overlooked threat to the health and habitability of coastal cities as it could lead to more intense urban heat and worse air pollution.

## FROM LIGHT WAVES TO QUANTUM PHYSICS: THE SCIENCE BEHIND SMART WASHBASINS

Even though phones now provide an inexhaustible source of entertainment, going to a nearby movie theatre to watch a film still has its own charm. The shared loud laughter, the annoying phone calls of neighbours, and even the endless paan-masala ads featuring fitness-enthusiastic Bollywood actors remind us of simpler times when only humans were sometimes called intelligent.

But even though movie theatres have transformed from having inedible food to unaffordable food, a few things have changed for good. For example, one of the most magical things in recent multiplexes, even if you ignore the thousand-crore-movies and the ear-wrenching Dolby surround sound, is the humble-looking washbasins. Incidentally, when you place your hand below the tap, it becomes self-aware and offers you water.

In fact, multiplexes (and even airports and metro stations) now seem to be aware. Doors open automatically, paused escalators start moving, and with a wave of your hand, sanitisers, dryers, and soap dispensers activate.

So, have you ever wondered how a washbasin detects you? In fact, even before magical wands became popular, you had some in your homes. Each of your remotes — be it for TV or AC — works like one. You point it from a distance, press a button, and suddenly the TV or AC comes to life.

Hiding behind all of this non-Harry-Potter-universe magic is, as always, some beautiful piece of physics. And this time, it is of a unique type of invisible light.

### **What exactly is a wave?**

Before we go on to the invisible, the first natural question to ask is what is light? And the short answer is — light is a wave.

A wave is a disturbance that moves periodically, like a child on a swing. Now imagine a large playground with a thousand swings, all tied together. If you push just one swing, the disturbance travels through all of them until even the last swing starts moving. This moving disturbance is what we call a wave. Please note that no kids have been harmed in conducting this thought experiment.

A wave has a frequency, which depends on how fast the swing moves back and forth. If it does it once in a second, we call it one Hertz. Instead, if it does it 1,000 times in a second, we call it 1 kilohertz.

We see waves all the time — in ripples on water when a stone is thrown, or in sound when a car suddenly honks behind us in traffic. Those are sound waves. But light waves are a bit strange.

The reason is simple. In water waves, it is the water that moves after getting disturbed. Similarly, in sound waves, it is the air that has been disturbed by that car (also may be your mental peace).

But what moves in a light wave? After all, sunlight travels from the sun to earth through outer space, which has nothing to move. Light moves through a vacuum.



## Invisible light

Light belongs to the family of electromagnetic (EM) waves — a wave in which electric and magnetic fields oscillate. An electric field is generated by a battery, and a magnetic field by magnets. But here they are generated simultaneously and have to change with time. In nature, they can be generated in multiple ways, one of which is by electrons inside an atom when they jiggle close to the nucleus. The faster the electrons jiggle, more is the frequency of the EM wave they create.

When such waves fall on our eyes, we can see them — but only a very tiny window of such frequencies. These frequencies are between 400 and 800 terahertz. Just like a kilo-Hz means a jiggle 1000 or  $10^3$  times in a second, a terahertz means  $10^{15}$  times in a second — really, really fast. These ranges of EM waves are termed visible light.

In all of physics, the study of light and its properties remains one of the beautiful fields of study. This area of study is optics.

So, continuing, even if we do not 'see' all frequency waves, it does not mean they are not present. In fact, we are drenched in electromagnetic waves of various types. Radio waves (our FM radio) cannot be seen, but our radio transistors can pick them up. Similarly, microwaves are another type of electromagnetic wave.

Even within the light we do see, the different colours — from red to blue — have slightly different frequencies. The frequency of red is slightly lower than that of blue. The kind of waves that give the remote magic are called Infrared (IR) waves. Here, "infra" means lower than, because their frequency is just below that of red light. These waves, although like visible light, are actually 'invisible'. That is, our human eyes cannot see them.

Pick up a remote closest to you, maybe belonging to a (slightly older style) TV or an AC. If you see the front end, you may find a tiny bulb. This is actually an LED — light-emitting diode. It means it emits some light when switched on. Think of it like a torch. Now, if you press the on button, you may not see anything glowing and wonder if this LED is really working. Turns out, it is 'actually glowing', just that your eyes can't see it. Many of our modern smartphone cameras are sensitive to it. The other day, some students here taught me that if you point your phone camera at the LED and press the on button on the remote, you may actually 'see' this IR light. Did you?

