# CURRENT AFFAIRS for UPSC

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DreamIAS

## INTERNATIONAL

### EXPRESS VIEW ON US ELECTION KICK OFF: TIGHTEN YOUR SEATBELTS

Some elections matter more than others. As the long US presidential election season kicks off with the Iowa caucuses — both the Democratic and Republican candidates are chosen through an internal party election — and the Republican debate, the riveting run-up to the November polls has begun. US elections generate global interest for two reasons. First, America continues to be the largest economy, with considerable military and strategic heft. What happens in the US election will have a bearing on how other countries, particularly middle powers like India, orient themselves on the global stage. Second, the US's immense soft power — particularly in the English-speaking world — has meant that America's culture wars have a reach and influence far beyond its borders. Unfortunately, however, interest in American politics does not always translate into a reasoned engagement based on information and perspective. The impact of the US presidential elections on other countries, like India, is either over-determined or understood too little.

It is clear that Donald Trump — and the idea of "Trumpism" — is the elephant that isn't in the room. Trump is not part of the Republican debate. The two "frontrunners" participating in the Republican debate this week — Nikki Haley and Ron DeSantis — are far behind the former president. Trump's judicial troubles — he is facing multiple criminal charges, including for inciting an insurrection — seem to have had little effect on his popularity so far. For the Democrats, barring any major surprises, President Joe Biden is likely to be the nominee, as incumbents are rarely defeated in the primaries.

Given the political polarisation in the US, it is not surprising that the election is being framed as a do-or-die battle by both sides. However, a reality check is called for, in America, and outside. The fear that an election result will completely alter the US's foreign policy stance — its engagement with partners in the Indo-Pacific, for example — is greatly exaggerated. Nor will the fundamental nature of geopolitical competition with China alter with a change in the White House: Vis a vis globalisation and Beijing, Biden has continued in large part with Trump's policies. It is important for the intellectual and strategic class in India to understand and analyse US politics through its own lens, not one borrowed from US media, or the diaspora. An objective understanding — with New Delhi's interests as the basis — is needed from a policy and strategic perspective.

### US DESIGNATES PAK, CHINA AS COUNTRIES OF PARTICULAR CONCERN FOR VIOLATION OF RELIGIOUS FREEDOM

The United States has designated Pakistan and China, along with eight other countries, as Countries of Particular Concern for violating religious freedom. The State Department also placed Comoros, Cuba, Nicaragua, and Russia on a Special Watch List for governments that have engaged in or tolerated severe violations of religious freedom. Additionally, the U.S. designated several entities, including al-Shabaab, al-Qaida, Boko Haram, Hayat Tahrir al-Sham, the Houthis, ISIS, ISIS-Greater Sahara, ISIS-West Africa, Jamaat Nasr al-Islam wal Muslimin, and the Taliban, as Entities of Particular Concern. Sudan and Uzbekistan were removed from the Special Watch List due to significant progress in addressing religious freedom issues. However, the State Department did not accept the recommendation to designate India, Russia, Syria, and Vietnam as Countries of Particular Concern.

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The US Commission on International Religious Freedom (USCIRF) praised the State Department's move to put 10 nations in the list of Countries of Particular Concern (CPCs), including Nigeria for the first time, and four countries on the SWL for severe violations, pursuant to the International Religious Freedom Act (IRFA).

We are gratified that the State Department has named 10 countries as CPCs. We particularly welcome Nigeria's designation for the first time as a CPC for tolerating egregious violations of religious freedom, which USCIRF had been recommending since 2009. Nigeria is the first secular democracy that has been named a CPC, which demonstrates that we must be vigilant that all forms of governments respect religious freedom," said USCIRF Chair Gayle Manchin.

We are encouraged to see that the designation this year also reflects significant advancements in religious freedom in Uzbekistan and Sudan, which were both removed from the SWL. While USCIRF recommended earlier in 2020 that these two countries stay on the SWL, it is undeniable the historic progress that has been made in these two countries. We hope that their progress encourages positive change in other places around the world," said Vice Chair Tony Perkins.

Notably, the State Department did not accept the USCIRF recommendation that India, Russia, Syria and Vietnam be also designated as CPCs.

## WHY DID THE ISLAMIC STATE ATTACK IRAN?

**The story so far:**

The Islamic State terror group claimed responsibility for Wednesday's bomb attacks at a memorial event in Kerman for Qassem Soleimani, the Iranian General who was killed by the U.S. in January 2020. Soleimani, commander of the Quds Force, an elite wing of Iran's Islamic Revolutionary Guard Corps (IRGC), was a sworn enemy of the Islamic State when he was alive. The Kerman bombing, in which at least 84 people were killed and over 200 injured, was the third major attack claimed by the Islamic State (IS) in the Islamic Republic of Iran, which shows the growing threat of terrorism Tehran is facing. The attack comes at a time when fears of a regional war, involving Israel and Iran, are on the rise in West Asia.

**Why does the IS target Iran?**

The IS, which is a Sunni Salafi-Jihadist outfit, sees Iran, a Shia theocracy, as an ideological rival and battlefield enemy. The IS is notorious for its sectarian violence against the Shias, who they call the Rafidha (rejectionists — a derogatory term used by Sunni extremists to refer to the Shias. They say the Shia community has rejected the first three [Sunni] Caliphs of Islam, Abu Bakr, Umar and Uthman). For the IS, Shias are not real Muslims — they are apostates who follow shirk (idolatry). In the IS-controlled territories of Iraq and Syria (from 2014 to 2018), Shias faced systemic persecution and violence. Even after the IS lost the territories and shifted the focus of their operations to the lawless lands of eastern Afghanistan, they continued to attack Afghanistan's Hazara Shia minority.

The IS also sees Iran as a formidable rival in the battlefield as Iran-backed militias played a key role in defeating the jihadists in parts of Syria and predominantly in Iraq. In March 2017, the Wilayat Diyala, the Iraq-based unit of the IS, had released its first propaganda video in Farsi, titled 'Persia between yesterday and today', urging Iranian Sunnis to declare allegiance to the 'Caliphate' and rise against — and topple — the Iranian regime. Since then, the IS has carried out high-decibel propaganda in Persian. The IS wanted to expand their sphere of operations from Afghanistan to

"other nearby lands", primarily Iran. In three months after the video was released, the IS carried out a coordinated attack on Iran's Parliament and the mausoleum of Ayatollah Khomeini, killing at least 17 people. It was a declaration of war by the Islamic State on the Islamic Republic.

**How does Iran look at the IS?**

Iran sees in the IS a bid to revive the deadly conflict of the early years of Islam between the Sunnis and the Shias. With their anti-Shia propaganda and violence, the IS wants to whip up sectarian passions among hardline Sunnis and trigger a wider war, targeting both Shia communities in Sunni majority countries as well as Iran. It also saw the IS as an immediate security threat. Unsurprisingly, Iran was the first country that rushed aid to Baghdad when the IS started gaining territories in Iraq. In June 2014, immediately after the IS captured Mosul, Iraq's second largest city, and surrounding areas, Iran despatched IRGC units to protect Baghdad and the holy Shia cities of Najaf and Karbala. By December 2014, well before the Western-backed counter-attack against the IS began, Iran had started carrying out air strikes on IS areas in Iraq. Iran's state organs frequently called the IS a "terrorist organisation" or Taqfiris (those who excommunicate fellow Muslims and mostly use violence against them).

In the medium term, Iran formed a strategy of fighting the IS through Shia mobilisation units. It recruited, trained and dispatched militias to Syria where the regime of Bashar al-Assad was fighting a civil war against a host of rebels and jihadists, including al-Qaeda and the IS. In Iraq, the Shia militias fought alongside the Iraqi army and the Kurdish Peshmerga militias, under American air cover, against the IS. They played a critical role in defeating the IS's physical structures and liberating Iraqi cities from the jihadists. The man behind these anti-IS operations was Major General Qassem Soleimani.

**Who was Qassem Soleimani?**

Soleimani, who was a soldier during the 1980-88 Iran-Iraq war, became commander of the Quds Force, the foreign operational wing of the IRGC, in 1998. Always a defender of the Islamic Revolution, Soleimani was instrumental in shaping Iran's forward defence doctrine, which sought to build regional strength through a network of Shia militia groups across West Asia. Iran helped create Hezbollah, a Lebanese Shia movement, in the 1980s and it continued to nurture good ties with Iraqi Shia organisations throughout the regime of Saddam Hussein. In recent years, Iran built stronger ties with Yemen's Shia rebels Houthis, as well as Hamas and the Islamic Jihad, Palestinian Sunni militant groups that are fighting Israel's occupation of Palestinian territories.

Soleimani, as the head of the IRGC's foreign operations wing, left a deep imprint on Iran's ties with these groups over the years. This relationship came handy for him to stitch together an anti-IS coalition when Iraq and Syria fell into chaos in the 2010s. The U.S. helped the Shia coalition fight the IS in Iraq, but it also accused Soleimani of supporting terrorism, given his close ties with foreign Shia militias. Inside Iran, he enjoyed cult status. Ayatollah Ali Khamenei, the Supreme Leader of Iran as well as the commander of Iran's armed forces, once called him "the living martyr of revolution". On January 3, 2020, a U.S. air strike in Baghdad, ordered by President Donald Trump, assassinated Soleimani, the primary enemy of the IS. And on the fourth anniversary of his assassination, the IS attacked a memorial event that took place near his qabar in Kerman.

**What does the attack mean for Iran?**

The Islamic Republic has had no dearth of external security challenges. But internally, Iran had remained a fortress for years, barring some separatist challenges. The Kerman bombings, the

worst terror attack in the republic's history, point to Iran's growing security vulnerabilities as well as the IS's expanding capabilities. The attack also comes at a time when Iran was under increasing regional pressure with the Israel-Gaza war widening beyond Gaza's borders. While all Arab countries restrained themselves to diplomacy to address Israel's indiscriminate bombing of Gaza, which has killed at least 22,000 people in 90 days, Iran-backed groups have attacked Israel and the U.S. positions in solidarity with Palestinians. Hezbollah has been engaging Israeli troops on Lebanon's southern border in a limited way, while Shia militias in Iraq have repeatedly targeted U.S. forces deployed in Iraq and Syria. Yemen's Houthis have attacked at least 25 commercial vessels in and around the Bab el-Mandeb Strait turning the Red Sea into a battlefield. Israel and the U.S. have retaliated against these attacks — an IRGC adviser was killed in Syria on December 25 and a top Hamas leader was killed in Lebanon on January 2, both believed to be executed by Israel. On January 4, the U.S. carried out an air strike in Baghdad to kill a Shia militia commander. As the crisis was widening across the region, mounting pressure on Iran, the IS found an opportunity to strike its old enemy. For Iran, the challenge is to tackle both the traditional external security threats and a relatively new yet growing internal security threat at the same time.

## GABRIEL ATTAL, 34, BECOMES FRANCE'S YOUNGEST PM

Emmanuel Macron has appointed 34-year-old Education Minister Gabriel Attal as the new Prime Minister of France in a bid to revitalize his second term ahead of European Parliament elections. The move reflects Macron's intention to move past unpopular reforms from the previous year and improve his centrist party's standing in the upcoming EU ballot, where polls show them trailing far-right leader Marine Le Pen's party. Attal, a close ally of Macron who gained prominence as government spokesman during the COVID pandemic, will replace outgoing Prime Minister Elisabeth Borne, becoming France's youngest and first openly gay Prime Minister. While seen as a popular and authoritative figure, some opposition leaders downplayed the change, emphasizing that the policies might remain unchanged regardless of the new prime minister.

## HOW A TV SHOW EXPOSED BRITAIN'S POST OFFICE SCANDAL

The British Prime Minister, Rishi Sunak, has announced measures to reverse the convictions of more than 900 subpostmasters who were wrongly accused of theft and fraud due to a faulty computer system. The scandal dates back to 1999 when the state-owned Post Office implemented the Horizon IT system, resulting in unexplained losses in the accounts of subpostmasters. Between 2000 and 2014, over 900 workers faced false accusations, leading to terminations, convictions, and imprisonment. The Post Office initially blamed the employees and denied evidence of a miscarriage of justice.

A turning point in the long struggle for justice occurred after the airing of a TV docudrama, "Mr Bates vs the Post Office," on January 1. The show highlighted the story of Alan Bates, a branch manager who spent nearly two decades exposing the scandal. The public outcry following the broadcast prompted the government to open a police investigation into Post Office prosecutions.

Prime Minister Sunak has now gone one step further, announcing new legislation which would overturn the conviction as well as a massive compensation package which will give each person wrongly accused a sum of GBP 75,000. A total of GBP 1 billion has been set aside for compensations, the government stated.

Some legal experts, however, have warned that legislating to quash convictions is unprecedented in Britain, and could open the doors for future political interference into the judicial process.

While this move is seen as a significant step towards justice, there are calls for accountability for those aware of software issues. A public inquiry and a police investigation are underway, gathering evidence and looking into potential fraud offences. Questions also remain regarding the missing money and the responsibility of senior Post Office officials. The scandal has led to increased scrutiny of the judicial process and calls for comprehensive investigations and accountability.

## COMFORTABLE WIN

There was no surprise in the January 7 Bangladesh national elections, which were boycotted by the main opposition party. In the preliminary results, the Awami League, Prime Minister Sheikh Hasina's party, had won 222 seats in the 300-member Parliament, while the Jatiya Party, one of several smaller opposition parties in the fray, secured 11 seats. Most of the remaining seats went to independents. The Bangladesh Nationalist Party (BNP) called for a general strike, protesting the "sham" election and demanding Ms. Hasina's resignation. The BNP, which had accused the Awami League of rigging past elections, had demanded elections under a neutral caretaker government. But Ms. Hasina dismissed the opposition's call, saying there was no provision for caretaker governments in the amended Constitution, leading to violent protests and a crackdown on the opposition. Ms. Hasina says the elections were free and fair, but her attempt to dismantle the BNP using state institutions is hardly a secret. Former Prime Minister and BNP leader Khaleda Zia is under house arrest over corruption charges; the party's acting leader and her son, Tarique Rahman, lives in London in exile; and several other senior party leaders are in jail. The elections, held amid the BNP's strike, saw a fall in voter turnout — from over 80% five years ago to 40%.

Being Sheikh Hasina is not easy. Most of her family members, including her father, Sheikh Mujibur Rahman, were massacred on August 15, 1975 in Dhaka. She fought Ershad's dictatorship along with Ms. Zia in the 1980s and early 1990s, steering the country back to democracy. In the early 2000s, when the BNP was in power, a grenade attack on one of her rallies killed 20 of her comrades. In her second term, in 2009, Bangladesh was grappling with a host of challenges, including internal instability. Ms. Hasina offered a stable civilian rule, cracked down on Islamist extremists, held those responsible for the 1971 genocide accountable and oversaw a period of economic boom and opportunities. Unsurprisingly, independent polls show that most Bangladeshis approve of Ms. Hasina's performance. But at the same time, the woman who once fought for democracy now faces accusations of turning the South Asian country of 170 million people into a one-party state. She now faces new economic and political realities. Post-COVID-19, there is high inflation, falling foreign exchange reserves and a doubling of debt. Neither Ms. Hasina's vengeful high-handedness nor the opposition's violent non-cooperation is helping Bangladesh. The Prime Minister, in her fourth term, should be more conciliatory and accommodative if she is to build a democratic, prosperous naya Bangladesh.

## TAIWAN SLAMS CHINESE BALLOONS AS SAFETY THREAT, PSYCHOLOGICAL WARFARE

Taiwan's defense ministry has accused China of posing a threat to aviation safety and engaging in psychological warfare through a recent series of balloons spotted near or over the island. The ministry stated that the balloons, believed to be part of China's "grey zone" tactics, were a serious threat to international aviation safety. The balloons were detected flying over the sensitive Taiwan Strait and near major air bases. The defense ministry emphasized China's disregard for aviation safety and accused it of attempting cognitive warfare to affect the morale of the Taiwanese people. Taiwan is on high alert for Chinese military and political activities ahead of key

elections, with tensions rising between the two nations. The United States has expressed concern over rising tensions and the potential for interference in Taiwan's democratic process. China views Taiwan as its own territory, a claim rejected by the Taiwanese government.

## MALDIVES, CHINA COMMIT TO GREATER STRATEGIC COOPERATION, SIGN 20 MOUS

During a state visit to China, Maldivian President Mohamed Muizzu and Chinese President Xi Jinping agreed to elevate China-Maldives relations to a comprehensive strategic cooperative partnership. Both nations committed to expanding practical cooperation in various fields, collaborating on international and multilateral affairs, and enhancing the well-being of their peoples. The joint press communiqué highlighted the strategic significance of their relations and outlined plans for a China-Maldives Comprehensive Strategic Cooperative Partnership from 2024 to 2028. The visit included the signing of 20 Memoranda of Understanding (MoUs) covering areas such as the blue economy, digital economy, disaster and risk mitigation, and news cooperation. This development comes amid a diplomatic row between the Maldives and India, and the Maldives' decision to skip an India-led security conclave in favor of participating in China's Global Security Initiative.

## STRAINED TIES IN INDIA-MALDIVES RELATIONS

**The story so far:**

Prime Minister Narendra Modi's tourism push for Lakshadweep triggered a social media spat, escalating into a diplomatic clash between India and the Maldives, worsening the already strained relationship between the Indian Ocean neighbours. Disparaging remarks led to the suspension of three Maldivian Ministers. India expressed concerns, impacting travel bookings, and 'boycott Maldives' trended on social media. India-Maldives relations have hit a rough patch since Mohamed Muizzu was elected President last year on the back of an 'India Out' campaign.

**What led to the 'India out' campaign during Solih's administration?**

The Maldives is a key maritime neighbour of India in the Indian Ocean Region (IOR). The country's location holds significant strategic importance to India, especially amid China's growing engagements in the region.

Although Maldives-India ties have been mostly cordial over the years, there was a noticeable tilt towards China during the presidency of Progressive Party of Maldives (PPM) leader Abdulla Yameen from 2013 to 2018. It was under Mr. Yameen that China included the Maldives as a part of its Belt and Road Initiative (BRI).

Bilateral ties improved when Ibrahim Mohamed Solih of the Maldivian Democratic Party (MDP) took over the reins from Mr. Yameen in 2018.

Aiming to reset ties with "one of its closest bilateral partners," Mr. Solih adopted an 'India first' foreign policy to establish a closer relationship with India in the areas of defence, security and economics. The Maldives "makes no apology" for close ties with India, he told The Hindu in a 2021 interview.

However, the growing proximity between New Delhi and Male and high-level military exchanges sparked concern in certain quarters, leading to an 'India out' campaign spearheaded by the Opposition. The critics of the Solih administration alleged that the government was compromising

the sovereignty of the island nation and "allowing Indian boots on the ground." The Opposition sharpened its attack after the government signed the Uthuru Thila Falhu (UTF) deal with India in 2021 to jointly develop the National Defence Force Coast Guard Harbour.

The anti-India campaign emerged as the main poll plank in the 2023 presidential race under the leadership of former pro-China Maldivian President Yameen.

With a few months to go, PPM's Mohamed Muizzu emerged as the joint Opposition candidate following a series of dramatic events which prevented former President Yameen from contesting the presidential election. A protege of the PPM chief, Mr. Muizzu was then serving as the Mayor of Male. Mr. Yameen returned to prison and Mr. Muizzu entered the poll fray.

Mr. Muizzu built on the 'India out' campaign to persuade voters. He promised to remove Indian troops from the Maldives shores and balance trade relations, which he claimed were heavily tilted in India's favour.

He refused to be labelled pro-China and maintained that he was "pro-Maldives", saying his government wouldn't allow Indian, Chinese, or any other country's military presence in the archipelago. He, however, signalled his intentions to build strong ties with Beijing, highlighting the benefits of Chinese assistance to the Maldives.

In September 2023, Mr. Muizzu won the contest with 54% of the votes, and in November, took oath as the eighth President of the island nation.

The first signs of a shift in foreign policy emerged when the new Maldivian President skipped India and instead travelled to Turkiye in November on his first official visit. The Ankara trip marked a departure from a long tradition of Maldivian heads visiting New Delhi first.

Mr. Muizzu has since travelled to the UAE and is currently on a five-day visit to China at the invitation of Chinese President Xi Jinping. The Maldivian President has termed China as its "valued ally and integral collaborator".

**Why did President Muizzu insist on the withdrawal of Indian soldiers?**

In his first address to the nation after taking the oath, Mr. Muizzu insisted on the withdrawal of Indian soldiers from the Maldives as he pledged to safeguard the sovereignty and independence of the Maldives. The President's remarks that the country "will not have any foreign military personnel" grabbed headlines in India, viewed as an attempt to officially turn the compass from his predecessor's 'India first' policy to an 'India out' policy.

A disappointed New Delhi urged the Maldives to look at the presence of its military personnel in the "proper perspective."

The new President made another formal announcement on this matter following his meeting with PM Modi on the sidelines of the UN's COP-28 climate summit in the UAE in December, claiming that Mr. Modi had agreed to his demand. While statements issued by the two governments didn't mention any such agreement, sources in the Indian government countered the claim, saying the discussions on the issue were still "ongoing".

Male's hesitance to maintain defence ties with New Delhi was again evident from the absence of a Maldivian government representative in the latest round of the Colombo Security Conclave held in Mauritius last month.

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**Why did the decision to revoke the survey pact with India cause a stir in political circles?**

The Muizzu government caused a stir in political and strategic circles with its decision to revoke a key 2019 agreement with India for conducting surveys in Maldivian waters. The Memorandum of Understanding (MoU) for hydrographic surveying, signed during PM Modi's state visit to the islands when President Ibrahim Solih was in power, backed the commitment of the two countries to maintain close cooperation in defence and maritime security. Critics of the Solih government, however, had claimed that it harmed national security.

**In December, Mr. Muizzu announced that the pact would not be renewed.**

Abhijit Singh, Head of the Maritime Policy Initiative at the Observer Research Foundation, says that the Muizzu administration's refusal to renew the pact seems less to do with the President's sensitivities about sovereignty than with his special relationship with Beijing. "Getting Indian hydrographic ships out of Maldivian waters appears intended to aid China's marine surveys of the surrounding seas," Mr. Singh notes in his analysis.

## INDIAN TOURISTS ARE IMPORTANT TO THE MALDIVES

During a recent visit to Lakshadweep, Prime Minister Narendra Modi shared photos of his trip on social media. Several users responded comparing the islands with the Maldives, located further down south in the Indian Ocean. This became a diplomatic row when three deputy ministers at the Youth Ministry of Maldives — Malsha Shareef, Maryam Shiuna and Mahzoom Majid — also commented on the posts on X making disparaging remarks against India and Mr. Modi. The Maldivian foreign ministry distanced itself from their remarks, saying their personal views did not represent the country's position. The Maldivian government suspended them.

Meanwhile, the comments led to an uproar on Indian social media, with many claiming that they were cancelling their scheduled trips to the Maldives. Whether this actually has an impact on tourist arrivals in the Maldives is yet to be seen. Indian celebrities also urged people to explore domestic tourist destinations, including Lakshadweep. A former sports minister of the Maldives, Ahmed Mahloof, expressed concern over the row saying "Indians boycotting the Maldives" will hit the country hard.

The strong reaction from the Maldivian government to the statements of the ministers is unsurprising as tourism is a major source of revenue for the archipelago. The number of hotels in the Maldives as well as tourist arrivals have grown significantly in recent years. Between 2006 and 2022, the number of resorts shot up from 88 to 172, beds for tourists from over 16,000 to about 60,000, and tourist arrivals from 6 lakh to over 16 lakh in the period.

Between 2006 and 2022, the tourism revenue increased from 1,777 million MVR to 10,430 million MVR — a staggering 487% rise. Tourism continues to contribute over 20% of the country's GDP.

The high dependency on tourism was cited in a recent blog by the Asian Development Bank, which called for diversification of the Maldivian economy. In the 1980s, tourism contributed to only 13% of the GDP with fishing and agriculture being the main economic activities, the blog stated. In fact, the tourism industry may directly account for 20% of the GDP now, but the indirect contribution was as high as 80%, the blog said.

The timing of the 'boycott' calls on social media could also be a concern for the Maldivian government. If the 2022 data are taken as an example, the number of beds occupied over a month

in resorts and hotels peaked in the January- March period. The number of tourist vessels operating also peaked in March and April. If the trends from the 2022 season are of any indication, a boycott call during the 2024 holiday season could result in serious revenue losses for the Maldives.

Indians contributed the most to tourism in the Maldives for three years consecutively (2020, 2021 and 2022). In terms of citizenship of tourists who arrived in the Maldives between 2014 and 2023. India was placed fifth or lower before 2019. But since then, India has consistently occupied the top two positions. In 2023, Indian tourists formed close to 11% of the total arrivals, second only to Russians. If the calls on social media to 'boycott' the Maldives leads to a drop in Indian tourists to the archipelago, it could take a toll on the Maldivian economy.

## NATION

### HOW HAS RED SEA TROUBLE IMPACTED INDIA?

**The story so far:**

A spate of attacks on cargo ships in the Red Sea since November by the Houthi militia of Yemen has turned the quickest marine route linking Asia with Europe through the Suez Canal unsafe. It has forced freighters to take a longer transit around the Cape of Good Hope in Africa's southern tip, making shipments both dearer and longer to deliver. It has compounded the woes of global trade as it emerges from the aftermath of the pandemic, feels the heat of the Russia-Ukraine war and grapples with a global economic slowdown.

**What is the impact on Indian trade flowing through the Red Sea?**

After the attacks, major cargo shipping lines decided they would not operate on this route. Even small feeder vessels have of late stopped plying in these waters. Almost 90% of western hemisphere cargo, both inbound or shipped from India, that used to go through the Red Sea is now getting re-routed through the Cape of Good Hope, according to the Federation of Indian Export Organisations' Director-General Ajay Sahai. Whether exporting to Europe, the U.S. east coast and even to countries in North Africa, the longer route is being used. The remaining 10% of Indian import or export cargo is either not moving or using a transit facility.

The impact of this move varies on the type of buyer-seller contract. If it is FOB (free on board), the freight burden is on the buyer, and in CIF (cost, insurance and freight) or C&F (cost and freight) contracts, the freight has to be borne by the exporter. In cases of FOB, and where the buyers have comfortable inventory, they are asking the Indian exporter to hold back consignment. Likewise, exporters who have to bear the freight are requesting their buyers to allow them to hold the consignment given the increase in freight costs, which includes peak season surcharge and contingency surcharge. However, if there is zero inventory, the buyer would insist on shipment of the goods, according to Mr. Sahai. "Roughly 20-25% consignments are being held up. Container Corporation of India is saying about 25% of its containers are being held back by Indian exporters. Everybody is hoping the situation will normalise shortly, but looking into recent developments we are still keeping our fingers crossed," adds Mr. Sahai. While all consignments are likely to be impacted by the increase in freight cost — by up to six-fold in some cases — and the longer voyage time, the pinch would be felt most by low-value, high-volume cargo as well as perishables.

**How does the crisis impact India's imports?**

Besides the extra time taken on account of the longer route, the developments could make imports costlier and call for better inventory management. While the impact on some critical imports are being assessed, both import and export cycles have elongated, says Mr. Sahai. Also, the crisis could result in final products turning dearer. For instance, the Red Sea crisis could come in the way of any plans to reduce pump prices of petrol and diesel. Gross imports of crude oil and petroleum products as a share of India's gross imports in value terms was 25.8% in 2022-23, and 22.6% in the first half of the current fiscal. In fact, India's import dependence (based on consumption) in the April-September 2023 period was 87.6%, according to the government's Petroleum Planning and Analysis Cell. Citing the turbulent situation, Petroleum Minister Hardeep Singh Puri said there was no plan to slash fuel prices.

Separately, in a note on the impact of the crisis on oil tankers, analytics firm Vortexa's senior freight analyst Ioannis Papadimitriou observes that though freight rates for impacted routes have increased, this has not been reflected in the overall tanker market, implying that there is as yet no en masse re-routing taking place. Additional war risk premiums in the Red Sea have been partially contributing to the freight-rate increases for the relevant routes, but this surcharge is significantly lower than the costs linked to re-routing via the Cape of Good Hope. Because of the current pricing dynamics, the tankers that are diverting are predominantly the ones chartered from companies announcing diversions as well as the ones operated by U.S. and Israel-linked entities.

**What has been the response?**

The UN has said "no cause or grievance" could justify Houthi attacks against freedom of navigation in the Red Sea. The U.S. wants more support for the multi-national 'Operation Prosperity Guardian' it is spearheading to keep the sea lanes open and free of threats. India is closely watching the situation, and the Commerce Secretary is said to have held discussions with officials and trade bodies.

## THE LAWS AROUND REMISSION POLICY

**The story so far:**

The Supreme Court on January 8 set aside the remission of 11 convicts sentenced to life imprisonment for the gang rape of Bilkis Bano and murder of her family, during the 2002 communal riots in Gujarat. The remission order was passed by the Gujarat government in August 2022.

**What are clemency powers?**

Article 72 and 161 of the Constitution provide powers to the President and Governor respectively to grant pardon, commutation, remission, respite or reprieve to a convict. These are sovereign powers vested in the heads of the Union and State executive to be exercised on the advice of the council of ministers.

Apart from this, the appropriate State government under Section 432 of the Criminal Procedure Code, 1973 (CrPC) may remit the whole or part of the punishment to which a convict has been sentenced. In case of life imprisonment convicts, this remission can be done only after a period of 14 years in jail as per Section 433A of the CrPC.

**What is the background to the remission in this case?**

The heinous crimes for which the 11 persons were convicted were committed in Gujarat in March 2002. However, considering the need for fair trial, these cases were shifted to Maharashtra by the Supreme Court in 2004. A CBI trial court in Mumbai sentenced the convicts to life imprisonment in 2008.

One of the convicts, Radheshyam Shah, moved the Supreme Court in 2022 seeking directions to the Gujarat government to consider his remission application under the State's 'Remission policy' of 1992. The argument was that this was the policy in force at the time of the commission of offence (2002) and at the time of sentencing (2008). The Supreme Court in an order in May 2022, directed the Gujarat government to consider Shah's application for premature release under the 1992 policy. The Godhra Jail Advisory Committee (JAC) headed by the District Magistrate

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unanimously recommended the remission of sentence for the 11 convicts and they were freed in August 2022.

**What are the issues involved?**

The premature release of the 11 convicts by the Gujarat government raised certain serious legal and moral questions.

Firstly, the provisions of CrPC are quite clear, that the appropriate State government for considering the remission application should have been Maharashtra where the sentencing happened and not Gujarat where the offence was committed or jail term was being served. Also, the law requires the opinion of the presiding judge of the convicting court to be obtained before considering the remission petition, which was not followed in this case.

Secondly, the Supreme Court in Laxman Naskar versus Union of India (2000) had laid down five grounds on which remission is to be considered. The first of these is whether the offence is an individual act of crime that does not affect society. It would be preposterous to surmise that such a heinous crime does not impact the conscience of a civilised society. Thirdly, the Supreme Court in Sangeet versus State of Haryana (2012) had held that a convict serving life imprisonment does not have a right to be prematurely released on completion of 14 years in jail and that remission should be considered only on a case-by-case basis. In light of this judgment, the Union Home Ministry had issued an advisory in February 2013 prescribing that remission should not be granted in a 'wholesale manner'.

The Gujarat government had revised its 'Remission policy' in 2014 in line with this advisory and had explicitly barred remission for those convicted of rape and murder. However, the instant remission was granted based on the policy of 1992 (that had no such exclusions) as it was in force at the time of conviction.

**What did the Supreme Court rule?**

The Supreme Court in its order categorically held that the Gujarat government is not the appropriate government to consider the remission petition. It held that the May 2022 order of the Supreme Court, that asked the Gujarat government to consider the remission petitions, was obtained through fraud and suppression of facts before the court. Hence, it held the May 2022 order of the Supreme Court to be a nullity. It further ordered the surrender of all the 11 persons before jail authorities within two weeks. It held that the appropriate government for considering the remission petitions in the instant case is Maharashtra and it may consider their petitions in accordance with law and the guidelines laid down by the Court. This order has reinforced the faith in our judicial system and 'rule of law' by setting aside a blatantly perverse order that shook the conscience of society at large and women in particular. It is expected that the Maharashtra government would follow the guidelines laid down by the Supreme Court in the Laxman Naskar case under which such crimes that affects the society at large deserve no mercy.

## JUSTICE GAVAI NOMINATED AS SC LEGAL SERVICES COMMITTEE CHAIRMAN: WHAT LAW SAYS ON FREE LEGAL AID IN INDIA

Supreme Court judge Justice BR Gavai has been nominated as the Chairman of the Supreme Court Legal Services Committee (SCLSC), replacing Justice Sanjiv Khanna – the seniormost judge of the top court after the Chief Justice of India (CJI).

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A notification issued by the Department of Justice on December 29, 2023, announced Justice Gavai's nomination. Here is what the committee is, and what the law says on legal services in India.

### What is the Supreme Court Legal Services Committee?

The Supreme Court Legal Services Committee was constituted under Section 3A of the Legal Services Authorities Act, 1987, to provide "free and competent legal services to the weaker sections of society", in cases falling under the top court's jurisdiction.

Section 3A of the Act states that the Central Authority (the National Legal Services Authority or NALSA) shall constitute the committee. It consists of a sitting SC judge, who is the chairman, along with other members possessing the experience and qualifications prescribed by the Centre. Both the chairman and other members will be nominated by the CJI. Further, the CJI can appoint the Secretary to the Committee.

### Who does the SCLSC comprise?

As of date, the SCLSC consists of chairperson BR Gavai and nine members nominated by the CJI. The Committee, in turn, can appoint officers and other employees as prescribed by the Centre, in consultation with the CJI.

Besides this, Rule 10 of the NALSA Rules, 1995, entails the numbers, experience, and qualifications of the SCLSC members. Under Section 27 of the 1987 Act, the Centre is empowered to make rules in consultation with the CJI, by notification, to carry out the provisions of the Act.

### What is the need for legal services and how is it dispensed to the people?

The need for providing legal services has been underlined in many provisions of the Indian Constitution. Article 39A states, "The State shall secure that the operation of the legal system promotes justice, on a basis of equal opportunity, and shall, in particular, provide free legal aid, by suitable legislation or schemes or in any other way, to ensure that opportunities for securing justice are not denied to any citizen by reason of economic or other disabilities."

Moreover, Articles 14 (right to equality) and 22(1) (rights to be informed of grounds for arrest) also make it obligatory for the State to ensure equality before the law and a legal system that promotes justice based on equal opportunity.

Although the idea of a legal aid programme was earlier floated in the 1950s, it was in 1980 that a committee at the national level was established under the chairmanship of then SC judge Justice PN Bhagwati. The Committee for Implementing Legal Aid Schemes started monitoring legal aid activities throughout India.

### What the Legal Services Authorities Act says

In 1987, the Legal Services Authorities Act was enacted to give a statutory base to legal aid programmes. It aims to provide free and competent legal services to eligible groups, including women, children, SC/ST and EWS categories, industrial workers, disabled persons, and others.

Under the Act, NALSA was constituted in 1995 to monitor and evaluate the implementation of legal aid programmes and to lay down policies for making legal services available. A nationwide network has been envisaged under the Act for providing legal aid and assistance. It also disburses

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funds and grants to State Legal Services Authorities and NGOs for implementing legal aid schemes and programmes.

Subsequently, in every state, State Legal Services Authorities (SLSA) were established to implement NALSA's policies and directions, give free legal services to people, and conduct Lok Adalats. An SLSA is headed by the Chief Justice of the respective High Court and includes the senior HC judge as its Executive Chairman. While the HC Chief Justice is the patron-in-chief of the SLSA, the CJI is the patron-in-chief of NALSA.

Similarly, District Legal Services Authorities (DLSAs) and Taluk Legal Services Committees were established in districts and most taluks. Situated in the District Courts Complex in every district, each DLSA is chaired by the District Judge of the respective district.

The Taluka or Sub-Divisional Legal Services Committees are headed by a senior civil judge. Collectively, these bodies organise legal awareness camps, provide free legal services, and supply and obtain certified order copies and other legal documents, among other functions.

## DELHI HC BATS FOR 'TRUE LOVE', QUASHES FIR AGAINST MAN FOR ELOPING WITH 'MINOR'

Quashing a kidnapping and rape case against a man who had eloped with a 'minor' girl, the Delhi High Court has remarked that "true love" between two individuals, one or both of whom may be minor or minors on the verge of turning adult, cannot be controlled through the rigours of law or State action.

Justice Swarana Kanta Sharma, in a recent judgment, took note of the fact that the couple "made a choice" about themselves, even though the law did not permit them to enter into a marital union.

"This judgment portrays the story of love between Ms. 'A' [the girl], who was allegedly a minor as per the State and Mr. Khan, who eloped at the calling of their love," the court said.

The couple got married as per Islamic rituals since they both belonged to the same religion, with the blessings of Mr. Khan's parents. However, an FIR was lodged against the man by the girl's father in January 2015. At the time of the "recovery" of Ms. 'A', she was five months pregnant. She refused to abort the child as it was born out of her "marital union with and love for Mr. Khan".

A daughter was born to the couple. In her statements before the police as well as the magistrate, she stood by her stand that she married the man for love and was 18 years of age at the time of their marriage. Mr. Khan remained in jail till April 2018 when he was granted bail and since then the couple is "living happily" and has given birth to another daughter.

**'Scales of justice'**

"In none of the statements at any stage after the FIR lodged by the father of Ms. 'A', did Ms. 'A' allege that she had been kidnapped or was a minor or was sexually assaulted or sexual intercourse was committed by Mr. Khan against her will," the court said. It said, "When the scales of justice have to be weighed, they are not always on the basis of mathematical precision or mathematical formula. At times, while one side of the scale carries the law, the other side of the scale may carry the entire life, happiness and future of toddlers, and their parents."