Well, in fact, if our eyes were sensitive to IR rays, this world would look very different to us. We could also look very different to each other since our bodies also create IR waves. If you want to see how we would look, you can go to a website called cool-cosmos. This is run by IPAC, a physics centre at the California Institute of Technology, created by physics teachers to learn about IR waves. They have an IR Zoo, which has pictures of many animals and how they would appear in IR.

Now, while you may agree that a remote creates IR waves, the TV or the AC needs to know about them. Here comes the second important actor — the sensor.

## Sensors as switches

You may think of a sensor as a railway crossing manager. It allows the train to pass if it gets the correct torch signal from far. These sensors are called photodiodes. They conduct electricity if light falls on it. The torch is the IR-LED, the train is of electrons in any electrical circuit, and the crossing manager is the photodiode. When the remote is switched on (the LED is on), the IR light



falls on the photodiode. The photodiode now allows for the current to pass and your TV or AC switches on. Otherwise, it is in the OFF state, and the current does not reach.

Just like for a train to pass, the manager needs to know which colour torch is the 'green signal'. Similarly, the sensor is only sensitive to the IR signals of the specific remote. Otherwise, your TV remote could switch on the AC and vice versa. You may now wonder how one creates the specific sensor. That is a different story, but a marvellous amount of material science and engineering goes behind this.

The physics subject which deals with the "why" behind all of this, is called condensed-matter-physics.

#### **How washbasins detect hands**

So, what really happens in that multiplex washbasin?

Here, an IR LED is kept and a sensor is placed just next to it. It is like having a torch that you are holding and pointing it in a vast dark space. Since you are holding the torch and are pointing it in front, the light will not directly fall into your eye. But now imagine that suddenly a big mirror comes in front of you. That mirror will reflect the torchlight from your hands right into your own eye and you will be able to tell — "Aha! A mirror must have appeared!"

Something similar happens when you place your hand in the basin. Usually, the IR light coming from the LED does not fall on the sensor and the water is not running. But when you place your hand, your hand reflects the IR light and now it falls on the sensor. The sensor thinks of it like a "green signal" and switches on the circuit. This circuit is tied to water and gets the water running!

#### **Quantum mechanics**

You may still wonder, how does a sensor work? How do electrons know the IR wave? How does the LED work? Much of this requires learning of quantum mechanics, condensed matter physics, and optics, something which one is taught in physics courses.

So next time, when you go to watch a movie in a multiplex, and find that the multi-crore movie did not stand up to your expectations — do not be disheartened. Enjoy the ads and ambience, and then take a break to use the washbasin.

Another movie would be at play for you — with ultra-modern sensors, quantum electrons, invisible IR light, and four centuries of physics just to create the perfect magical moment.

## **HEARTS AND BONDS**

#### **Why are saturated fats bad for the heart but unsaturated fats are okay?**

Simply speaking, the two kinds of fats affect the body's LDL cholesterol differently. LDL is the kind that clogs arteries.

Saturated fats raise the level of LDL cholesterol in the blood by reducing the number of LDL receptors in the liver. As a result, the liver removes less LDL from the blood. And as the LDL in the blood builds up, it is oxidised and lodged in the artery walls, where it triggers inflammation and forms plaques. Over time, these plaques narrow the arteries and raise the risk of heart attack and stroke.



On the other hand, monounsaturated fats lower LDL levels without touching the HDL cholesterol level, which helps carry LDL back to the liver for disposal. Polyunsaturated fats go further and reduce the level of triglycerides and dampen inflammation.

Saturated fats have no double bonds, which makes them solid at room temperature. Unsaturated fats have one or more double bonds, making them flexible and thus allowing them to behave differently inside the body.

#### AEROBIC EXERCISE CREATES A MUSCLE PROTEIN THAT BOOSTS MOUSE MEMORY

Researchers from Seoul National University and the Korea Brain Research Institute have found that aerobic exercise can prompt mice to produce a protein that helps the brain consolidate short-term memories into long-term ones.