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## THE SPEAKER'S COURT

The Maharashtra Assembly Speaker Rahul Narwekar's ruling on the disqualification petitions filed by rival factions of the Shiv Sena demonstrates why the adjudicatory function under the anti-defection law should not be in the hands of Presiding Officers in the legislature. In a matter that many thought would decide the survival of the Eknath Shinde regime, the Speaker has ruled that there was no case to disqualify members of the Eknath Shinde faction, or 14 members in the Uddhav B. Thackeray (UBT) group. The ruling is based mainly on the finding that loyalists of Eknath Shinde, the Chief Minister now, constituted the 'real political party' when rival Shiv Sena factions emerged on June 21, 2022. Mr. Narwekar's verdict conveniently draws upon some aspects of the Supreme Court's final verdict of May 11, 2023, in which a Constitution Bench ruled that the Governor was wrong in asking the then Chief Minister, Uddhav Thackeray, to undergo a floor test and that the Speaker was wrong in recognising the Shinde faction's appointee as the party's whip. In contrast to the Court ruling, the Speaker has declared that Sunil Prabhu, an appointee of the UBT faction, 'ceased to be the duly authorised whip' from June 21, 2022, and that Bharat Gogawale of the Shinde group was "validly appointed" as the whip. As a result, Mr. Narwekar found no reason to sustain the charge that the Shinde loyalists violated any whip. He also ruled that there was no proof that the UBT group violated the other side's whip as no such whip was served on them.

The Uddhav Thackeray group may approach the Supreme Court again, possibly on the ground that the Speaker's ruling contradicts key conclusions of the Bench. While acknowledging the split in the Shiv Sena Legislature Party, the Court had said: "... no faction or group can argue that they constitute the original political party as a defence against disqualification on the ground of defection". The Speaker has also referred to the Shinde faction's "overwhelming majority" (37 out of 55 MLAs of the original party). On the other hand, the Court had observed that the percentage of members in each faction is irrelevant to the determination whether a defence to disqualification is made out. However, the Court had conceded that the Speaker may have to decide on which faction is the real party when adjudicating a question of defection. It favoured reliance on a version of the party constitution and leadership structure submitted to the Election Commission before rival groups emerged. It is these observations that the Speaker has utilised to determine which group is the real party. As long as defection disputes are in the hands of Speakers, and not any independent authority, political considerations will undoubtedly cast a shadow on such rulings.

## IS TABLEAU SELECTION TURNING INTO A POLITICAL BATTLEGROUND?

**The story so far:**

The ongoing dispute between the Central government and non-BJP States regarding Republic Day parade tableaux has taken a political tone, with the Opposition accusing the Modi government of bias. The Centre denies the allegations, citing a misalignment with this year's theme and emphasising that similar controversies occurred under previous regimes.

**How are tableaux selected?**

Republic Day celebrates India's adoption of the Constitution and transition to a democratic republic. The parade, led by the President in New Delhi, showcases military strength and cultural heritage, featuring tableaux from States, Union Territories, Ministries, and departments. The Ministry of Defence oversees parade coordination and preparations. This process includes the selection and shortlisting of tableaux.

**Who makes the selection?**

The Ministry follows a standardised procedure for Republic Day parade tableau selection, inviting submissions months in advance based on a specified theme. Proposals undergo expert evaluation, including a basic assessment and a presentation of three-dimensional models.

Factors like visual appeal, theme alignment, and local resource use contribute to final selections. A State can pitch multiple proposals to the committee, but only one is chosen for the final parade. The Defence Ministry emphasises time constraints for the limited number of tableaux. However, the exclusion of proposals from Opposition-ruled States has led to accusations of 'discrimination' by several State governments.

**What are the politics over the rejection of tableaux?**

This year, tableau proposals by Punjab, Delhi and West Bengal — all non-BJP ruled States — failed to make the final cut. While the Aam Aadmi Party (AAP) is in power in Punjab and Delhi, the Trinamool Congress (TMC) is the ruling party in West Bengal. As per designs uploaded on the MyGov platform, Delhi submitted four sketches, proposing to showcase its mohalla clinics and education services.

West Bengal proposed two designs exhibiting its cultural heritage and the Kanyashree scheme that seeks to improve the status of girls. Punjab, meanwhile, submitted seven designs for three ideas — the history of the sacrifice of Mai Bhago, the State's heritage, and the history of the freedom struggle and sacrifices made by freedom fighters.

Controversy erupted last week when Punjab CM Bhagwant Mann remarked that the BJP government had "demeaned" the sacrifices made by Punjabis in the freedom struggle by rejecting the State's tableau. A war of words followed between the AAP and the BJP after State BJP chief Sunil Jakhar claimed that the CM intended to use the tableau for personal promotion. The Centre dismissed the charges and clarified that Punjab's proposal didn't align with the broader theme. In a statement, the MoD said Punjab was shortlisted six times in the last eight years, from 2017 to 2022. The Ministry added a similar clarification on the exclusion of West Bengal, saying the State's tableau was shortlisted five times in the last eight years.

In 2022, a similar situation played out in the run-up to the parade, when proposals from Tamil Nadu, Kerala and West Bengal were excluded from the final list. The Communist Party of India had termed the Centre's decision an attack on federalism. The governments of Tamil Nadu and West Bengal later showcased their tableaux during celebrations across the States. Last year, Karnataka's tableau was approved by the Centre following backlash after the then BJP government announced that the State had not made it to the final list — a first in 13 years. Under the UPA, proposals by the BJP-led Gujarat government were similarly rejected for several years until the saffron party came to power at the Centre in 2014.

## DEBATING INDIA'S NEW HIT-AND-RUN LAW

**The story so far:**

Transporters and commercial drivers from States like Maharashtra, Chhattisgarh, West Bengal, and Punjab have staged protests against the recent legislation concerning hit-and-run incidents. Section 106 (2) of the Bharatiya Nyaya Sanhita, 2023 (BNS) stipulates a penalty of up to 10 years in jail and a fine for fleeing an accident spot and failing to report the incident to a police officer or

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a magistrate. This law is in addition to the colonial-era provision on causing of death due to rash or negligent acts under Section 304A of the Indian Penal Code, 1860. Protestors are demanding the withdrawal or amendment of Section 106 (2), backed by the threat of a nationwide strike if their demands are not met. They argue that while strict action in hit-and-run cases is necessary, the new law has several flaws that need reconsideration.

### What happened?

The new law has sparked widespread protests among truck drivers, affecting multiple States. In Maharashtra, the protest turned intense with truck drivers staging road blocks, and where incidents of stone-pelting led to police injuries and vehicle damage. It has also sparked fears of fuel shortages. Chhattisgarh witnessed a similar upheaval, as 12,000 private bus drivers went on strike, leaving commuters stranded across major cities and causing panic at petrol pumps. Similar incidents were reported from West Bengal, Punjab and Madhya Pradesh where normalcy has come to a grinding halt.

### What are the demands of protesters?

Transporters have raised concerns that the offence provides for stringent punishment even where the accidents are unintentional. Their primary concern is the severe punishment of 10 years imprisonment and ₹7 lakh fine for drivers who flee the scene of an accident without reporting the same. They protest that this penalty is excessive and that it fails to consider their challenging work conditions, including long driving hours and difficult roads. Additionally, they argue that accidents may be caused by factors beyond the driver's control, such as poor visibility due to fog. The same, combined with fears of mob violence against drivers in the event that they stop to assist the injured at accident sites, has fuelled the protests against the law.

The general perception among drivers is that they are often unfairly blamed for accidents, regardless of the actual circumstances. They argue that the punishment provided by the law is disproportionate and does not align with the realities of road transport and the nature of accidents. The drivers are also concerned that the law may be abused by law enforcement agencies to their detriment. They think that these harsh penalties could have a negative impact on the transport industry as a whole given that stringent punishments may deter many from joining or continuing in the profession.

### What is the need for the law?

The new law comes in the backdrop of concerning figures related to road accidents in India. In 2022, India registered the highest count of road crash fatalities, exceeding 1.68 lakh deaths. This unsettling statistic translates to an average of 462 deaths daily. Despite a 5% global decrease in road crash deaths, India witnessed a year-on-year increase of 12% in road accidents and 9.4% in fatalities in the same year. The country averages 19 deaths due to road accidents every hour which amounts to nearly one death every three and a half minutes. Over half of all road fatalities occurred on national and State highways, which form less than 5% of the total road network. With only 1% of the world's vehicles, India accounts for about 10% of crash-related deaths and incurs an economic loss of 5-7% of its GDP annually due to road crashes.

### What is the principle underlying the law?

The National Crime Records Bureau recorded 47,806 hit and run incidents which resulted in the deaths of 50,815 people in 2022. All penal laws carry with them certain justifications for

punishment. The side of the coin seeking stringency in punishment appears to lie in an expressive function of the law which wants to deter drivers from engaging in rash and negligent driving that may lead to death. On the other side, however, the intent is to punish an offender in the event that they attempt to escape the law after causing death due to rash and negligent driving. Here, the law creates a positive obligation on part of the offender to report such an incident to the police or magistrate. They are also provisions to criminalise the omission in the performance of such a duty. The imposition of this legal duty clearly arises from a legislative intent to enforce moral responsibility on the part of the offender towards the victim of a road accident. Such conversion of moral responsibility into a legal duty is not new to cases pertaining to motor vehicle accidents. For instance, Section 134 of the Motor Vehicles Act, 1988, requires the driver of the vehicle to take all reasonable steps to secure medical attention for the injured person unless it is not practicable on account of mob fury or any other reason beyond his control. Similarly, the question of whether the offender fled from the spot was identified as a significant factor in the scheme for motor accidents claim formulated by the Delhi High Court in the case of Rajesh Tyagi versus Jaibir Singh (2021).

**Are the protests justified?**

The widely circulated view that Section 106 (2) of the BNS stipulates an imprisonment of up to 10 years and a fine of ₹7 lakh for fleeing an accident spot and failing to report the incident to a police officer/magistrate is grossly incorrect. While this Section discusses a maximum punishment of 10 years and a fine, there is no actual mention in the BNS about the fine being ₹7 lakh. Section 161 of the Motor Vehicles (Amendment) Act, 2019, provides compensation for victims of hit-and-run accidents. The compensation for death is ₹2 lakh and for grievous hurt it is ₹50,000. Unlike Section 106 (2) of BNS, the compensation in this case is not recoverable from the drivers.

Sub-section 1 of Section 106 of the BNS applies to rash or negligent driving where if the driver reports the matter to the police, they shall incur a punishment of up to five years with a fine. However, in the latter case of 106 (2), if the driver fails to report the matter and escapes, they will be imprisoned for up to 10 years. Despite increase in the quantum of punishment in this section, the offence has not been made non-bailable.

The way forward is to revisit and reconcile these two clauses so that more than 35 lakh truck drivers in the country are not treated unfairly, apart from individual vehicle drivers. For instance, an exception has been made under 106 (1) of the BNS for doctors in the event of rash or negligent acts, where the punishment will be up to two years with a fine. This limited categorisation is problematic and is against the principles of equality, as the liability of a wide variety of people working in other sectors also needs to be moderated.

Section 106 (2) is particularly contested and protested by truck drivers, and this section has the scope to be revisited. This section does not differentiate between rash and negligent driving as two separate types. In order to provide a graded liability and commensurate punishment, the acts of rash driving and negligent driving must be separated and placed under different degrees of liability so that all incidents of this nature are not bracketed into one, causing prejudice to the actors. Arguably, this determination of the actor's liability has to consider contributory factors in negligent acts such as the behaviour of commuters, road conditions, lighting on the road, and other similar factors. In such a situation, the applicability of one clause fitting to all categories will serve as prejudice against drivers in different circumstances.

Instead of ruling 10 years of imprisonment for all cases, the same could be categorised in different scales based on liabilities so that the apprehensions of the drivers could be put to rest. Further, there are many ambiguities about this clause, particularly among drivers. Hence, it is necessary to mention that in cases of accidents resulting in grievous/straightforward injuries, the corresponding classified clauses of liabilities will apply, and that the applicability of Section 106 (2) will be invoked only in the event of death due to an accident. The road accidents resulting in minor injuries ought not to be equated with criminal acts. Here measures like community service or revoking of driving licences or mandatory driving retests etc. could be the ways to criminalise.

## TURMOIL IN JHARKHAND

The Enforcement Directorate (ED) is keeping Jharkhand Chief Minister Hemant Soren on his toes as it pursues allegations against him and his close associates. The charges are related to tribal land transfers and illegal mining. Seven summons past, Mr. Soren has not appeared before the ED. He apparently fears his arrest ahead of the Lok Sabha elections and is preparing the ground for turning these corruption allegations into a political battle. The Chief Minister has been touring the State and mobilising people around his government's welfare measures with the slogan, 'Aapki Yojana Aapki Sarkar Aapke Dwar, i.e., Your scheme, your government, at your doorstep'. His attempts at getting some judicial reprieve have had very limited success. After the ED's first summons in August, Mr. Soren had approached the Supreme Court of India questioning its legality. The Court directed him to the Jharkhand High Court which rejected his petition on October 13, allowing the ED to continue with its investigations. This case is related to the purchase and sale of tribal land between 2020 and 2022, allegedly in violation of laws that restrict such transactions. In a mining lease allotment case, he appeared before the ED office in Ranchi in November 2022. He was facing allegations of allocating mining leases for himself, his wife and sister-in-law while holding the Mines Department portfolio. The High Court recently rejected a PIL that sought a Central Bureau of Investigation inquiry into this case.

The Bharatiya Janata Party (BJP) is counting on the possible arrest of Mr. Soren and keeping up the political heat. ED investigations frequently turn out to be very convenient for the BJP. The party has launched a campaign to preempt the possibility of Mr. Soren's wife, Kalpana Soren, replacing him as Chief Minister in the event of his arrest. Ms. Soren belongs to a tribal community in Odisha, and she may not be eligible to contest a seat reserved for Scheduled Tribes in Jharkhand. The abrupt resignation of Sarfaraz Ahmad, Jharkhand Mukti Morcha (JMM) MLA from Gandey, a general seat, on January 1, 2024 has given some credence to the speculation that the Sorens may be preparing for a transition in the face of mounting legal troubles. The BJP has asked the Governor not to allow anyone who is not an MLA to take oath as Chief Minister. Meanwhile, a meeting of JMM, Congress and Rashtriya Janata Dal legislators on January 3 at Mr. Soren's official residence unanimously called for his continuation in office regardless of the way the case turns. Corruption is a serious challenge to democracy, but selective investigation against political opponents is no less so.

## RISE IN CHILD MARRIAGES IN WEST BENGAL

**The story so far:**

A recent study on child marriage in India published in the Lancet noted the overall decrease in child marriage across the country but pointed out that four States, mainly Bihar (16.7%), West

Bengal (15.2%), Uttar Pradesh (12.5%), and Maharashtra (8.2%) accounted for more than half of the total headcount burden of child marriages in girls.

**What are the key findings?**

The paper titled 'Prevalence of girl and boy child marriage across States and Union Territories in India, 1993–2021: a repeated cross-sectional study' highlights that one in five girls are still married below legal age in India. The publication states that while some States have achieved dramatic decreases in prevalence and headcount for child marriage in girls, "other states have struggled, such as West Bengal".

"The largest absolute increase in headcount was observed in West Bengal, representing an increase of 32.3% in headcount (difference n=500346 )...West Bengal saw the largest absolute increase with over 5,00,000 more girls getting married as children," the paper said. Child marriage, particularly girl child marriage, has posed a challenge for policy-makers in West Bengal for decades. The National Family Health Survey-5 carried out in 2019-20, points out that the women aged 20-24 years who were married before the age of 18 years in West Bengal remains one of the highest in the country at 41.6%. The percentage was the same during the National Family Health Survey- 4. The all-India figure of women aged 20-24 years getting married before they turn 18 is pegged at 23.3%.

**What has been the impact?**

While child marriage is considered a human rights violation and a recognised form of sexual and gender-based violence, the adverse impact of child marriage is manifested across maternal and child health in the State.

Days before the Lancet study was published, 10 infants died at Murshidabad Medical College and Hospital in a span of 24 hours. The hospital authorities said the majority of the children were born with extremely low birth weight. Amit Dan, principal of the medical college, said one of the babies was born weighing only 480 grams. "We could not save the child. What we are dealing with is a social problem. Because of child marriage and poverty, children are born with a low birth weight and sometimes doctors are not able to save them," Dr. Dan said.

Murshidabad, one of the economically poorer districts of the State, has one of the highest numbers of child marriages in West Bengal. The NFHS - 5 points out that 55.4% of women aged 20-24 years are married before the age of 18 years in the district. The district saw a rise from NFHS-4 numbers, which stood at 53.5 %.

**What have been the policy interventions?**

The West Bengal government has made a number of policy interventions to stop child marriage. Launched in October 2013, Kanyashree Prakalpa is a conditional cash transfer scheme aimed at incentivising the schooling of all teenage girls between the ages of 13 and 18, and simultaneously discouraging child marriage. The scheme has completed 10 years and was recognised at an international level with a United Nations Public Service Award 2017. The West Bengal Budget for the year 2023-24 said the scheme has covered 81 lakh girls.

While the school enrolment of girls has increased in the State, questions are being posed based on NFHS data and the Lancet study of whether the scheme has achieved its promise of arresting child marriage. In 2023, the West Bengal Higher Secondary Examination, also referred to as the Class XII board exam, saw a 14.84% increase in female candidates. The number of girls appearing in the

examination was 1.27 lakh higher than boys and totalled 57.43% of the total candidates. The All-India Survey of Higher Education for 2020-21 also puts the number of estimated enrolment of girls in West Bengal at 9.29 lakh, which is higher than the boys enrolment which stood at 8.63 lakh.

Sabir Ahamed, national research coordinator of Amartya Sen's Pratichi Trust, agreed that girl's enrolment in schools has "significantly increased over the past few years and yet the incidence of child marriage remains high in West Bengal".

"It remains a puzzle for policy planners and researchers. There is a stride in educational attainment, which has not translated into increased participation of women in the workforce either," Mr. Ahamed said. Researchers like Mr. Ahamed point out that surprisingly there is no direct correlation between literacy rate and child marriage. Despite high literacy, the incidence of child marriage is also disproportionately high in some districts: for example, the Purba Medinipur district with over 88% literacy rate has the highest incidence of child marriage of more than 57.6% as per NFHS- 5. Experts also link child marriage with migration as a significant population of the State go out to work in other States. "There is a significant migratory population who goes to other States to work and they don't want to leave unmarried daughters at home. Also, the men who are married to these girls want their wives to have children when they go out for work," Dr. Dan said, explaining the vicious cycle.

Along with Kanyashree, the State government also has cash incentive schemes for marriage of girls named 'Rupashree Prakalpa'. Certain families avail cash benefits of both the schemes to organise marriage of girls, sometimes soon after cashing in on the school scheme.

**Are laws not being implemented?**

Along with social issues there are issues regarding implementation of laws on child marriage. The Ministry of Women and Child Development in response to a question by MP Chandrani Murmu in August 2023 gave details of cases registered under The Prohibition of Child Marriage Act (PCMA), 2006 over the past five years across the country. In 2021, West Bengal registered 105 cases under PCMA 2006 whereas States with a smaller population and lesser instances of child marriage registered more cases, like Tamil Nadu, which registered 169 cases, Karnataka 273 and Assam 155 cases respectively.

The Ministry also added that to curb child marriage, the Government had introduced the Prohibition of Child Marriage (Amendment) Bill, 2021 in Parliament in December 2021 for raising the age of marriage of women to 21 years to bring it on par with the men and the Bill has been referred to a Parliamentary Standing Committee.

**What lies ahead?**

Experts point out that West Bengal has emerged as an example where cash incentives and existing laws have failed to check child marriages.

In 2022, the West Bengal government called for a district action plan to curb child marriage and issued necessary guidelines.

However, in the absence of a social campaign involving all stakeholders including panchayats, schools and local communities and without a political will to enforce the existing laws the situation at the grass roots will not improve as rapidly as it has in other parts of the country.

## EXPRESS VIEW: THE RULE OF THE MOB

As general elections draw closer, political parties in the Opposition face a question: What is the model — of politics, policy, governance — that they will take to the voter?

In this context, for the TMC, the unconscionable attack on an Enforcement Directorate (ED) team in North 24 Parganas district, West Bengal, by a mob of supporters of a party strongman, and the whataboutery of the Mamata Banerjee-led government's response, is poorly timed.

In a system governed by the rule of law, they show how a party and government use the mob as an instrument, ceding vital space to it and shielding it from the law.

Early Friday morning, when the ED team arrived in Sandeshkhali to search the home of TMC leader Shahjahan Sheikh in connection with the alleged ration scam case, a group of his loyalists obstructed them, vandalised vehicles and injured three officers. According to the ED, the local police did not respond to calls for assistance. As disturbing as the collapse in law and order is the response of the ruling party and state government. Spokesperson Kunal Ghosh all but blamed the victims, saying the attack was a result of "provocation".

State Industry Minister Shashi Panja said that "BJP is targeting Bengal with agencies... People understand this". This is not the first time that law enforcement agencies have been drawn into unseemly political spectacles in West Bengal. In 2019, a CBI team was stopped by local police en route to film producer Shrikant Mohta's office in connection with the Rose Valley chit fund case. The CBI, again, had a run-in with the Kolkata police when it tried to question then police commissioner Rajeev Kumar as part of the probe into the Sarada chit fund scam, with CM Mamata Banerjee herself leading the protest for Kumar.

To be sure, Central investigative agencies — from the ED to the CBI, NIA and Income Tax authorities — have much to answer for. An investigation by this newspaper in 2022 showed a striking jump in CBI cases against politicians in the first eight years of the NDA government compared to the UPA government and that, of them, under the Modi government, cases against Opposition leaders stood at 94 per cent. The Opposition is justified in flagging the weaponisation of Central agencies by the BJP-led Centre to target the political opponent. But to look the other way in the face of a partisan mob taking the law into its hands is to go against an inviolable principle in a constitutional democracy — due process, not violence, is the way to address grievances. The government of Bengal and the TMC are not helpless: They can knock on the doors of the judiciary.

As elections approach, they can go to the people and make their case against the Centre. But first, the TMC government needs to show that it does not stand with the mob. It's not going to be easy. The so-called Syndicate, the network of party workers that blurs the line between crime and politics, is deeply entrenched. But Banerjee's government needs to act. Else, instead of aiding her national political ambitions, the "Bengal Model" could end up as an albatross around its neck.

## WHAT IS THE LONG-RUNNING LEGAL DISPUTE OVER ALIGARH MUSLIM UNIVERSITY'S MINORITY CHARACTER?

A seven-judge Bench of the Supreme Court on Tuesday (January 9) started hearing the matter pertaining to Aligarh Muslim University's minority character. This is a dispute that dates back almost 57 years and has been adjudicated upon multiple times by different courts.

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**What is the 'minority character' of an educational institution?**

Article 30(1) of the Constitution empowers all religious and linguistic minorities to establish and administer educational institutions. This provision reinforces the Union government's commitment to foster growth and development of minority communities by guaranteeing that it will not discriminate in giving aid on the basis of their being 'minority' institutions.

**When and how was AMU set up?**

AMU's origins can be traced back to the Muhammadan Anglo-Oriental (MOA) College, established by Sir Syed Ahmad Khan in 1875 to help Muslims overcome educational backwardness and prepare for government services. MOA not only imparted Western education but also emphasised Islamic theology. Sir Syed also advocated for women's education.

In 1920, the institution was conferred university status and all assets of MOA College were transferred to it. The long title to the AMU Act read: "An Act to incorporate a teaching and residential Muslim University at Aligarh."

**When did the university's minority character come under dispute?**

The legal dispute over AMU's minority status dates back to 1967 when the Supreme Court (in S. Azeez Basha and another versus Union of India), led by then Chief Justice of India KN Wanchoo, was reviewing changes made in 1951 and 1965 to the AMU Act of 1920. These amendments affected how the university was run. For instance, originally, the 1920 Act said that the Governor General of India would be the head of the University. But in 1951, they changed it to replace 'Lord Rector' with 'Visitor,' and this Visitor would be the President of India.

Further, a provision that said only Muslims could be part of the University Court was removed, allowing non-Muslims to join. Additionally, the amendments reduced the authority of the University Court and increased the powers of the Executive Council of AMU. As a result, the Court essentially became a body appointed by the 'Visitor'.

These alterations in the AMU's structure faced a legal challenge in the Supreme Court. The petitioners argued primarily on the grounds that Muslims established AMU and, therefore, had the right to manage it. It was while considering the challenge to these amendments that the top court held on October 20, 1967, that AMU was neither established nor administered by the Muslim minority.

The highest court determined that in 1920, Muslims could have set up a university, but that would not have guaranteed that the degrees from that university would be officially recognised by the Indian government. Hence, the court emphasised, AMU was established through a central Act to ensure the government's recognition of its degrees. So while the Act may have been passed as a result of the efforts of the Muslim minority, it does not imply that the University, under the 1920 Act, was established by the Muslim minority, the SC ruled.

Additionally, according to the 1920 Act, the SC stated, the university was not solely operated by Muslims. Instead, its administration was entrusted to the Lord Rector and other statutory bodies. Even the University Court, which had only Muslim members, was elected by an electorate which was not exclusively Muslim, the Supreme Court noted.

**Why does the dispute persist?**

The SC ruling triggered nationwide protests from Muslims. In response, political authorities yielded in 1981 and introduced an amendment to the AMU Act, explicitly affirming its minority status. The amendment introduced Section 2(l) and Subsection 5(2)(c), which stated that the university was "an educational institution of their choice established by the Muslims of India" and "subsequently incorporated" as the AMU.

In 2005, the AMU implemented a reservation policy, reserving 50% of seats in postgraduate medical courses for Muslim candidates. This was challenged in the Allahabad High Court, which, in the same year, overturned the reservation and nullified the 1981 Act. The court reasoned that the AMU could not maintain an exclusive reservation because, according to the Supreme Court's verdict in the S. Azeez Basha case, it did not qualify as a minority institution. Subsequently, in 2006, a set of eight petitions, including one from the Union government, contested the High Court's decision before the Supreme Court.

In 2016, the NDA government informed the SC that it was withdrawing the appeal filed by the government, saying, "as the executive government at the Centre, we can't be seen as setting up a minority institution in a secular state."

On February 12, 2019, a three-judge Bench presided by the then CJI Ranjan Gogoi referred the matter to a seven-judge Bench. On Tuesday, the Bench, comprising Chief Justice of India DY Chandrachud, Justices Sanjiv Khanna, Surya Kant, JB Pardiwala, Dipankar Datta, Manoj Misra and Satish Chandra Sharma, started hearing the case.

## J&K TO HAVE NO LOCAL BODY MEMBERS FROM TOMORROW

The people of Jammu and Kashmir, who have not had any Assembly representation since 2018, will cease to have any electoral representation at the grassroots level as well from Tuesday. The five-year term of almost 30,000 local representatives is set to expire on that date, and there is no clarity on when the next election to municipal bodies and panchayats will be held, as the Union government has decided to first conduct a delimitation exercise.

Panchayat elections were last held in the erstwhile State of J&K in late 2018. A total of 27,281 panches (panchayat members) and sarpanches (village headmen) were elected, and took the oath of office on January 10, 2019. There are 12,776 vacant sarpanch and panch seats in J&K. A senior Union government official told The Hindu that elections can be held only after a delimitation exercise is completed.

J&K has been under Central rule since June 2018 when a coalition government of the Bharatiya Janata Party (BJP) and the People's Democratic Party (PDP) collapsed, and the Assembly was dissolved. The Assembly elections were last held in 2014. After the special status of J&K under Article 370 of the Constitution was removed by Parliament in August 2019, the former State was bifurcated and downgraded into the Union Territories of J&K and Ladakh, the latter without a Legislative Assembly.

Union Home Minister Amit Shah has said that a call on restoring the Statehood of J&K will be taken after Assembly elections are held. On December 11, the Supreme Court directed the Election Commission of India to hold Assembly elections in J&K by September 30, 2024.

With regard to the panchayat fund, Mr. Sharma added that as the redrawing of panchayat boundaries is on, the administration should ensure that population figures are also taken into account before disbursing the money. "If a panchayat has 2,500 population, then also it is entitled to the same funds as that of a panchayat which has 1,000 people. This discrepancy should be addressed by the government," Mr. Sharma said.

In September 2018, the Union government transferred the functions of 29 subjects to the panchayats under the 73rd amendment to the Constitution, including the functioning of primary health centres, primary schools, and anganwadi centres. J&K had partially adopted the recommendations after the 73rd Constitutional Amendment Act, providing a constitutional status to the panchayati raj institutions, was passed by the Parliament in 1993.

In 2020, the Union Cabinet approved the adaptation of the Jammu and Kashmir Panchayati Raj Act, 1989 that was amended by the Ministry of Home Affairs the same year. This paved the way for the creation of District Development Councils in the UT, whose members are directly elected by the people; the elected members of the legislative Assembly have no say in this process. "The move will help establish all the three tiers of grassroot-level democracy like in other parts of the country," Union Minister Prakash Javadekar had said.

## PARTIALLY BUILT TEMPLE IS BEING INAUGURATED IN AYODHYA FOR POLITICAL GAINS: SHANKARACHARYAS

Prime Minister Narendra Modi is going to inaugurate the "semi-constructed" Ram Temple in Ayodhya on January 22 and the Vishva Hindu Parishad has taken over its consecration for "political gains", top religious leaders have said. Swami Nischalananda Saraswati, the 145th Jagadguru Shankaracharya of the Purvamnaya Govardhana Peetham of Puri, said on Tuesday that since Mr. Modi was doing the consecration puja, he would not attend the ceremony. "When Modiji will do the consecration at the temple and will touch the idol, will I be going there to clap," he asked while speaking to presspersons.

He said people need to think what remained for the dharmacharya (religious teacher) to do in Ayodhya if the Prime Minister was doing everything. However, he praised Mr. Modi for not portraying himself as a secular leader and showing full respect to Sanatan Dharma. "The Prime Minister is doing everything, even teaching yoga and now doing the consecration, which is done by seers and saints," he said.

Talking on similar lines, Swami Avimukteshwaranand Saraswati, the 1,008th Shankaracharya of the Jyotish Peeth in Uttarakhand, said the inauguration of the partially constructed temple was being done only for political gains. "Traditions are not being followed in the consecration ceremony of the Ram Temple in Ayodhya. In India, the king and the religious leaders have always been separate, but now the political leader is being made the religious leader. This is against traditions and is being done for political gains," he said. He said that in any temple, no entry or consecration could happen before the construction work was completed. "The temple has not been completely constructed. In such a situation, the consecration is not up to the traditions in Hinduism," he added.

In a media interaction, Champat Rai, general secretary of Shri Ram Janmabhoomi Teerth Kshetra (Ram Temple Trust) and senior VHP leader, said the Ram Mandir belonged to the people of the Ramanand sect and not to Shankaracharyas, 'Shaivas' and 'Shaktas'. Swami Avimukteshwaranand Saraswati said then Mr. Rai must resign and hand over the temple to the Ramanand sect.

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## THE STORY OF NASHIK'S KALARAM TEMPLE, VISITED BY MODI — AND BY AMBEDKAR MANY DECADES AGO

After his roadshow in Nashik, Maharashtra, Prime Minister Narendra Modi on Friday (January 12) visited the Kalaram Mandir on the banks of the Godavari in the Panchavati area of the city.

A day earlier, Shiv Sena (UBT) chief Uddhav Thackeray had said he would spend January 22 — the day of the consecration ceremony of the Ram temple in Ayodhya — at the temple.

The temple is also the site of a landmark agitation led by Babasaheb Ambedkar demanding temple entry rights for Dalits more than 90 years ago.

**Why have major political leaders come to this temple over the decades?**

The Kala Ram temple derives its name from a black statue of the Lord — Kala Ram translates literally to "Black Ram".

Panchavati has a special place in the Ramayana and, therefore, in the Hindu religion.

A number of important events described in the epic story of Lord Ram took place here. Ram, along with Sita and Lakshman, spent the first few years of their 14-year exile in Dandakaranya, the dense forest in central India of which Panchavati was a part.

The name Panchavati comes from the existence of five banyan trees in the area. According to the epic, Lord Ram, Sita, and Lakshman set up a hut here as the presence of five banyan trees made this region auspicious.

It is from the Panchavati region that Ravan, the demon king of Lanka, abducted Sita after drawing her out of the secure zone created by Lakshman by deceit, and set off the chain of events that led to Ram's journey southward to Lanka, and the Ramayana war.

But it is also the site of an important Dalit satyagraha.

In 1930, B R Ambedkar and the Marathi teacher and social activist Pandurang Sadashiv Sane, known as Sane Guruji, led an agitation to demand access for Dalits to Hindu temples. On March 2, 1930, Ambedkar organised a large protest outside the Kalaram temple. Dalit protesters arrived in Nashik in trucks, and surrounded the temple with a sit-in. Over the next few days, they sang songs, raised slogans, and demanded the right to enter the temple.

The protesters faced opposition, and there was an incident of stone-throwing when they tried to stop a Ram Navami procession from entering the temple premises. Babasaheb reached the spot and controlled the situation, according to an account of the satyagraha in Dhananjay Keer's book, Dr Ambedkar: Life and Mission.

The satyagraha at the Kalaram temple continued until 1935, Keer wrote. Earlier, in 1927, Ambedkar had launched another satyagraha to assert the rights of Dalits to use the water in public places. Sane Guruji too, travelled all over Maharashtra to campaign for Dalit rights, and led a protest fast at the Vitthal Temple in Pandharpur.

On January 6, Thackeray had said: "…On [January 22], we will have a darshan of Lord Ram at the Kalaram temple in Nashik. This is the same temple in which Dr Babasaheb Ambedkar and Sane Guruji had to struggle to allow entry [for Dalits], saying Lord Ram belongs to everyone."

The temple has an unusual statue of Lord Ram, which is black in colour. The Kalaram temple derives its name from a black statue of the Lord — Kala Ram translates literally to "Black Ram". The sanctum sanctorum has statues of Ram, Sita, and Lakshman, and a black idol of Hanuman at the main entrance.

The temple, which is visited by thousands of devotees every day, was built in 1792 with the efforts of one Sardar Rangarao Odhekar, according to the website of the Shree Kalaram Mandir Sansthan. It is said that Sardar Odhekar dreamt of a black-coloured statue of Lord Ram in the Godavari, and recovered the statues from the river and built the temple. The place where statues were found was named Ramkund, according to the Sansthan.

The main temple has 14 steps, which represent the 14 years of Ram's exile. It has 84 pillars, which represents the cycle of 84 lakh species that one has to complete in order to be born as a human. The Sansthan website says there is a very old tree, with an impression of Lord Dattatreya's footprints on stone beneath it.

## A NEW HIGH

On January 6 evening, a stream of commands transmitted by scientists and engineers of the Indian Space Research Organisation (ISRO) were translated by a computer onboard the Aditya-L1 spacecraft into manoeuvres that guided it into orbit around an imaginary point in space. Thus, Aditya-L1 reached its destination, around the L1 Lagrange point, from where it will have an unfettered view of the sun for its expected lifetime of five years. Aditya-L1 is an observatory-class solar mission that will study the sun with seven instruments: VELC, a coronagraph to study the uppermost layer of the sun's atmosphere; SUIT, an ultraviolet imaging telescope; SoLEXS and HEL1OS, to study solar flares and coronal mass ejections; ASPEX and PAPA, to study the solar wind and plasma; and a set of digital magnetometers to measure properties of the magnetic field around the spacecraft. ISRO picked the L1 Lagrange point — 1.5 million km from the earth in the earth-sun direction and one of five Lagrange points in the earth-sun system — because the gravitational influences of the two bodies interact such that a smaller body here will not experience a net tug towards either. So, Aditya-L1 can stay at L1 while expending little fuel. Its scientific mission will begin in a month or so, once its thrusters' emissions drift away.

As such, Aditya-L1 supplements India's storied history of observing the sun — dating back to the Kodaikanal Solar Observatory, which commenced operations in 1901 — by lofting it into space. It also follows the XPoSat mission, launched on January 1 to become only the world's second X-ray polarimetry satellite, and eight years after AstroSat, which reached several highs of its own. An important issue with such achievements is public perception. For example, while Aditya-L1 and AstroSat are big strides from India's point of view, they pale in comparison to the imaging abilities of the James Webb Space Telescope, which is operated by three space agencies. Yet, many continue to expect the Indian spacecraft to capture hi-res photographs of the cosmos and are disillusioned when it does not. This is not fair (setting aside the fact that not all instruments are imagers). ISRO can do more, too, by expanding its own and its collaborating institutes' public outreach efforts, such as by hosting open days focused on specific missions and commissioning science communication on new results at regular intervals. Everyone should be able to celebrate a new high, but especially the people at large, so ISRO should also consider including components on missions that feed public interest. All these efforts will require funds, but considering the love ISRO has been getting from the government of late, it may just be a matter of asking.

## WHAT IS THE SQUARE KILOMETER ARRAY PROJECT, SIGNIFICANCE OF INDIA JOINING IT

The new year ushered in the news that India had decided to formally join the Square Kilometer Array (SKA) project, an international scientific collaboration working to build the world's largest radio telescope.

India had already been contributing to the project for the past several years, but the full member status, which offers greater scientific opportunities to use the upcoming facility, requires countries to sign and ratify an international treaty, and also make a financial commitment. India has approved Rs 1,250 crore for the project, which includes its funding contribution for the construction phase.

The decision to join SKA as a full member ensures India's participation in yet another international mega science project in the most advanced areas of scientific research. India has already decided to build a gravitational wave detector to join the international LIGO (Laser Interferometer Gravitational Wave Observatory) network, and is a full member of the ITER project, which is working to harness energy from nuclear fusion reactions. India also has a strong participation in the Large Hadron Collider (LHC), the world's largest and most powerful particle accelerator that is running some of the most exciting experiments in particle physics.

**The SKA**

The Square Kilometer Array will not be a single large telescope, but a collection of thousands of dish antennas operating as a single unit. The name, Square Kilometer Array, comes from the original intention to create one square kilometre (one million square metre) of effective area for collecting radio waves. This was meant to be achieved by installing thousands of smaller antennas in a specific array design that would make them function like a single radio telescope. As of now, it appears that the USD 2.4-billion project (2021 prices) would eventually have a lesser collecting area than one square kilometre, but the original name has been retained.