Previous research has shown mice love to play on a running wheel if one is available. So the researchers gave special mice access to a running wheel for four weeks. These mice had been genetically engineered for the scientists to easily track the proteins produced in their skeletal muscles. Based on tracking the protein and a revolution counter on the wheel, the team found that mice that exercised had higher cognitive performance than mice that hadn't received a wheel. When the team examined the mice's blood plasma and brains, they found higher levels of several proteins from the skeletal muscles compared to their sedentary littermates. The most prominent such protein was Serpina1e.

Serpina1e travels to the brain, where it enhances neurite formation in the hippocampus, which is responsible for consolidating long-term memories. An intravenous injection of Serpina1e to sedentary mice also improved their cognitive performance.

The researchers wrote their "study focused on male animals to avoid any potential effects of sex-dependent physiological and behavioural variabilities" and that "future studies are warranted to consider comparative investigations of Serpina1e-mediated cognitive modulation in both sexes."

#### SOCIETIES EMBRACE GENE THERAPY BUT RESIST GENETIC CHANGE IN CROPS

Our debates and discussions on technology are currently dominated by artificial intelligence (AI). Conversations around this subject are rarely about whether AI will envelop our lives or not, but about how and when it will do so.

The chariot taking us to the future has another horse — biotechnology — galloping at the same breakneck speed as its twin, but puzzlingly not central enough to our discussions. This steed has also matured, and the question before us is whether we have the ability to generate new ideas in science that can steer the chariot in directions we value or if we are destined to go where it takes us.

Our ability to engineer life is not recent. For more than 10,000 years we have bred and domesticated plants, animals, and microbes. In our migrations across the planet, we have often taken with us these organisms and diseases across continents. The passengers on our migration often wreaked ecological devastation in their new homes. At other times they adapted well and were of great value to our societies.

Much of the food we eat in India today is from non-native plants and animals, and our ecosystem has adapted these organisms, 'engineered' by breeding them. Most of what goes into your



delicious aloo paratha is imported food engineered by breeding. Like all life on the earth, we too are much engineered. Our own migrations, mixing, isolation, and endogamy have shuffled our genes and how they respond to our environment.

However, very little of all this — immensely valuable in building civilisations — was driven by deliberate ideas or theory. Engineering organisms by this method of breeding and selecting for characters that are valued by us is slow, taking decades or even hundreds or thousands of years.

### **Canvas of genome engineering**

Since the late 19th century and through the 20th century to the present, successive revolutions in biology have demonstrated how humans can engineer nature in our laboratories. These were driven by ideas as were other revolutions in natural sciences, mathematics, and computer science. Human societies have long demonstrated the capacity to modify nature, a capability that we have crudely held for millennia. Today, we wield this with a power and intensity that no one ever could, and with a greater responsibility upon us even as we open new avenues.

The broad canvas of genome engineering can be divided for convenience into three compartments: humans, plants, and microbial engineering. Public demand, acceptance, and apprehension vary considerably across these sectors. Understanding how we accept, raise concerns about or reject technologies involves science, society, culture, market, and politics.

Engineering germ-line cells — sperm or egg — to alter genes in a way that allows changes to be transmitted to the next generation is not legally permitted in most countries. Engineering somatic cells — the cells of our body whose genes are not carried to our progeny — is regulated and allowed and is happening in many situations. Cells of patients with certain kinds of cancers can be engineered so that their immune system is modified to attack cancerous cells. Because these treatments are given to patients who are severely ill, the risks are outweighed by the potential benefits.

### **Acceptance of innovation**

The acceptability of such interventions is high; indeed, they are welcomed. The value of gene therapies for well-defined inherited diseases is weighed against safety concerns coming from the toxicity of the gene delivery system, which may need to be injected at high concentrations for the treatment to be effective. Patient groups that are keen on treatment and cures for a wide variety of diseases, such as sickle-cell disease, thalassemias, and, potentially, muscular dystrophies, Huntington's disease, and a variety of other familial diseases, drive demands for drugs and genetic treatments. The costs of research and therapy, safety and efficacy considerations, long timelines, the operation of market forces, etc. are limiting the use of these technologies. There is no groundswell of opposition to the idea of engineering somatic cells for therapy in humans.