The antennas, about 200 of them in South Africa and more than 130,000 in Australia, are being installed in sparsely populated locations, chosen to ensure they are as far away from human activities as possible. This has been done in order to minimise signal interference from undesirable Earth-based sources. Construction at both the sites began in December 2022, and the first phase of the project is expected to be completed by next year.

Once operational, SKA would be between 5 to 60 times more powerful than the most advanced existing radio telescopes functioning in comparable frequency ranges.

**What's in it for India**

Though none of the SKA facilities would be located in India, there are immense science and technology gains for the country by participating in the project as a full member. In this regard, SKA offers opportunities similar to the LHC or the ITER, which too are located on foreign soil but have brought rich dividends to the Indian scientific community.

Radio astronomy is something in which India already has highly developed capabilities. The Giant Meterwave Radio Telescope (GMRT) near Pune is one of the most advanced — and sought-after — facilities in the world, which has been producing remarkable scientific results. There are other similar facilities in Ooty, Nainital and Bengaluru. The SKA, which will become the most promising

tool for research in the most pressing scientific questions in astronomy, offers the next logical step forward for Indian scientists working in this area.

A full member status would provide India preferential access to the SKA facilities. Most existing telescopes operate under an open-use policy which allows research groups from any country to get time on the facility through competitive bidding by making a scientific case. This is how the GMRT also works. But there is a growing argument that countries that contribute to building any large international project should have priority access to that facility. This is likely to be the case with the SKA. Member countries will get preferential allocation of time on the radio telescope, roughly in proportion to their contribution to the project, and only limited time slots would be available through competitive bidding.

There are technology benefits as well. The SKA would work on highest-end technologies, including electronics, software, materials science and computing. The intellectual properties generated by the project, though owned by the SKA Observatory, would be accessible to all the member countries. This can offer huge learning opportunities for scientists, academics and even private industry.

Participating in the project is also expected to result in expanding the science and technology base in this area, along with capacity building and training opportunities. The Indian participation in the project is being led by Pune-based National Centre for Radio Astrophysics (NCRA), but 22 institutions are collaborating on SKA-related activities in the country. These include not just leading research institutions and some IITs and IISERs, but also a couple of universities and colleges. A few private companies are also involved.

### India's involvement

India has been involved in the SKA project right from its inception in the 1990s, and contributed to the design and development of the telescope as well as in negotiating the SKA Observatory Convention, the international treaty that established the facility as an intergovernmental organisation. The main contribution has come in the development, and operation, of the Telescope Manager, the 'neural network' or the software that will run the entire facility.

There are plans to set up an SKA regional centre in the country that will be part of the global network to process and store data and make it available for the scientific community.

Indian scientists have identified several areas of research for which they want to use the SKA telescopes. These include studies relating to the evolution of the early universe, the formation and evolution of galaxies, neutron star physics, and solar sciences. More than 150 scientists, researchers, and students from over 30 different Indian institutions, including a few private companies, have been participating in ongoing science activities related to the SKA.

## IN A FIRST, IAF C-130 WITH GARUD COMMANDOS MAKES NIGHT LANDING AT KARGIL

In a first, a C-130 Super Hercules tactical transport aircraft of the Indian Air Force made a night landing at the Advanced Landing Ground (ALG) in Kargil close to the Line of Control (LoC) with Pakistan along with a team of Garud special forces.

Earlier, transport aircraft landed here during daytime, one official said. Explaining the significance, the official said the ALG was located at an altitude of around 10,000 feet and was a restricted airstrip with a unidirectional approach surrounded by rough terrain. It does not have

night-landing facilities. This demonstrates the capability to carry out specialised missions round the clock in this area, the official said.

The Kargil ALG is also significant because this is the only airstrip in this area critical for any exigency. In Jammu and Kashmir, the IAF has full-fledged airfields at Srinagar, Awantipora, Udhampur and Jammu. In Ladakh, the IAF has airfields at Leh and Thoise and ALGs at Nyoma, Fukche and Daulat Beg Oldi (DBO).

In the past decade, the Defence Ministry has reactivated a series of ALGs close to the border, especially along the Line of Actual Control with China.

## NUMBERS GAME

For the eighth year running, the Centre has announced the Swachh Survekshan Awards, its annual exercise of awarding cities, towns and States which have performed impressively on various parameters of public sanitation. In an exercise that has now become predictable, the city of Indore, in Madhya Pradesh, has been adjudged India's cleanest city for the seventh year in a row. The only change is that this year, it has to share honours with Surat, Gujarat. Last year, Surat came second, which is not surprising as it usually occupied the higher echelons of the ranking ladder in earlier editions. Bhopal, Indore, Surat and Visakhapatnam have entrenched themselves over the years. There is a certain volatility beyond the top 10 — Ahmedabad, Chandigarh and Gwalior, for instance, are volatile cities — but the top cities are consistent. All of this is suggestive of a degree of stagnation.

Another quirk of the survey is that it creates multiple sub-categories, so that many more cities have a chance at top-scoring in some category or the other. Thus, while it is meaningful to create sub-categories based on population, some classifications stretch credulity. Mhow in Madhya Pradesh has been awarded as the cleanest 'cantonment' town. Varanasi and Prayagraj are proud winners of the 'Cleanest Ganga town' and Chandigarh is the cleanest 'Best Safaimitra Surakshit Sheher' (Cities safest for sanitation workers). Other than obvious criticisms of parochialism — why for instance cannot there be the cleanest Cauvery or Narmada town? — it ends up focusing too much attention on the top. The underlying principle of several ranking schemes put in place by the Centre is to 'motivate' sections — cities, villages, schools — to pull themselves up on their own mettle. While this works well for sporting contests, public sanitation is not something that is the result of a town or city actively choosing to be lazy or industrious in improving themselves. It is heavily influenced by their history, economic conditions and proximity to power. That a few cities are perpetually at the top means that there is less attention paid to the factors that hinder a general improvement in sanitation. One way to make future editions of the survey work as a useful barometer of progress is to acknowledge that consistent toppers have already put in place a well-oiled system and having done so, retire them from future rankings for a few years. This will throw focus and highlight challenges that stymie other cities. For civic sanitation to remain a sustainable movement, it is high time that the government intervenes and prevents it from being a numbers game.

## SHOULD INDIA STUDY WASTEWATER TO TRACK MALARIA, DENGUE?

Wastewater surveillance is an excellent tool to monitor the presence of specific pathogens well before they can be detected through laboratory testing. It has been routinely used for decades for tracking the polio virus in almost every country. Water-borne viruses can be best studied through testing sewage samples. If wastewater surveillance provides accurate information about the

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presence of polio virus excreted by humans, in the case of other pathogens, for instance SARS-CoV-2 virus, it helps provide information on new variants and virus load which serves as a proxy for the extent of virus spread in the community. The biggest advantage of wastewater surveillance is that it is cost-effective and can independently confirm the presence of pathogens before laboratory testing throws up a warning signal.

For instance, wastewater surveillance carried out by the Tata Institute for Genetics and Society (TIGS) in Bengaluru was able to detect a silent wave of theXBB.1.16 Omicron variant in the city last year.

With the usefulness of wastewater surveillance during the pandemic established, researchers in developed countries have used it for tracking other diseases such as monkeypox, influenza and cholera. In a paper published in November last year in the journal Science Translational Medicine, researchers in the U.S. have suggested that wastewater surveillance be expanded to track dengue, malaria, Zika and typhoid.

"The U.S. and Europe don't have much dengue and are unlikely to test fevers for dengue or malaria unless they know it is around (which may happen from environmental surveillance). In India, these are endemic diseases, so the questions that can be addressed by environmental surveillance need careful consideration since clinical cases are likely to be tested for known causes," says Dr. Gagandeep Kang, former Professor at CMC Vellore.

There have been recent outbreaks of malaria and dengue in the U.S., and Portugal. However, the U.S. and European countries rarely report malaria and dengue. The developed countries also have excellent sewage networks, which makes it easy to track these pathogens. Finally, transmission is seasonal, if at all.

But in India, malaria and dengue are endemic and pathogen transmission takes place almost throughout the year. "Importantly, besides people shedding the pathogens through stools, there are several mammals, including nonhuman primates, that serve as reservoir hosts of malaria and dengue. So in a tropical country like India, it is difficult to say that all the malaria and dengue microbes detected in wastewater are excreted only by humans," Dr. Ishtiaqsays.

In the case of dengue, virus shedding by humans is low. This makes it difficult to detect dengue viral RNA in wastewater at levels similar to SARS-CoV-2 RNA. "Using wastewater surveillance to detect malaria or dengue pathogens and find the actual burden of the disease in the community in a setting like ours is a challenge," says Dr. Ishtiaq.

"For vector-borne diseases, wastewater surveillance is not enough. Where we are trying to solve the problem through vector surveillance, mosquito surveillance should not be sidelined and wastewater surveillance be seen as a solution." Unlike water-borne pathogens such as rotavirus and hepatitis which are passed through human excreta, vector-borne diseases that have other reservoir hosts will be a challenge to study through wastewater surveillance, she adds.

In August 2022, besides the SARS-CoV-2 virus, Bangladesh launched a proof-of-concept wastewater surveillance programme to track and monitor three other vaccine-preventable pathogens including Salmonella typhi, Vibrio cholerae, and rotavirus in the communities.

"When selecting priority pathogens of wastewater surveillance, it is essential to consider the limitations and challenges that arise from different sanitation systems and host-parasite geography before drawing conclusions from wastewater surveillance data," she writes.

## MINISTRY NOTIFIES REVISED RULES TO ENSURE QUALITY OF MEDICINES

Last year, the country felt intense global scrutiny after the World Health Organization (WHO) issued an alert about cough syrups being contaminated with diethylene glycol and ethylene glycol. These are considered toxic to humans and can prove fatal. The contamination was allegedly found in samples taken from a batch of cough syrup made by QP Pharmachem Ltd, based in Punjab. QP Pharmachem Ltd's manufacturing licence was suspended after cough syrup, linked to child deaths in Gambia and Uzbekistan, were found to be contaminated. Other cases of alleged contamination have also been reported from cough syrups made in India.

The latest revision includes five new categories of drugs — pharmaceutical products containing hazardous substances such as sex hormones, steroids (anabolic and androgenic), cytotoxic substances, biological products and radiopharmaceuticals. It also has additional sections including — introduction of a pharmaceutical quality system (PQS), quality risk management (QRM), product quality review (PQR), qualification and validation of equipment, and a computerised storage system for all drug products.

According to the notification, the manufacturer must assume responsibility for quality of pharmaceutical products to ensure that they are fit for use, comply with requirements of the licence, and do not place patients at risk due to inadequate safety, quality or efficacy.

Additionally, companies must market a finished product only after getting "satisfactory results" from tests of the ingredients and retain enough of the samples of intermediate and final products to allow repeated testing or verification of a batch.

## HOW AI CAN HELP DETECT CANCER AND WHY INDIA'S BIGGEST CANCER TREATMENT HOSPITAL IS UTILISING IT

Given the escalating cases of cancer, the shortage of specialists poses a significant challenge in curbing fatalities. To address this gap, Mumbai's Tata Memorial Hospital (TMH), the biggest cancer hospital in India, is turning to artificial intelligence (AI).

By established a 'Bio-Imaging Bank' for cancer, the hospital is utilising deep learning to craft a cancer-specific tailored algorithm that aids in early-stage cancer detection. It incorporated data from 60,000 patients into the biobank in the last year.

Here is all you need to know about the project.

**What is a 'Bio-Imaging Bank', and how does AI come into the picture?**

The project's overarching goal is to create a robust repository encompassing radiology and pathology images, intricately linked with clinical information, outcome data, treatment specifics, and additional metadata. This comprehensive resource is strategically designed for the training, validation, and rigorous testing of AI algorithms.

Initially focusing on head neck cancers and lung cancers, with a minimum of 1000 patients for each cancer type, the project aims to surpass the committed patient data for both cancer types by its completion date. Alongside database creation, the project involves training and testing multiple AI algorithms using the gathered data, addressing medically relevant tasks such as screening for lymph node metastases, nucleus segmentation and classification, biomarker prediction (for instance, HPV in oropharyngeal and EGFR in lung cancer), and therapy response prediction.

The multi-institutional project is funded by the Department of Biotechnology, in collaboration with IIT-Bombay, RGCIRC-New Delhi, AIIMS-New Delhi, and PGIMER-Chandigarh.

**How does AI help in early cancer detection?**

AI contributes significantly to cancer detection by emulating the human brain's information processing. In cancer diagnosis, AI analyses radiological and pathological images, learning from extensive datasets to recognise unique features associated with various cancers. This technology facilitates early detection by identifying tissue changes and potential malignancies.

The creation of a tumour image bank involves segmenting and annotating images, outlining tumours, identifying different features, and annotating them as malignant, inflammatory, or edematous. Biopsy results, histopathology, immunohistochemistry reports, and genomic sequences are correlated with images and clinical data to develop diverse algorithms.

This approach allows TMH to develop algorithms for different tumours, assess treatment responses directly from images, and avoid unnecessary chemotherapy for predicted non-responders, offering clinical utility. Leveraging the biobank, predictive and diagnostic models are developed using thousands of breast cancer images, undergoing AI and ML analysis with technical support from partners like IIT-Bombay.

**Is this technology currently in use?**

Yes. TMH has already added the data of 60,000 patients into the biobank over the previous year, started using AI to reduce radiation exposure for paediatric patients undergoing CT scans.

Also, on a pilot basis, the department is using a specific algorithm in the ICU for thoracic radiology, which focuses on imaging and diagnosing conditions related to the thoracic region of the body, specifically the chest area. The AI immediately provides a diagnosis, proven to be 98 percent correct after doctors cross-check.

However, the use of AI tools raises debates about potential replacement of human radiologists, facing regulatory scrutiny and resistance from some doctors and health institutions.

## COMPLETE ORGAN TRANSPLANT PROCESS IN 6-8 WEEKS, SAYS DELHI HC. WHAT WAS THE CASE?

Delhi High Court has prescribed an ideal timeline of 6-8 weeks to complete the process of transplanting organs from living donors.

In a judgment passed on January 4, Justice Prathiba M Singh said prolonged delays can cause significant mental and physical anguish for donors, recipients, and their families, and directed the Ministry of Health and Family Welfare to ensure that timelines under The Transplantation of Human Organs and Tissues Act, 1994, and Rules, 2014 are prescribed for all steps in the process of considering organ-donation applications.

**What does the 1994 Act say?**

The law governs the transplantation of human organs and tissues in India, including the donation of organs after death. It lays down regulations governing healthcare providers and hospitals, and stipulates penalties for violations.

A transplant can be either from a pool of organs of deceased persons donated by their relatives or from a living person who is known to the recipient.

In most cases, the Act allows living donations from close relatives such as parents, siblings, children, spouses, grandparents, and grandchildren. Altruistic donations from distant relatives, in-laws, or long-time friends are allowed after additional scrutiny to ensure there is no financial exchange.

Living donations from close relatives involving Indians or foreigners must be accompanied by documents establishing their identities, family trees, and pictures that prove the donor-recipient relationship. Donors and recipients are also interviewed.

Donations from unrelated persons require documents and photographic evidence to prove their long-term association or friendship with the recipient. These are examined by an external committee to prevent illegal dealings.

Offering to pay for organs or supplying them for payment; initiating, negotiating, or advertising such arrangements; looking for persons to supply organs; and abetting in preparing false documents can attract a jail term up to 10 years and a fine up to Rs 1 crore.

The Authorisation Committee plays a critical role in the transplantation process.

**What is the Authorisation Committee?**

The Authorisation Committee oversees and approves organ transplant procedures involving donors and recipients who are not near relatives. This approval is crucial, especially in cases where organs are donated for reasons of affection, attachment, or other special circumstances, to ensure ethical compliance and prevent illegal practices.

Section 9(4) says the "composition of the Authorisation Committee shall be such as may be prescribed by the Central Government from time to time", and that state government and Union Territories "shall constitute…one or more Authorisation Committee consisting of such members as may be nominated by the State Government and the Union Territories…"

Under Section 9(5), the Committee is expected to conduct a thorough inquiry while reviewing applications for transplant approval. A crucial aspect of the inquiry is to verify the authenticity of the donor and recipient, and ensure that the donation is not driven by commercial motives.

Section 24 of the Act allows the Centre to make rules, subject to parliamentary approval, for carrying out the various purposes of the Act. These can relate to the manner and conditions under which a donor may authorise the removal of their organs before death, how a brain-stem death is to be certified, or the steps to be taken to preserve human organs removed from anyone, etc.

**What do the 2014 Rules say?**

Rule 7 of the 2014 Rules provides for the constitution of the Authorisation Committee and the nature of enquiry and evaluation conducted by it. Rule 7(3) says the Committee must ensure there is no commercial transaction involved in cases where the donor and recipient are not near relatives. But Rule 7(5) says that if a recipient is in a critical condition and needs transplantation within a week, the hospital can be approached for an expedited evaluation.

For living donor transplantations, Rule 10 describes the application process, which requires joint applications by the donor and recipient. Rule 21 requires the Committee to personally interview applicants and determine their eligibility to donate.

**What was the case before the Delhi High Court?**

The court ruled on a plea filed by a retired Indian Air Force officer diagnosed with kidney failure in 2017. By 2019, two hospitals had advised him to get a renal (kidney) transplant.

However, his application seeking approval for transplantation was rejected by the Army Hospital in New Delhi due to the non-availability of a "near relative" donor in terms of Section 2(i) and Section 9(1) of the 1994 Act.

Section 2(i) of the Act defines a "near relative" as a "spouse, son, daughter, father, mother, brother, sister, grandfather, grandmother, grandson or granddaughter". Section 9(1) says that without the Committee's prior approval, no human organ or tissue can be removed from a donor's body before death and transplanted into a recipient unless the donor is a "near relative".

After the petitioner was diagnosed with hypertension and chronic kidney failure at Sir Ganga Ram Hospital, the transplant was planned again. But no decision was taken — and in 2020, the petitioner approached the HC seeking the transplant and/ or a direction to the Committee to grant approval.

In February 2021, the HC directed the Authorisation Committee to decide the petitioner's application within two weeks. But when the matter was heard again in October 2021, the court was informed that the petitioner had passed away.

**What did the court decide, and why?**

Despite the petitioner's passing, the court proceeded with the case.

The Centre argued that the Committee took its decision within a week of receiving all documents, as prescribed by the 2014 Rules.

But counsel for petitioner contended there is no timeline for the Committee to conduct interviews, which leads to a delay in deciding cases. If the Committee indefinitely adjourns hearings without meeting donors, recipients, and their families, the applications remain undecided, causing prolonged suffering to the patients, the counsel submitted.

The court agreed, and ruled that everything from conducting interviews to processing forms and decision-making is to be done within fixed timelines, and not in an "expanded or elastic" manner. Such urgency is in fact, reflected in provisions like Rule 23(3), which requires a final decision to be taken within 24 hours of the meeting, the court said.

Despite this, the court found an absence of timelines under Rules 21 and 23 in holding pre-transplantation interviews by the Authorisation Committee, leading to delays. "In some cases, as in the present case, the recipient has in fact passed away awaiting the decision of the Authorisation Committee," the court said in its order.

"The non-adherence to timelines has resulted in extended waiting periods of 2 to 3 years in some cases before a decision is made, which contradicts the intent as also the letter and spirit of the 1994 Act and the 2014 Rules," the court said.

It suggested that after 4-6 weeks of receiving the application, the Committee can schedule interviews within 2 weeks, during which it will facilitate meetings of family members of the donors and recipients and conduct more than one interview.

However, the "entire process, from submission to decision, ought not to ideally exceed 6 to 8 weeks," the court said.

## EXPRESS VIEW ON PRESCRIPTIONS IN ALL-CAPS: DOCTOR'S ORDERS

An old joke goes like this: A young lover is unable to read a letter from his beloved because her handwriting is illegible. He takes the spider-trail-like scrawl to the local chemist, who promptly hands him medicine. After all, an ineligible cursive is the hallmark of prescriptions, not love letters. Now, thanks to a judgment by the Orissa High Court, there may be hope for the hapless millions who have struggled to make sense of their prescriptions.

The Court has directed Odisha's health department to ensure that doctors write all prescriptions, post-mortem reports and other documentation in capital letters. Or at least in legible handwriting. Both the common man and the judiciary cannot comprehend the "zig-zag" of the doctors' penmanship. There has been speculation about the reason for the scrawl. It has been attributed to the fact that doctors are often in a hurry, in overburdened public healthcare systems. Medical jargon is complicated and the possibility of errors when writing by hand — without spellcheck — is compounded. A cynical view is that poor handwriting is a strategy to keep medical knowledge out of reach in the age of Google.

Beyond the punchlines, though, poor penmanship can have tragic consequences. The deaths and injuries caused by it led the Medical Council of India to issue multiple directives on ensuring prescriptions that do not require a graphology degree to decipher. Hopefully, the Orissa HC's directive will have some effect. Increasing digitisation too can help avoid errors when it comes to prescriptions and reports — it is far easier to have a printout or even a cloud-based medical history with all prescriptions and reports than trying to make sense of the crisscrossed lines on a piece of paper. And it's easier than trying to write in all caps, all the time. The only loss, of course, will be of jokes at doctors' expense.

## INDIA GEARS UP FOR HPV VACCINE DRIVE AGAINST CERVICAL CANCER: WHO CAN RECEIVE THIS VACCINE? HERE'S ALL YOU NEED TO KNOW

In a bid to reduce cases of cervical cancer, the government is likely to roll out an immunisation campaign against Human Papillomavirus (HPV) in the second quarter of the year. Girls between the ages of 9 and 14 years across India will be vaccinated for free in three phases under the government's programme over the next three years. After the "catch-up" is completed, the HPV vaccine will be included in the government's routine immunisation programme for 9-year-old girls.

**How does the vaccine prevent cancers?**

The quadrivalent vaccines, including the Serum Institute of India's Cervavac, prevent the entry of four of the most commons types of HPV 16, 18, 6 and 11 thereby preventing infections, genital warts, and eventually cancer. The indigenously developed, cheaper Cervavac will be used in the government campaign.

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At least 14 HPV types have been identified to have the potential to cause cancer. Among these, HPV types 16 and 18 are considered to be the most oncogenic, causing about 70 per cent of all cervical cancer cases globally.

Universal immunisation of girls also reduces the transmission of the infection to boys and protects them from other cancers.

**Who should get the HPV vaccine?**

The vaccine has to be administered in adolescent girls before they are sexually active. This is because the vaccine can only prevent the entry of the virus. "HPV is a very common infection and 90% of sexually active women already have it. Other than that, the response to the vaccine is also better in the adolescence. This is the reason a booster is needed for girls over the age of 15 years who get the shot," said Dr Sarika Gupa, consultant of gynaecologic-oncology at Rajiv Gandhi Cancer Institute-New Delhi.

Although not covered by the planned government campaign, the vaccine can also be administered to adolescent boys and is recommended for men who have sex with men.

**Can I get the vaccine outside of the government campaign?**

Yes. If you are not eligible to receive the vaccine under the government's campaign or you would like to get it before the campaign is rolled out, SII's Cervavac is commercially available for R2,000 per dose. You primary physician can administer the shot for you.

**Can older women also get immunised?**

Yes. While the vaccine is not as effective among older women, it can still be administered up to the age of 45 years. Even if a person has already been exposed to an HPV infection, they are likely to be protected against other HPV types that the vaccines have.

Experts, however, suggest regular screening to be a better tool for older women. "Women who have not received the vaccine must undergo a pap smear test and an HPV DNA test every five years. If the HPV DNA test shows that they have not yet been exposed to HPV, then their chances of cervical cancer remains low," said Dr Gupta.

HPV DNA test is expensive, costing around 3,500 to 4,000. Dr Gupta says: "In the absence of HPV DNA test, a pap smear should be done every three years.

**Why is a HPV vaccination campaign important?**

More than 95% of all cervical cancer cases are linked to persistent infection with certain high-risk strains of HPV. What this essentially means is vaccination can be effectively used to prevent the infection and thereby cervical cancer cases. This is especially necessary in a country like India that accounts for nearly a fifth of the cervical cancer cases globally. India reports around 1.25 lakh cases and about 75,000 deaths each year.

While the effect of a vaccination drive will be most pronounced for cervical cancer, with HPV infection linked to cancers of anus, vagina and oropharynx, there is likely to be a drop in the incidence of these as well.

"The vaccine is 97% effective in preventing cervical cancer. This is the reason more than 100 countries have now implemented HPV vaccination programmes and they have seen a decline in the incidence as well," said Dr Gupta.

## EXPLORING INDIA'S DIVERSE CULTURAL HERITAGE THROUGH GI TAGS

Last Thursday, 17 products from across six States/Union Territories got the Geographical Indications (GI) tag. The products ranged from handicrafts such as the Dongaria Kondh shawl from Odisha, to agricultural products such as the Sundarban Honey from West Bengal. A GI tag is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin.

**What is a GI tag?**

In India, if one thinks of Tirupati or Nagpur, often laddus and oranges come to mind, respectively. Both these products have GI tags. While arguing for a GI tag, Tirumala Tirupati Devsthanam said in their application that the highest quality of raw material is procured for the production of the laddu prasad and a variety of skills are required for each stage of its making. The GI tag for the Nagour orange reportedly helped farmers brand their products under the tag.

Any trader's body, association, or organisation can apply for a GI tag. The applicants need to prove the uniqueness of the item with historical records and a complete breakdown of how the product is made. GI tags are also not meant just for popular products. There are hundreds of GI tags across States. Every GI tag recognises a particular region and product and brings it to the public eye.

It is important to note that the raw materials for such products do not have to come from that region (unless it is an agricultural tag). For instance, the leaf that gives the Banarasi paan its identity is not grown in Varanasi; it comes from Bihar, West Bengal, or Odisha. The mulberry silk used in Kancheepuram sarees comes from Karnataka and the gold zari from Surat.

There are over 500 GI tags as of January 7, 2023. There are 34 classes of products that can get GI tags, — from chemicals and paint to foodstuff, handicrafts, musical instruments, and even firearms and locomotives. The products in the GI registry fall under five major categories. Handicrafts dominate the list, with over half the GI tags being given to products crafted by skilled artisans.

**GI tags across States**

Every State in India has at least one GI tag. While GI tags are a proxy for unique cultural items, they are by no means exhaustive. If a State has more GI tags compared to another, it doesn't necessarily mean that it is more culturally rich; it just means that more items have been registered, with more to probably follow. Tamil Nadu (61) has the highest number of GI tags compared to other States. Uttar Pradesh has the second highest number of GI tags. (56). These include leather footwear from Agra, saddles from Kanpur, and the traditional embroidery art form of Chikankari from Lucknow. Karnataka with 48 GI tags is ranked third, Kerala with 39 is ranked fourth, and Maharashtra with 35 is fifth.

The Coimbatore wet grinder (to make batter for idlis) was given a GI tag under the "manufactured" category.

Ancient cultural centres such as Banaras (Varanasi) are steeped in culture and tradition. Banaras offers 11 unique crafts and agricultural items (the highest from a single place), including the

famous Banarasi paan. The heritage city of Mysuru, ruled for centuries by the Wodeyars, has 10 unique items, including the special variety of jasmine (Mysore mallige) and the fragrant sandalwood soap. Paintings from Thanjavur in Tamil nadu and the Thanjavur's iconic bobblehead dolls find a place among the five GI tags the city has to offer.

## A LOOK AT PROJECT TIGER, 50 YEARS ON

In 1973, Project Tiger introduced India's tiger reserves, whose status has since rapidly ascended. From an administrative category constituted and administered by the forest bureaucracy, tiger reserves became a statutory category in 2006. Today, they are hailed worldwide as India's conservation success story, especially in this age of climate change.

**The origins of Project Tiger**

In 1972, India enacted the Wildlife (Protection) Act (WLPA), which introduced new spaces within notified forests called 'National Parks', where the rights of forest-dwellers were removed and vested with the State government. It also created 'Wildlife Sanctuaries', where only some permitted rights could be exercised. Project Tiger was the result of this development.

There were nine tiger reserves in 1973 over 9,115 sq. km; today there are 54 in 18 States, occupying 78,135.956 sq. km. Critical Tiger Habitats (CTH) cover 42,913.37 sq. km, or 26% of the area under National Parks and Wildlife Sanctuaries. As of 2022, the camera-trap method indicated there were 3,167-3,925 tigers in India. The government created the CTHs to vouchsafe a part of India's forests for tiger-centric agendas. Beyond each CTH would be a Buffer Area — a mix of forest and non-forest land. But even though the latter had an inclusive, people-oriented agenda, the overall 'fortress conservation' approach to protecting tigers displaced people who had coexisted with tigers for generations.

**A change of operations**

In 2005, Prime Minister Manmohan Singh appointed a five-member Tiger Task Force to crack the mystery of vanishing tigers despite spending huge money on them. They found the approach of using guns, guards, and fences not effective in protecting tigers, and that the increasing conflict between the forest/wildlife bureaucracy and those who coexist with the tigers was a recipe for disaster. The group asserted that "the protection of the tiger is inseparable from the protection of the forests it roams in. But the protection of these forests is itself inseparable from the fortunes of the people who, in India, inhabit forest areas."

So, in September 2006, Parliament amended the WLPA to create the National Tiger Conservation Authority (NTCA) and a tiger conservation plan. To ensure that CTHs remained inviolate; the Act only modified forest-dwellers' use of the forest — mostly tribals — and planned to relocate them if required. Four months later, the government also enacted the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006, also known as the FRA. The FRA recognised all customary and traditional forest rights on forest land, including in tiger reserves. Under the Act, the habitation-level Gram Sabha was to democratically determine and demarcate the forest rights that the FRA recognised. The Gram Sabhas became the authority to protect, conserve, and manage forests, wildlife, and biodiversity within their customary and traditional boundaries. As a result, the FRA secured the livelihoods of at least 20 crore Indians in 1.79 lakh villages.

Importantly, the FRA introduced a 'Critical Wildlife Habitat' (CWH), like the CTH under WLPA, with one difference — once a CWH had been notified, it couldn't be diverted for non-forest purposes.

## WITH WORLD'S LARGEST NUMBER OF SNOW LEOPARDS IN CAPTIVITY, HOW DARJEELING ZOO, INDIA'S LONE CONSERVATION BREEDING PROGRAMME, SCRIPTED A SUCCESS STORY

Nearly four decades after Darjeeling zoo began a conservation breeding programme, it now has the world's largest number of snow leopards in captivity — 14 in total with 7 males and 7 females.

Among them, there are six cubs from three mothers, the highest since the launch of the breeding programme at Padmaja Naidu Himalayan Zoological Park (PNHZP), also commonly known as Darjeeling zoo.

The announcement was made by the World Association for Zoos and Aquariums (WAZA) — a global alliance of regional associations, national federations, zoos, and aquariums — on its social media handle.

Darjeeling Snow leopards Snow leopards are in the "vulnerable" category of the International Union for Conservation of Nature or IUCN "Red List of Threatened Species", with an estimated global population of 4,000 to 7,500.

"This is great news and an immense recognition from an international body, like the WAZA. It indicates and signifies the success of our conservation breeding programme. Darjeeling Zoo has the only conservative breeding programme for snow leopards in the entire country. Apart from snow leopards, we have conservative breeding programmes for red pandas, mountain orals and pheasants at the zoo," Saurabh Chaudhury, member secretary of West Bengal Zoo Authority told The Indian Express.

This success story at Darjeeling zoo, however, has not been overnight. The conservation breeding programme for snow leopards, the first and the only in the country, was launched at Darjeeling zoo in 1985.

Four years later in 1989, the Conservation Breeding Centre (CBC), which is currently spread across five hectares at Topkeydara, recorded the first birth of a snow leopard. Since then, 77 snow leopards have been born in the zoo. While some died of natural causes, others were transferred to other zoos in the country.

At the centre, care is taken to create a natural environment as well as to carefully pair the male and female snow leopards for breeding. According to the zoo officials, a highlight of the breeding programme is the use of a wide genetic pool while pairing the snow leopards for breeding.

"If those paired are closely related, there is a chance of the cubs developing disease. We were careful to use a wide genetic pool. Snow leopards brought to the zoo were not only from different parts of the country but also from zoos outside India," added Saurabh Chaudhury.

At the centre, there are five naturalistic enclosures of 1,000 square metre area.

"A dry mountainous region has been created artificially within parts of the enclosures, similar to the natural habitat of snow leopards. We checked the pedigree of each snow leopard. The most

genetically apart and most unrelated or most distant ones were chosen for pairing," said Holeyachi.

"Before pairing them, the couple were kept in adjoining enclosures to develop courtship. They were closely observed. Only after their compatibility was seen, they were paired and kept in the same enclosure," added Holeyachi.

"Once the female leopard is pregnant, it is separated from others and kept under CCTV surveillance 24X7. Regular blood tests are carried out and her body weight is measured at regular intervals. After giving birth, the mother and cub are regularly tested and closely monitored," said Holeyachi, adding snow leopards from Darjeeling have been sent to zoos in Nainital, Shimla, and Sikkim.

## CHASING MONSOON FOR 150 YEARS: THE ORIGIN STORY OF INDIA METEOROLOGICAL DEPARTMENT

Two monstrous cyclones in 1864, one striking Kolkata and the other hitting the Andhra coast, killed more than one lakh people. The loss of lives in the Kolkata cyclone, possibly the most destructive one till then, alone was estimated to be over 80,000. Two years later, in 1866, India faced severe drought and famine, pushing scores of people into malnutrition and deaths by starvation.

Though events like these were not uncommon in India in those times, the severity of these particular calamities, more than anything else, exposed the lack of a system of monitoring atmospheric parameters and foreseeing their changes. It is these events that triggered the eventual setting up of the India Meteorological Department, which on Monday, January 15, is entering its 150th year of existence.

Though meteorological observations were being made from several observatories at least from the 1850s, these were being done largely by amateurs or the disparate wings of the British colonial system, including the military and the survey office. The Asiatic Society of Bengal, which had been publishing some of these observations in its journal, was among the first to push for the setting up of a separate office. It was on January 15, 1875, that the IMD officially started functioning, employing the services of just one person, Englishman HF Blanford, who used to be called the Imperial Meteorological Reporter. His job was to systematically study the climate and meteorology of India, and use this knowledge for weather forecasting and issuing cyclone warnings.

It has been a long journey from those early days and IMD now has evolved into a massive organisation, running hundreds of permanent observatories and thousands of automatic weather stations, covering every nook and corner of the country. While weather forecasting remains its main raison d'être, IMD now provides a variety of related specialised services that are sought by a vast range of agencies. Whether it is conducting general elections or examinations, sporting events or mountaineering expeditions or organising a big function or a space launch, there is hardly any major activity that happens without the inputs of the IMD. These, apart from the several regular forecast and advisory services for agriculture, railways, airways and ships, power plants, fishing community, water management agencies and the like. Climate change research, and assessment of risks and vulnerabilities, is another major IMD preoccupation.

ISRO rockets are rain-proof but strong winds and thunder are not conducive conditions for a launch.

However, the most impactful successes of IMD have been in cyclone predictions, one of the main triggers for its establishment 150 years ago. Starting with the 2013 Phailin, the death toll from cyclones has come down to a minimal level. Earlier, cyclones these powerful would have easily killed thousands of people. The credit goes to IMD's forecasts, combined with efficient evacuation measures put in place by local administration.

Mohapatra, who specialises in cyclones and was posted in Bhubaneswar during the 1999 Odisha super cyclone, said that event was his lowest point as a meteorologist.

"But that was also the turning point for IMD's cyclone forecast capabilities. We made massive investments in time, manpower and technology, with the intent that something like this must never be repeated," he said.

## WHY DID NORTH INDIA FOG HEAVILY IN LAST WEEKS OF 2023?

**The story so far:**

As winter tightened its grip on northern India, a blanket of fog descended on several States in the last days of 2023 and first of 2024, creating challenging conditions for residents and travellers alike.

**Where was fogging reported?**

According to weather reports in late December 2023, minimum temperatures in Punjab, Haryana, and the northern reaches of Rajasthan and Uttar Pradesh hovered around 6-9 degrees Celsius. In New Delhi, south Rajasthan, and north Madhya Pradesh, some places recorded minimum temperatures in the range of 10-12 degrees Celsius, according to the India Meteorological Department (IMD).

At the same time, most of North India also experienced a dense fog that reduced visibility in many areas to as little as 50 metres for several days. Haryana, including Chandigarh, plus isolated pockets of Uttarakhand, Uttar Pradesh, Bihar, Rajasthan, and Madhya Pradesh reported fog with visibility reduced to under 200 metres. Other States including Jammu & Kashmir, Himachal Pradesh, Odisha, Chhattisgarh, Jharkhand, and Uttarakhand also reported fog for a few hours in the morning, the IMD reported.

**What effects did the fog have?**

The fog's principal effect was on air travel: nearly 450 flights were delayed or cancelled on December 27 at Delhi's Indira Gandhi International Airport as a dense layer of fog enveloped the city. On December 29 and 30, almost a 100 and 80 flights, respectively, were delayed from Delhi. The arrival and departure of several Delhi-bound trains were also delayed by poor visibility and dense fog on December 29.

The Hindu reported on December 29 that at least eight trains that were supposed to have reached the national capital the previous night didn't, while a few trains scheduled to reach on the morning of December 29 had been delayed by a few hours.

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**What is fog?**

A fog is a collection of small droplets of water produced when evaporated water has cooled down and condensed. According to Madhavan Nair Rajeevan, former director of the IMD and current Vice-Chancellor of Atria University, "Fog is nothing but a thick cloud, but very close to the earth's surface. For a thick fog to form, temperatures should be lower and abundant moisture should be available near the surface."

Fog materialises whenever there is a temperature disparity between the ground and the air. This happens frequently during Indian winters — fog is created when the temperature drops at night and in the early morning, aerosols present in the atmosphere condense. High humidity, combined with an ample presence of water vapour or moisture, encourages foggy conditions.