Contrast the relative acceptability of genetic engineering approaches in human health to the situation in agriculture and horticulture. In the U.S. and Canada, almost all the maize, soybean, and cotton is made from genetically engineered plants designed for pest resistance or herbicide resistance. Canada is a large producer of canola, almost all of it from genetically engineered plants. These products are exported all over the world, including to Europe and India, where they are not allowed to be grown. Yet a large proportion of Europe's animal feed is imported from the Americas and is from genetically modified plants.



The arguments against genetically modified food come from a range of positions: about their safety and the consequences of environmental release, about how they result in monoculture and reduce diversity, and how they result in the domination of big seed and farm companies that hold the key patents and control the market.

However, genetically modified crops have been grown and consumed safely for decades now. The dominance of seed companies is not a consequence of the use of genetically modified plants and is present independent of whether their products are genetically modified or not. Monoculture and the dominance of marketable varieties have happened independent of the use of genetically modified plants. The classical green revolutions — i.e. the breeding of high-yielding varieties of cereals — did not require laboratory genetic engineering. Some of the criticism may be justified but the fact remains that acceptance of innovation in some areas is slow or never, and remarkably fast in other related areas.

Synthetic biology and biotechnology provide another context where genetic engineering is growing rapidly. Several drugs — insulin is a common example — are made by recombinant DNA technology and directly injected into us. The anti-malarial natural product artemisinin can now be made by microbes in the laboratory and does not have to be extracted from plants. Many natural products are now synthesised in large amounts in the laboratory using genetic engineering.

The 'weight-loss' drug semaglutide, which is the active ingredient in Ozempic and Wegovy, is a relatively recent example of synthetic biology's reach. Its natural equivalent in our bodies decays in minutes, but the synthetic version grown in baker's yeast can stay on for weeks, ensuring its efficacy. Synthetic biology has transformed the diagnosis of animal and plant diseases, made vaccines that have prevented millions of deaths of humans and livestock, and developed what are called biologics: genetically engineered antibodies and proteins that are used to treat cancers and other diseases. Developed largely by energetic startups, followed usually by collaboration with big companies, these drugs are less-expensively made when they eventually go off patent. Here, there is little or no lament against their being used in humans, except to despair of their cost and accessibility.

#### **Wheels of the chariot**

Ideas that move into application have emerged where they have been challenged, tested, discarded or accepted, and where societal debates on them have flourished. When the flexibility to put out ideas and test them diminishes, as in Europe in agriculture or the U.S. in infectious disease research, the global supply chain of ideas gets broken until these geographies reform or new geographies for ideas take root. How societies respond to ideas also affects how further potentially transformative new ones emerge. Trofim Lysenko and his acolytes managed to destroy Soviet agriculture by smashing the core ideas of genetics, and in doing so also managed to kill new ideas in biology. Mathematics and physics, lying outside his interest and remit, escaped his attention and thrived. One can selectively destroy the capacity for new ideas but this is never a stable route.

We do not find societies where only ideas thrive without any innovation — nor others where true innovation thrives without original ideas. But we can find societies where there is imitation and incremental development, standing on the discoveries and innovation of others. For true innovation, as opposed to imitation and catching up, a reasonable regulatory system is also needed. A completely risk-averse regulatory system is by definition very safe, allowing only those



innovations to grow that have been tested by others elsewhere over the years. This results in a society that may become good at high-volume low-value products whose technological and market effectiveness has been demonstrated elsewhere. Not to be sniffed at, but certainly not sufficient for a large country like ours, and not sufficient to stimulate new and daring ideas.

With the acceleration of biotechnologies in all their diversity, rigorous but enabling regulatory oversight is essential. Today, information from genome sequences in the context of how the environment and genes affect outcomes, partners with the growth of how we analyse information. This partnership powers the generation of new ideas about how life works and new ideas about what life itself is. These, in turn, will rapidly feed into new findings and new innovations.

If regulation is only about safety and curbing, and demanding compliance with an ever-changing process, it will curb enthusiasm for daring ideas and explanations about the complexities and meaning of life. Modest and unambitious approaches, thus encouraged, are a self-defeating oxymoron. In this highly regulated situation, both ideas and innovation alike will happen elsewhere. Reverse engineering of quality is what one will have to take pride in, at best.

The life sciences, unlike many other technologies, are simpler to scale, moving from ideas and discovery to innovations and applications. In particular, theory and computational approaches in the life sciences must be strongly encouraged and can be very effective. Narrowly demanding application and results can be counterproductive, yet focus and quality along with daring are required.