The process by which it cools plays a pivotal role in the formation of fog. One primary mechanism contributing to fog formation is called infrared cooling. It typically occurs when the weather is transitioning from summer to winter. In the summer, the ground absorbs radiation from the sun, becomes warmer, and moistens the air passing over it. When cooler weather kicks in, this mass of warm, moist air comes in contact with processes that cool it. The 'collision' prompts the water vapour in the air to condense rapidly, giving rise to fog. Another type of fog, known as radiation fog, is prevalent and occurs when an unseasonably warm day with high humidity is followed by rapidly dropping temperatures.

The specific type of fog, its duration, and its effects are contingent on various environmental conditions.

**Why is northern India prone to fogging?**

"The entire Indo-Gangetic plains are prone to formation of fog during winter season, as all the conditions — low temperatures, low wind speed, moisture availability and plenty of aerosols — are present in this region," Dr. Rajeevan wrote in an email to The Hindu.

"Moisture incursion into this region can happen once a Western Disturbance — a precipitational pattern that brings rain to north India during winter months — moves across northern parts. Sometimes, moisture incursion can happen from the Arabian Sea also."

## RAPID RISE IN WEB BLOCKING ORDERS, SHOWS RTI REPLY

Website blocking orders have grown over a 100-fold from 2013 to October 2023, shows a reply to a Right to Information (RTI) application filed by the Bihar-based activist Kanhaiya Kumar.

Mr. Kumar obtained statistics on website and online post blocking orders issued under Section 69A of the Information Technology Act, 2000. The Union government issued 62 such orders in 2013, and in 2023, 6,954 till October. This comes even as the Department of Telecommunications (DoT), in December, directed Internet service providers (ISPs) to compile Internet Protocol (IP) addresses of servers in India, to facilitate blocking them quickly.

**Fall in data prices**

The increase in blocking orders has coincided with a massive uptick in Internet use, specifically since mobile data prices fell dramatically in 2016. The data reflect blocking orders sent to social media and content firms for specific pages, profiles and videos. However, the IT Ministry refused to provide a breakdown of these statistics, citing the confidentiality clause in the rules.

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

**Telegram:** http://t.me/DreamIAS_Jamshedpur

Most of the webpages blocked are likely to be individual posts, videos or profiles. In 2022, the Union government said in response to a parliamentary query that 228 websites were blocked. When other orders, such as those sent directly to social media and online content providers, are factored in, the number for that year is 6,775.

Section 69A of the IT Act allows the Union government to block content online in the "interest of sovereignty and integrity of India, defence of India, security of the state, friendly relations with foreign states or public order or for preventing incitement to the commission of any cognisable offence".

## HOW VOICE CLONING THROUGH ARTIFICIAL INTELLIGENCE IS BEING USED FOR SCAMS

A few years ago, voice cloning through Artificial Intelligence (AI) was just a phenomenon of mild amusement. AI-generated songs by famous artistes like Drake and Ariana Grande were floating around online. However, fears around the AI software were realised when AI voice cloning-related scams burgeoned. In April last year, a family living in Arizona, U.S., was threatened to pay ransom for a fake kidnapping pulled off by an AI cloned voice. And scams weren't the end of it. Easy access to AI voice clones also spawned disinformation.

Earlier in January, 4chan users started flocking to free AI voice cloning tools to generate celebrity hate speech, wherein Harry Potter actress Emma Watson read out a portion of the Mein Kampf and conservative political pundit Ben Shapiro made racist comments against Democrat politician Alexandra Ocasio-Cortez.

**Why is India a major target for AI voice clone scams?**

Similar incidents have made their way in India. A report titled 'The Artificial Imposter' published in May last year revealed that 47% of surveyed Indians have either been a victim or knew someone who had fallen prey to an AI generated voice scam. The numbers are almost twice the global average of 25%. In fact, India topped the list with the maximum number of victims to AI voice scams. Even as several cases went unreported, some came to light. In December, a Lucknow resident fell prey to a cyberattack that used AI to impersonate the voice of the victim's relative, requesting the person to transfer a substantial amount through UPI. Another report in August stated that a man from Haryana was duped of ₹30,000 after a call was made from a scamster who used an AI app to sound like the victim's friend in dire need of money due to an accident.

Indians have been found to be particularly vulnerable to scams of this nature. According to McAfee, 66% of Indian participants admitted that they would respond to a voice call or a phone call that appeared to be from a friend or family member in urgent need of money, especially if the caller was supposedly a parent (46%), spouse (34%) or their child (12%). The report stated that messages that claimed the sender had been robbed (70%), involved in a car accident (69%), lost their phone or wallet (65%) or needed financial aid while travelling abroad (62%) were the most effective excuses.

While these tools aren't perfect, scammers have relied on creating a sense of exigency to glide over these flaws. The report also shared that 86% Indians were prone to sharing their voice data online or via voice notes at least once a week which has made these tools potent.

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**How are voice clones done?**

Once a scammer finds an audio clip of an individual, all it takes is to upload their voice clip to the online program that is able to replicate the voice accurately barring some intonations. There's a host of these applications online with popular ones like Murf, Resemble and Speechify. While most of these providers have a monthly subscription fee from under $15 for basic plans to $100 for premium options, they have a free trial period.

An especially lauded one has been a year-old AI startup called ElevenLabs that was founded by former Google and Palantir employees. The Andreesen Horowitz-backed firm has been releasing a steady stream of tools. In October last year, it released a product called AI Dubbing which can translate even long-form speech into 20 different languages.

In mid-December, former Pakistani Prime Minister Imran Khan's political party used an AI-generated speech from the now imprisoned leader in an attempt to rally for votes virtually. Mr. Khan had reportedly sent his party a shorthand script from jail which was later edited and then dubbed by ElevenLabs.

Prominent tech companies also have a hand in the AI voice game now. Recently, Meta launched SeamlessM4T, an open-source multilingual foundational model that can understand nearly 100 languages from speech or text and generate translations in real-time. Apple introduced a voice cloning feature in iOS 17 intended to help people who may be in danger of losing their voice say to a degenerative disease.

ChatGPT, the poster boy for AI chatbots also has a voice transcription feature that can be used for cloning. But OpenAI has been careful to partner with specific parties to prevent the illegal use of these capabilities.

YouTube took a similar route and announced Dream Track which partners with just 100 creators in the U.S. that would allow them to create song clips featuring AI vocals with permission from pop stars like Demi Lovato, Sia and John Legend.

**What can be done?**

The speed and easy access of these tools have sent alarm bells ringing. In November last year, the U.S. Federal Trade Commission or FTC launched a Voice Cloning Challenge which asked the public to send in their ideas to detect, evaluate and monitor cloned devices. Just yesterday, the contest posted a prize of $25,000 for the winner. The FTC is also considering the adoption of a recently-proposed Impersonation Rule that will help deter deceptive voice cloning.

But the pace at which generative AI releases are moving has regulators gasping for air. On January 2, researchers from Massachusetts Institute of Technology (MIT) and Tsinghua University in Beijing, China, and members of AI startup MyShell released OpenVoice, an open-source voice cloning tool that is almost instant and offers granular controls to modify one's voice that isn't found on other such platforms.

And the segment is only expected to grow exponentially. A report by Market US has revealed that the global market for these applications stands at $1.2 billion in 2022 and is estimated to touch almost $5 billion in 2032 with a CAGR above 15-40%.

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## NETFLIX REMOVES ANNAPOORANI AFTER RIGHT-WING OUTRAGE

The Nayanthara-starrer Annapoorani was withdrawn from Netflix on Thursday on the request of its co-producer, Zee Entertainment, following protests by right-wing groups claiming that the film hurt the sentiments of the Hindu community, especially Brahmins.

Zee Entertainment gave a written apology to the Vishva Hindu Parishad, an outfit of the Rashtriya Swayamsewak Sangh (RSS), saying that it had never intended to hurt the sentiments of the community and promising that the film would not be released again until it was edited.

The film, which was released in theatres on December 1 last year had been streaming in multiple languages on Netflix since December 29 after approval by the Chennai regional office of the Central Board of Film Certification.

It tells the story of a temple cook's daughter who dreams of becoming the country's best chef and learns to make non-vegetarian food against her family's wishes. Netflix has now removed the film in all languages and all countries, though it was the Hindi version that had sparked anger among a section of the community.

On Wednesday, the Jabalpur police lodged a first information report (FIR) against Ms. Nayanthara, debutant director Nilesh Krishnaa, and the film's writer and producers, under Section 153A (promoting enmity between groups) and 3A of the Indian Penal Code.

VHP spokesperson Vinod Bansal hailed the streamer's decision as a 'victory of Hindus' in a post on X. "Zee Studios has now apologised. It is important to wake up on time and it is our compulsion to prevent attacks on the faith of Hindus," he wrote.

Zee Entertainment's letter says that the producers have taken note of the VHP's allegations that the film contains scenes, verses, and dialogues that attribute false and contradictory statements to Lord Ram, suggesting that he had consumed animal flesh during his 14 years of exile.

The VHP's Mumbai unit had also alleged that this portrayal of Lord Ram not only disrespected the deeply cherished beliefs of millions, but also spread misinformation about revered figures of Hinduism. "Such content not only has the potential to create social unrest but also reflects a lack of sensitivity towards the sentiments of a significant section of the society," the VHP had said.

In its response, Zee Entertainment said it was in the process of coordinating with its co-producers M/s. Trident Arts to address the VHP's concerns, and also with Netflix to immediately remove the film from the platform until it was edited. "We have no intentions as co-producers of the Film to hurt the religious sentiments of the Hindus and Brahmins community and would like to hereby apologize for the inconvenience caused and hurt caused to the sentiments of the respective communities," Zee Entertainment said.

## EXPRESS VIEW: THE MAKING OF INDIA'S HANGZHOU HAUL

India had returned home from last year's Asian Games at Hangzhou, China, with its best-ever medal haul. Never before had 256 Indians stood on the podium of the continental event. To understand the unprecedented medal rush, The Indian Express launched a detailed investigation — and it threw up striking personal and professional arcs. These are success stories starring young men and women from rural and urban areas pushing themselves in arduous ways to achieve excellence and break through constraints via sport.

**3RD FLOOR AND 4TH FLOOR SHATABDI TOWER, SAKCHI, JAMSHEDPUR**

**Telegram:** http://t.me/DreamIAS_Jamshedpur

There was good news, too, in the shrinking gender gap when it came to the medal winners — 43 three per cent of the medals indicated that more and more young women in India are turning to sport, successfully, to find upward mobility and recognition, liberation from confined spaces and financial independence. Farming families contributed the most, 62 medals, and 40 medal-winners were born to daily wagers. The Hangzhou haul proves that sports puts fewer hurdles than many other sectors in the way of those who strive to level the playing field and flatten it, often armed with nothing more than their talent and determination.

Those from rural, underprivileged, marginalised or tribal backgrounds are still to gain a foothold, much less success, in big-money sports like golf, chess, tennis, squash or shooting. Even within sport, there exists a class-system. Those from humble origins are more visible in hockey, track and field, kabaddi and wrestling. The numbers also suggest that parents with steady government jobs don't yet consider sports as a career option for their children. Tracing the graphs of under-privileged athletes from rural areas shows that most of them accidentally stumbled upon sports. A more structured talent spotting system at the grassroots level would prove beneficial.

Though there are a handful of children of doctors and engineers and IAS officers amongst the 256 medallists, there are many more cases of sons and daughters of those who didn't even complete their basic education medalling at Hangzhou. The Army has taken the lead to carve out champion rowing fleets out of men who had never even heard of the sport. Local coaches are carrying out scouting duties, with pitiful remuneration. India might still be in the single digits at Olympics, but sport is emerging as the greatest punt taken by the unseen in its small towns and villages.

## EXPRESS VIEW ON USTAD RASHID KHAN: MUSIC CUT SHORT

In the early '80s, when Ustad Rashid Khan was just Rashid Khan, a young, curious student at Kolkata's ITC Sangeet Research Akademi, a concert by Pandit Bhimsen Joshi at the prestigious Doverlane Music Conference changed the direction of his struggle to become a classical musician. Khan sat listening to the stalwart in rapt attention from the wings when he was asked to get off the stage and sit at the back. While it hurt deeply, as Khan would mention in interviews later, it also galvanised a strength of will, pushing him towards working harder so that he could sing on the same stage one day.

Not only did Khan, who died in Kolkata on Tuesday after battling prostate cancer and a cerebral attack, sing at the well-known music conference, he became perhaps the only classical vocalist to find appreciation on a public stage from Joshi. Khan became the link between the traditional and modern spaces and styles of classical music. Armed with a voice emblematic of a musical era now lost, Khan ventured onto the traditional proscenium like an old-fashioned, paan-chewing ustad and one could only marvel at the technical skill of his khayal and thumris. But unlike the older, traditional classical artistes, he wasn't averse to probing his art form in contemporary and popular spaces — films, music studios, world music. His Hamsadhwani was as powerful as the popular "Aaoge jab…" from Imtiaz Ali's Jab We Met.

Born in Badaun, Khan was the great-grandson of Ustad Inayat Hussain Khan, the founder of the Rampur-Sahaswan gharana. He learned under the aegis of his maternal granduncle and the exacting Ustad Nissar Hussain Khan and from his uncle Ustad Ghulam Mustafa Khan. After he was brought to Kolkata by Nissar Hussain at the age of 10, the city became home. A place where he found music, appreciation, a family, and where he breathed his last. The city loved him back. Among others, West Bengal Chief Minister Mamata Banerjee bid a poignant farewell to the "Sangeet Samrat" who left too soon.

## BUSINESS & ECONOMICS

### ILO WARNS OF RISE IN UNEMPLOYMENT, DECLINE IN REAL WAGES

Global unemployment rate is set to increase in 2024 while growing social inequalities remain a concern, said the International Labour Organisation (ILO) in its 'World Employment and Social Outlook: Trends 2024' report released in Vienna on Wednesday.

Joblessness and the jobs gap have both fallen below pre-pandemic levels but global unemployment will rise in 2024, the ILO noted adding that growing inequalities and stagnant productivity are causes for concern. In India, real wages are "positive" compared with other G20 countries, according to the UN body.

The ILO said the macroeconomic environment deteriorated significantly over 2023. "Ongoing geopolitical tensions as well as persistent and broadening inflation triggered frequent and aggressive moves by central banks," it said. Monetary authorities in advanced and emerging economies implemented the fastest increase in interest rates since the 1980s, with significant global repercussions, it said. China, Türkiye and Brazil slowed down considerably, causing adverse impact on global industrial activity, investment and trade. On a positive note, the ILO said, despite the economic slowdown, global growth in 2023 was modestly higher than anticipated and labour markets showed surprising resilience.

### INDIA-US TRADE POLICY MEETING STARTS TODAY: GSP, LAPTOP IMPORT MONITORING SYSTEM ON TABLE

India and the US are set to take up a number of sticky trade issues — ranging from New Delhi's long-pending demand seeking the restoration of Generalised System of Preferences (GSP) that was revoked under former US President Donald Trump to Washington's objection to India's laptop import monitoring system — at the trade policy forum meet that begins today (January 12).

**Why is the trade policy forum meeting crucial?**

The US is India's single largest trade partner and the only large economy where India exports more than it imports. At a time when goods exports are slowing in the West due to the Russia-Ukraine war, India predominantly depends on the US demand for export earnings and is also banking on the US-led Indo-Pacific Economic Framework for Prosperity (IPEF) trade pact to counter China's mammoth influence on trade in Asia.

With the US firms increasingly adopting China plus one policy and the ongoing supply chain reset, closer trade ties with the US could help India attract more foreign direct investment (FDI). Moreover, in the absence of a free trade agreement (FTA) with the US, such trade policy forum meetings are among the few platforms to resolve trade tensions and push for tangible export growth.

**Why is restoration of GSP a key demand from Indian exporters?**

India had lost GSP benefits in 2019 when former US President Donald Trump began introducing radical trade measures citing widening trade gap with India and China. Trump's trade war was

detrimental to New Delhi as it was the largest beneficiary of GSP status in 2017 with $5.7 billion worth of imports into the US given duty-free status.

While it was widely expected that the US under the Joe Biden administration would reverse Trump-era measures, GSP was not restored. GSP restoration was discussed during the last India-US trade policy forum last year too.

**Why is the US concerned about India's laptop import monitoring system?**

Even as India clarified that it will not impose restrictions on laptop imports, the US continues to raise questions on the purpose of the "monitoring system" that has been proposed as an alternative. This is likely to be taken up in the trade policy meeting as such measures are seen as a non-tariff measure. India has said that the aim to impose such a system is to ensure that the IT products come from "trusted geographies".

**How is India looking to boost service trade with the US?**

Ajay Sahai, Director General & CEO of the Federation of Indian Export Organisations said India is seeking liberal visa regime to boost service trade. India's services exports have been on the rise and healthy export numbers largely due to the US demand has helped lower the current account deficit. However, visa delays for Indians surged to record levels during Covid-19. Visas are a key concern for the US as immigration is a politically sensitive issue in the election year.

**What is the totalisation agreement that India is seeking?**

India is also set to reiterate its longstanding demand for a totalisation agreement that will provide social security to Indian professionals in the US. A totalisation agreement or social security agreement will eliminate dual social security deductions in India and the US.

The agreement will particularly benefit the Indian IT sector workforce who are working in the US and paying social security but are unable to get the benefit. A government official, according to PTI, said that for the proposed agreement the US had sought data from India about different social security schemes being implemented and that India has provided all the data from different ministries, including labour.

## ROBUST REVENUES

With little under a quarter left in the financial year 2023-24, the government has met nearly 81% of its direct tax collection target. At ₹14.7 lakh crore, direct tax inflows net of refunds, as of January 10, were 19.4% higher than a year ago. Economists believe the exchequer's net direct tax kitty will end up surpassing the Budget estimate of ₹17.2 lakh crore by about a lakh crore if not more, with the full-year growth settling at around 18%. With Goods and Services Tax inflows also likely to beat the Budget math and non-tax revenues bolstered by a generous dividend from the central bank, overall revenues are likely to go beyond Budget hopes despite a relatively tepid intake from excise duties. Within direct taxes, corporate taxes have grown 12.4% while personal income taxes have yielded 27.3% higher revenues and this dichotomy may persist in coming years with the number of income-tax returns filed this assessment year hitting record levels (8.2 crore by December 31).

The healthy revenue uptick and appreciable widening of the tax filing base offers some comfort for the government's fiscal consolidation hopes going forward, amid apprehensions that this

year's deficit target of 5.9% of GDP may be missed by a small margin. It also creates room for the Centre to undertake more reforms in taxation with a focus on simplifying it further for corporates and individuals. For instance, the multiple withholding tax rates for firms, that often lead to disputes, can be minimised to a handful of lower rates, if not one. Tax deduction and collection at source (TDS and TCS) rates, including the much-debated levy to track overseas spends, may be brought down a few notches — the taxman can continue to derive intelligence from them, irrespective of the rates. The new exemption-less personal income tax regime with lower rates and paperwork is gaining traction. Yet, the government can mull some mechanisms to nudge people into better life choices aligned with public policy goals that can also deepen financial markets and strengthen macro-fundamentals — encouraging retirement savings and health insurance, for instance. The 18% GST levy on health insurance must also be reconsidered, even as a broader rationalisation of GST rates is awaited, as it entails significant costs for lower- and middle-income households who face a real risk of slipping into poverty in the aftermath of a health-care crisis for a single member. Finance Minister Nirmala Sitharaman has signalled the Interim Budget 2024-25 will have no spectacular moves, so a repeat of the 2019 pre-election exercise that rejigged income-tax slabs may be unlikely. But the revenue buoyancy must enthuse policymakers to keep more reform options on the table for the new government to consider.