Fundamental and applied research are the wheels of the chariot. If we ruin one wheel, we will go in circles. If we over-regulate, the chariot will be stuck in regulatory quicksand and we will go nowhere. If we under-regulate, we cannot steer the direction the horses are to take us, and they may well take us to a precipice. Wise regulation that not only deals with the present but also with an unknown and uncertain future will release human ingenuity and result in our ability to tackle the most complex and unforeseen challenges.

#### EXTREME HEAT THREATENS FOOD SYSTEMS, WARN UN AGENCIES

Extreme heat is pushing global agrifood systems to the brink, threatening the livelihoods and health of more than a billion people, according to a new report by the UN's food and weather agencies.

The United Nations Food and Agriculture Organization (FAO) and the World Meteorological Organization (WMO) said heatwaves are becoming more frequent, intense and prolonged, damaging crops, livestock, fisheries, and forests.

For livestock, the report details a thermal humidity index that, when breached, will trigger acute heat stress.

In dairy cattle, this manifests as a 15% to 25% drop in milk production and significant drops in fertility rates. Scientists have noted similar stressors in poultry, where extreme temperature spikes can lead to mass mortality events in facilities without industrial-level climate control.

"Extreme heat is rewriting the script on what farmers, fishers, and foresters can grow and when they can grow. In some cases it is even dictating if they can still work," said Kaveh Zahedi, head of FAO's climate change office. "At its core, this report is telling us that we face a very uncertain future," he said.



Recent climate datasets show global warming is accelerating, with 2025 ranking among the three hottest years on record, triggering more frequent and severe weather extremes.

Acting as a risk multiplier, extreme heat intensifies droughts, wildfires, and pest outbreaks and sharply cuts crop yields once critical temperature thresholds are breached.

The report said higher temperatures are shrinking the safety margin that plants, animals, and humans rely on to function.

Beyond just dehydration, extreme heat disrupts the rest period of plants. High nighttime temperatures force crops to maintain high respiration rates after dark, consuming the energy stores they built through photosynthesis during the day.

This exhaustion stunts growth and leads to pollen sterility in staple crops like maize and rice, where heat during the critical flowering window can altogether prevent fertilisation, resulting in empty husks.

Marine heatwaves are also becoming more frequent, depleting oxygen levels in water and threatening fish stocks. In 2024, 91% of the world's oceans experienced at least one marine heatwave, the report said.

Risks rise sharply as warming accelerates. The intensity of extreme heat events is expected to roughly double at 2C of warming and quadruple at 3C, compared to 1.5C, the report said.

Mr. Zahedi said every one-degree rise in average global temperatures cuts yields of maize, rice, soya, and wheat by around 6%.

The FAO and WMO said piecemeal responses were inadequate and called for better risk governance and early-warning weather systems to help farmers and fishers take preventive action.

## PATHOGENS WITHOUT PAYBACK: WHEN SHARING ISN'T CARING

When contagions don't discriminate, why should cures? That question encapsulates a bitter irony of global public health. Countries that contribute the most pathogens to medical research are often the last to benefit from the outcomes.

Low- and middle-income countries (LMICs) in Africa, Southeast Asia and Latin America, where new pathogens often emerge, are expected to proactively share biological materials and genomic data with the world through the World Health Organization (WHO). However, countries that develop life-critical vaccines, therapeutics and diagnostics (VTDs) using that material are under no obligation to reciprocate with fair and timely access to these clinical products. Risks are shared; rewards are not.

Despite the proven human cost of this inequity, the historic WHO Pandemic Agreement (WPA), adopted in May 2025, still lacks the much-needed Pathogen Access and Benefit-Sharing (PABS) Annex. Without a binding legal framework to enforce fair sharing from samples to solutions, a coordinated global response to cross-border health crises will remain fraught with challenges.

### **The price of survival**



A case in point is the infamous vaccine apartheid witnessed during the COVID-19 pandemic, which left LMICs grappling with prolonged vaccine shortages even as high-income countries, according to the People's Vaccine Alliance, hoarded more than half of global vaccine supplies despite representing only around 13-14% of the world's population.

The COVAX initiative delivered just around a fifth of its promised doses by mid-2021 and WHO's COVID-19 Technology Access Pool, meant to facilitate the sharing of intellectual property and manufacturing knowhow, drew a blank. Subsequent mutations of the COVID-19 virus resulted in an estimated 1.3 million preventable deaths, delayed recoveries and a whopping \$28 trillion, as per the IMF, in global economic losses.

COVID-19 isn't the only example: the life-saving Ebola drug, Inmazed, whose estimated per-treatment cost based on procurement data came to a jaw-dropping \$6,900, was effectively beyond the reach of those survivors, in one of the world's poorest regions, who had helped make the treatment a reality through their blood samples and antibodies. When a new outbreak struck in September 2025, killing, as per the WHO, nearly 70% of those infected, all that the WHO could do amid rich countries stockpiling the drug for "emergencies" was to wait for limited donations from the manufacturer.

More recently, the bilateral health compacts signed by the U.S. with more than 15 African nations require them to share pathogens for 25 years in return for just five years of diminishing U.S. funding and nearly no commitments on product access.

PABS seeks to legally link sample-sharing to guaranteed benefits, making it mandatory for pharmaceutical manufacturers to provide 20% of real-time VTD production to the WHO during declared pandemics, at least half of it for free and the remaining at reasonable prices. Besides making yearly monetary contributions, manufacturers would also need to transfer technology, build capacity and enable broader production in developing countries through licences.

#### **Technical gaps**

Recent Intergovernmental Working Group negotiations in Geneva, while narrowing certain technical gaps, have not been able to address fundamental disagreements around binding obligations on benefit-sharing, intellectual property and data traceability. With another round of negotiations slated to begin on April 27, the window to secure a meaningful agreement is closing fast. Pushing ahead with a partial framework would undermine global health cooperation and institutional trust, compelling developing countries to settle for asymmetrical health deals.

While PABS is backed by around 100 LMICs, including India, which represent nearly 80% of the world's population and have suffered the limitations of voluntary goodwill arrangements, opposition comes from developed countries, especially the European Union (EU), which are home to some of the world's largest pharmaceutical companies.

Proponents of PABS want tighter, enforceable rules and contractual provisions to govern the sharing of samples and benefits, whereas opponents favour voluntary mechanisms over binding contracts, arguing that the added bureaucracy and complexity arising from legal mandates could stifle research and innovation. This, despite existing global systems — from environmental treaties to public health frameworks — already relying on standard legal instruments to balance access with incentives.



The EU's current model of allowing anonymous access to pathogen sequence data without adequate transparency or traceability is opposed by PABS proponents, who say mandatory user registration is critical for greater accountability. The EU contends that doing so will impede the openness and interoperability of data systems. However, the likes of the European Genome-Phenome Archive, and the Global Initiative on Sharing All Influenza Data (GISAID), often publicly defended by many EU countries, already use secure access and trackable data-sharing systems.

Advocates of PABS want it to be made mandatory for companies and labs to let WHO and its programmes use their products and technologies developed using shared pathogen data under non-exclusive licences so that multiple players can produce and distribute those products and technologies. In contrast, the EU wants this arrangement to be left to the discretion of individual companies.

Supporters of PABS want all agreements to be made public and seek assured representation for civil society in negotiations and systemic oversight. The EU is averse to any such mechanisms. Additionally, PABS supporters want the scope of benefit-sharing to be extended beyond pandemics to include WHO's more frequent PHEIC (public health emergencies of international concern) declarations.

#### **The middle ground**

The EU's position is also being challenged by global health groups including the AIDS Healthcare Foundation, Third World Network and Public Citizen. It is evident, however, that both sides ultimately seek certainty. While developing countries are seeking guaranteed, enforceable benefits, high-income countries, largely at the behest of their pharmaceutical industries, are looking for a legally predictable system that does not weigh down their innovation economics with obligations.

A middle ground for countries to share in the benefits of better pandemic preparedness could be a tiered system with lower obligations during normal times, stronger commitments during pandemics, and a global fund to support poorer countries, sparing manufacturers a disproportionate burden.

For a start, essential elements of access, utilisation, benefit-sharing, IP, onward transfer, dispute resolution and non-compliance could be written into the Annex now and detailed model contracts could be fleshed out over a mutually agreeable timeframe. A mechanism could be worked out to reward, not coerce, manufacturers who share IP.

Developed countries must reassess the impact of their resistance on their credibility with the Global South, while developing countries must show greater flexibility on timelines and payment terms in return for firm commitments on the essentials.

From zoonotic threats such as mpox, to engineered pathogens, dual-use biotech and AI-driven cyberbiosecurity risks, the next pandemic may not be too far off. When they meet again in Geneva, both sides must approach the resolution of the PABS impasse as a matter of political will rather than mere bargaining, for no one is safe until everyone is.

### **LIVER DISEASE OFTEN GOES UNNOTICED IN PEOPLE WITH TYPE 2 DIABETES**

A large proportion of people living with type 2 diabetes develop fatty liver, and nearly one in three may have underlying liver fibrosis without symptoms. Latest evidence published in The Lancet,



from a large multinational European study of over 30,000 adults shows that undiagnosed liver fibrosis is relatively common, with about 4.6% having significant liver stiffness and 1.6% confirmed cases.

The study found strong links with metabolic factors such as obesity and type 2 diabetes, along with harmful alcohol use, with fatty liver disease accounting for over 90% of cases.

#### **Fat accumulation to fibrosis**

Type 2 diabetes is characterised by insulin resistance, which disrupts the metabolism of glucose, fat, and proteins. And one of the consequences is fat accumulation in the liver, known as hepatic steatosis.

According to Arulprakash S, clinical lead and senior consultant, Medical Gastroenterology and Hepatology, SRM Prime Hospital, this fat may remain harmless in some individuals. While it can infect liver cells in some cases, leading to inflammation (steatohepatitis), which can gradually progress to fibrosis and cirrhosis. He notes that genetic predisposition plays a role, and also not everyone living with fatty liver develops advanced disease.

Vaibhav Patil, consultant, Hepatology and Medical Gastroenterology, Liver Disease and Transplantation, Rela Hospital, explains that insulin resistance is the central cause. It leads to fat deposition in liver cells and attracts inflammatory cells, causing chronic inflammation and fibrosis. Additional contributors include high free fatty acids causing lipotoxicity, glycated proteins, and disturbances in gut microbiota. Metabolic conditions such as obesity, dyslipidaemia, and hypothyroidism further accelerate liver damage by increasing the flow of harmful fats to the liver. These conditions often coexist with diabetes and act together in disease progression.

#### **Late symptoms**

Liver disease in type 2 diabetes often remains undetected for years. As doctors point out, slow liver injury does not produce symptoms and is usually picked up only through investigations such as blood tests, ultrasound, or FibroScan.

Dr. Vaibhav Patil notes that the liver has a high functional reserve and lacks pain receptors, which delays the appearance of symptoms even in the presence of fibrosis.

Leelavathy Kandaswamy, Senior Consultant Diabetology and Endocrinologist, Apollo Speciality Hospitals, explains that patients may feel normal despite ongoing damage. Symptoms such as fatigue, jaundice, abdominal swelling, or fluid accumulation typically appear only in advanced stages, when significant liver injury has already occurred.

#### **Need for routine screening**

Fatty liver is often reversible with strict glycaemic control and lifestyle modification. However, fibrosis represents a more advanced and largely irreversible stage of liver damage.

Doctors emphasise that fibrosis, not just fat accumulation, is the key determinant of long-term outcomes. It can lead to cirrhosis, liver failure, and hepatocellular carcinoma. They highlight the entity of “lean NASH,” particularly seen in developing countries, where individuals who are not overweight still develop fatty liver due to genetic predisposition and visceral fat deposition. This underscores that being thin does not eliminate risk.



Fibrosis can also arise from other causes, including chronic viral infections such as hepatitis B or C, drug-induced liver injury, heavy metal toxicity, and genetic conditions like Wilson disease or haemochromatosis.

Screening is therefore essential. Studies show that up to 35% of people with type 2 diabetes may have fibrosis without symptoms. Tests such as liver function tests, fibrosis scoring systems (including FIB-4), and non-invasive tools like FibroScan help detect early changes. Monitoring measures such as the CAP score can assess fat content in the liver.

Early detection helps in timely interventions, including weight management, improved blood sugar and lipid control, and medications such as pioglitazone or GLP-1 receptor agonists like semaglutide. Doctors therefore emphasise that integrating liver screening into routine diabetes care can help prevent progression to advanced disease and reduce the risk of long-term complications, including liver cancer.



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