## FIRST ADVANCE ESTIMATES OF INDIA'S GDP OUT: WHAT ARE THEY, AND WHAT DO THE DATA SHOW?

The First Advance Estimates released on Friday are the last GDP data released before the Union Budget is presented. They also provide the first complete picture of economic growth in the 10 years of the government led by Prime Minister Narendra Modi.

India's GDP will grow by 7.3% in the current financial year (2023-24), slightly faster than the 7.2% growth in 2022-23, the First Advance Estimates (FAEs) released by the government on Friday showed.

**How can GDP be estimated when there are still almost three months to go in the year?**

The FAE are presented at the end of the first week of January every year. They are only the first estimates of growth for that financial year. By the end of February, the Ministry of Statistics and Programme Implementation (MoSPI) will release the Second Advance Estimates and, by the end of May, the Provisional Estimates.

The GDP estimates continue to be revised as more and better data become available — and in the coming three years, MoSPI will release the First, Second, and Third Revised Estimates of this year's GDP before settling on the final number, which is called the "Actuals".

The FAE are based on the performance of the economy over the first seven-odd months, and the data are extrapolated to arrive at an annual picture. "The Advance Estimates of National Income are indicator-based and are compiled using the benchmark-indicator method, i.e. the estimates available for the previous year (2022-23) are extrapolated using the relevant indicators reflecting the performance of sectors," the official press release said.

**If the data are not final, what is the point of the FAEs?**

The crucial significance of the FAEs is that they are the last GDP data released before the Union Budget for the coming financial year (which is presented on February 1) is finalised. As such, the

FAEs constitute the base for the Budget numbers. However, since Lok Sabha elections will be held in April-May, a full-fledged Union Budget will not be presented this year.

This year's FAEs draw some additional significance from the fact that they provide the first complete picture of economic growth in the 10 years of the government led by Prime Minister Narendra Modi.

**So what do the FAE data show?**

India's real GDP (GDP after stripping away the effect of inflation), both in absolute terms (in Rs lakh crore) and in terms of growth rate.

By the end of March 2024, India's GDP is expected to rise to almost Rs 172 lakh crore. When Prime Minister Modi took charge for the first time, India's GDP was Rs 98 lakh crore, and it had reached almost Rs 140 lakh crore when he began his second term.

On an annual basis, the 7.3% growth rate estimated for 2023-24 presents a substantial and pleasant upside surprise. Most observers, including the Reserve Bank of India, had expected growth to decelerate in the current financial year to somewhere between 5.5% and 6.5%. That the GDP growth rate is now expected to beat even the higher estimate by almost a percentage point underscores the strength of India's economic recovery.

However, there is a clear deceleration of growth in the second term of the Modi government compared to the first. During 2014-15 to 2018-19, the Indian economy grew at a compounded annual growth rate (CAGR) of 7.4%; in the second term (2019-20 to 2023-24), it was just 4.1%.

The big reason for this is the poor growth rate in the first two years of the current term of the government. The economy grew by less than 4% in 2019-20 (before the Covid-19 pandemic), and then contracted by 5.6% in 2020-21 (immediately after Covid struck).

Overall, the 7.3% growth rate in the current year suggests an optimistic picture because most of this momentum has little to do with the low base effect that bumped up GDP growth rates in FY22 and FY23.

**What is contributing to India's growth?**

India's GDP is calculated by adding up all kinds of spending in the economy — the demand side of the economy. As such, there are four main "engines" of GDP growth.

*Spending by people in their individual capacity: Technically this is called Private Final Consumption Expenditure (PFCE). It accounts for almost 60% of India's GDP.

*Spending towards investments in boosting the productive capacity of the economy: This could be the building of a factory, companies buying computers for their offices, or governments building roads. This is called Gross Fixed Capital Formation (GFCF), and is the second-largest engine of growth that typically accounts for 30% of the GDP.

*Spending by governments to meet daily expenditures such as salaries: This is Government Final Consumption Expenditure (GFCE). It is the smallest engine, accounting for around 10% of GDP.

*Net exports or net spending as a result of Indians spending on imports and foreigners spending on Indian exports: Since India typically imports more than it exports, this engine drags down GDP calculations, and shows up with a minus sign.

PRIVATE CONSUMPTION DEMAND: In the current year, the overall demand by people is expected to grow by 4.4%. This is similar to the CAGR (4.5%) in the second term of the Modi government but is substantially lower than the growth rate in the first term (7.1%).

Muted private consumption is made worse by growing inequality — consumption in some parts of the economy (say, the urban rich) has grown quite fast while large sections of the economy (especially rural India) haven't yet recovered enough. While people should not consume more than their income, the muted performance of the biggest engine of growth is a matter of concern.

INVESTMENT SPENDING: A high rate of investment spending is considered a salutary signal for the prospects of an economy because it shows businesses are optimistic about future consumption demand. On the face of it, investments have grown by 9.3% in the current financial year, thus helping to push up the CAGR in the second term (5.6%) closer to the CAGR in the first (7.3%).

However, there are two lingering concerns: one, a large part of the investment spending is still coming from the government and, two, private consumption is still muted.

GOVERNMENT SPENDING: As weak as the growth in private demand has been in the current year, at 3.9%, government spending has grown even slower. Despite the Covid disruptions, government spending has barely grown in the second term. At a CAGR of 2.8%, it is far lower than the CAGR of 7.9% during the first term.

NET EXPORTS: When data for any particular year shows up with a negative sign, it suggests Indians are importing more than they are exporting. As such, negative growth rates here are a good development. For the current year, this drag effect has grown by 144%. However, over the two terms, the growth rate has decelerated from 19.6% to 13.3% — which is a mild improvement.

## EXPRESS VIEW ON INFLATION: A MATTER OF INTEREST

AAZData released by the National Statistical Office on Friday showed that retail inflation had edged marginally upwards last month. As measured by the consumer price index, it rose to 5.69 per cent in December, up from 5.55 per cent in November, driven largely by higher food inflation. This increase was expected. In his statement on the last monetary policy committee meeting, RBI Governor Shaktikanta Das had noted that the "the near-term outlook, however, is masked by risks to food inflation which might lead to an inflation uptick in November and December." Das had cautioned that "this needs to be watched for second round effects, if any."

The disaggregated data shows that the consumer food price index rose to 9.53 per cent in December, up from 8.7 per cent in November. Within the food basket, inflation remains elevated in cereals, vegetables, pulses and products, sugar and spices. As per analysts, the outlook for some of these items like rice, wheat and pulses remains uncertain. However, core inflation, which excludes the more volatile components such as food and fuel, has moderated further. Alongside, data also released by the NSO showed that the index of industrial production slowed down to just 2.4 per cent in November, in part, due to the base effect. For the first eight months of the year (April-November), industrial output is up 6.4 per cent.

In a few weeks from now, Finance Minister Nirmala Sitharaman will present the interim Union budget. A few days later, the monetary policy committee of the Reserve Bank of India will meet for the last time this financial year.

In its last meeting, the MPC had voted to maintain the status quo on both rates and stance, as it decided to remain focused on the "withdrawal of accommodation to ensure that inflation progressively aligns to the target".

In his statement Shaktikanta Das had said that "the target of 4 per cent CPI is yet to be reached and we have to stay the course." However, in an interview to this paper, MPC member Jayant Varma recently said that "we are approaching the point where an interest rate cut is necessary to prevent an excessive real interest rate."

Varma argued that monetary policy can be "less restrictive" if there was expectation of inflation nearing the central bank's target of 4 per cent. The RBI has projected inflation to moderate from 5.2 per cent in the first quarter of 2024-25 to 4 per cent in the second quarter and 4.7 per cent in the third quarter. Considering that the US Federal Reserve has also hinted at the possibility of rate cuts next year, in its coming meetings, the MPC should provide some forward guidance on the possible trajectory of interest rates.

## EXPLAINSPEAKING | NREGA, NYAY AND PM-KISAN: WHY DO POLITICIANS RUSH TO GIVE DIRECT BENEFITS (CASH) TO THE POOR?

**Traditional thinking with regard to helping the poor is captured by the following well known saying: 'If you give a man a fish, you feed him for a day. If you teach a man to fish, you feed him for a lifetime.' But if one examines the assumptions in this, it can lead to a surprising policy recommendation: Just give a man a fish!**

Last week, The Indian Express reported that the Indian National Congress party has dusted off "NYAY" (Hindi word for justice) — the centrepiece item of its 2019 manifesto — in the run-up to the 2024 general election later this year. Congress President Mallikarjun Kharge reportedly said that if voted to power, the party would implement the NYAY scheme under which women would be given "at least Rs 60,000-70,000" annually. To be sure, NYAY is an acronym for Nyuntam Aay Yojana (or Minimum Income Scheme).

Congress's 2019 manifesto had promised that NYAY would be provided to the poorest 20% of Indian families (roughly 5 crore families out of a total of 25 crore; assuming 5 people per household). Nyay was to include a guaranteed payment of Rs 72,000 to each eligible family.

Around the same time, in 2018, the incumbent government, led by Prime Minister Modi, had rolled out a similar scheme called PM-KISAN (Pradhan Mantri – Kisan Samman Nidhi). It was billed as the world's largest direct benefit (read cash) transfer (or DBT) scheme for farmers and involved "an income support of 6,000/- per year in three equal installments will be provided to all land holding farmer families" in India.

Even though the Congress failed to woo voters in 2019, despite promising a substantially larger sum, its Rajasthan government, led by then Chief Minister Ashok Gehlot, rolled out a similar direct benefit scheme in 2023 in the run-up to the state Assembly election.

There are several questions here: What is the charm of such schemes? Are they the same as Universal Basic Income? Aren't such cash transfers counter-productive to poverty alleviation? Aren't they doles or freebies or revadis? Have they worked elsewhere? Can a country such as India afford them? Wouldn't it be better to put some conditions on such transfers?

**Why are Nyay/PM-Kisan not UBI?**

While these schemes resemble UBI, the first thing to note is that they are not exactly the roll out of Universal Basic Income (UBI).

Under a UBI, the government gives a "basic" income to every citizen in the country — from the richest person to the poorest one, regardless of whether they work or not. But there is a flip side to UBI: The government also rolls back all types of subsidies — from food to fertiliser to train tickets to medical bills.

The idea is simple: Just give everyone a minimum income amount, cut down the bureaucratic costs involved in running scores of welfare programmes, and simply tax everyone in such a manner as to fund the UBI. The truly needy people will get a minimum help while anyone who doesn't actually need the UBI help will find it taxed away.

As should be evident, such schemes — be it the proposed Nyay or the existing PM-KISAN — are different in all three aspects.

For one, they are not accompanied by removal of all the existing subsidies. It is not as if the poor or the farmers will be deprived of other social welfare schemes if they enjoy the DBT.

Secondly, the amount is much smaller than what anyone can consider to be the minimum or basic income that everyone needs to have to live a decent life. Lastly, the scope of the schemes is limited to a section of Indians; these are targeted schemes, not universal ones.

**Why has UBI not been rolled out?**

Even though UBI has captured the imagination of people on both the left and right of the economic ideological spectrum, the hard fact is that no country can afford it.

In rich countries such as Switzerland (which considered and refused to adopt UBI) the UBI amount is quite a lot even though the population may be small. In relatively poorer countries, the population is too large even if the UBI amount may be smaller.

Either way, sheer affordability itself is a massive stumbling block.

The other problem is the reduction of existing subsidies, not to mention the likely raising of taxes to fund the UBI. Announcing the removal of existing subsidies is almost certain to create a political backlash — big enough to end political careers.

**Then, why do politicians persist with direct benefit (or cash) transfers?**

In the recent past, the Congress party has tried to push for targeted welfare schemes. In particular, during the 10 years of UPA rule, it put in place laws to provide income support via the National Rural Employment Guarantee Act (NREGA) and subsidised food via the National Food Security Act (NFSA). The BJP under PM Modi came to power berating these policies of the Congress and labelling them as politics of dole.

And yet, far from repealing either of them, the Modi government has repeatedly leaned on these very schemes to alleviate economic distress — be it during the demonetisation episode or during the Covid pandemic. In fact, the roll out of PM-Kisan — a scheme which involved nothing but directly providing money to the beneficiaries — saw PM Modi taking NREGA and NFSA to its logical extension.

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

**Telegram:** http://t.me/DreamIAS_Jamshedpur

And yet, in popular discourse, both political parties spar over the populism and disbursal of freebies. The economic arguments for providing direct cash are rather counter-intuitive.

Comprehending them becomes even more difficult when one views this issue from a partisan political lens. But if one puts aside one's political opinions — and it is best that one does so in order to understand why politicians across party lines are queuing up to implement such direct benefit transfers — it becomes clear that politicians rubbishing each other's schemes is quite pointless since the fact is that both parties are trying to do the same thing.

Traditional thinking with regard to helping the poor is captured by the following well known saying: "If you give a man a fish, you feed him for a day. If you teach a man to fish, you feed him for a lifetime."

This is all very fine until one examines and questions the assumptions. What if the man is too hungry on the first day to learn anything? What if he is so weak and feeble that he needs to be fed for a few days before he can summon up enough strength to learn? What if the choice is not between feeding him a fish and teaching him to fish? What if the choice is between feeding him a fish today (and ensuring he lives for another day to learn fishing) and risking his life (and ability to learn fishing tomorrow)?

**What would you do then?**

Perhaps the answer would change in favour of giving the man a fish before insisting that he learns how to fish. This switch is likely to be based on two key realisations.

One, that a feeble man can't really learn much on an empty stomach. Two, that the concerned man doesn't have to be lectured on the usefulness of learning how to fish, and is motivated enough to learn provided he is in a situation to learn.

**A radical policy solution: Give a man a fish**

In 2010, Joseph Hanlon (Open University, Milton Keynes), Armando Barrientos and David Hulme (University of Manchester) wrote an insightful book with a provocative title — 'Just Give Money to the Poor: The Development Revolution from the Global South'.

In it they detailed the four paradigm shifts in thinking about the poor and about the well-being of the vulnerable. Each of these stages built on its predecessor.

1> In I6th-century England, a government for the first time accepted the collective responsibility for ensuring subsistence for all.

2> In late-19th-century Europe, government social spending increased, and pensions and sickness and old-age insurance were introduced.

3> In the mid-20th century, an adequate standard of living became a human right and a government responsibility, and the rich North accepted a responsibility toward the poorer South.

4> At the beginning of the 21st century, countries of the Global South took the lead in construing cash transfers as a right and in using them as a way to end poverty and promote development.

Simply put, the authors argue that "simply giving money to the poor — no strings, no conditions, no kidding — may be the most promising approach not just for avoiding hardship and reducing poverty, but for long-term development as well."

To buttress their claim they provide examples from developing countries — Mexico, South Africa, Namibia, Brazil, Indonesia, and India (NREGA) — across the planet where governments were trying out this radical solution.

"Instead of maintaining a huge aid industry to find ways to 'help the poor,' it is better to give money to poor people directly so that they can find effective ways to escape from poverty…(these examples) point to a little-understood reality of the developing world: The biggest problem for those below the poverty line is a basic lack of cash. Many people have so little money that they cannot afford small expenditures on better food, sending children to school, or searching for work. It is not a lack of motivation: people with little money spend their days actively trying to find a way out of poverty. It is not a lack of knowledge; they know what they need and manage their money extremely well," write the authors.

Moreover, such transfers can create a virtuous development cycle in a country. "Families with an assured, though small, income begin to take small risks by investing in their future: buying better seeds to try to increase farm production, purchasing goods that can be resold locally, or even spending more time looking for better jobs. In impoverished communities, it is hardly worth starting a business because no one has money to buy. When they have a bit of extra income, most families spend the money locally, buying food, clothing, and inputs. This stimulates the local economy, because local people sell more, earn more, and buy more from their neighbors, creating the rising spiral," argue the authors.

**Wouldn't giving cash make people lazy?**

Before the turn of the century, the majority of Indians surveyed felt that those struggling with poverty were victims of an unfair society. It can be argued that perhaps this balance has shifted in the last decade towards laziness.

However, elsewhere in the book the authors point out the following: "A quiet revolution is taking place based on the realization that you cannot pull yourself up by your bootstraps if you have no boots. And giving 'boots' to people with little money does not make them lazy or reluctant to work; rather, just the opposite happens. A small guaranteed income provides a foundation that enables people to transform their own lives. In development jargon, this is the 'poverty trap' model-many people are trapped in poverty because they have so little money that they cannot buy things they know they need, such as medicines or schoolbooks or food or fertilizer. They are in a hole with no way to climb out; cash transfers provide a ladder."

This also answers why providing such DBTs doesn't imply that governments can forget about providing other services such as health care or education. To be sure, developed countries have been routinely providing cash transfers, be it in the shape of child support, housing benefits, winter fuel payments etc.

**Why did people reject the offer of much higher cash transfers from Congress in 2019?**

There are no clear cut answers here but it helps to understand that even such a simple and straightforward policy intervention requires effective implementation to have the desired effect.

The authors provide five guiding principles: "Such programs should be fair; assured; practical (Are the civil service and banking infrastructures sufficient to administer the program?); not pennies (Are the cash payments large enough to make a difference?); and popular (Are the programs politically acceptable?)."

## TEXTILE SECTOR FACES ESG CHALLENGES

The textile and apparel sector in Tamil Nadu contributes more than 50% of installed renewable energy capacity in the State; nearly 300 textile processing units in Tiruppur are connected to common effluent treatment plants with zero liquid discharge; in Panipat, Haryana, open-end spinners use only recycled fibre; and India recycles almost 90% of its used PET bottles into fibre.

These are among some sustainable practices that India's textile and clothing sector has invested in over the past two decades. Now, as the European Union (EU's) moves towards implementing its environmental, social, and governance (ESG) goals and the European Green Deal takes effect in 2026, several global brands are insisting on sustainable production and supply chains.

There is palpable concern in India's textile sector, dominated Micro, Small and Medium Enterprises (MSMEs), about the impact new rules like EU's Carbon Border Adjustment Mechanism would have, aside from complying with ESG standards.

But there is also recognition that this might well be the moment to attempt a paradigm shift in sourcing, production, pricing and supply processes, to cement the sector's position as a top global supplier.

### Vital market

India exports 16% of its cotton textiles to the EU, 40% of its synthetic fabric and about a third - 28% of the country's total apparel exports are to European countries.

The Ministry of Textiles has formed an ESG task force and is considering supportive interventions for the industry; industrial associations are joining hands with organisations that will enable exporters to put systems in place, document the measures taken, and get the required certifications; the Cotton Textiles Export Promotion Council (Texprocil) is promoting Indian cotton brand Kasturi that comes with traceability; and some of the financial institutions are reaching out to MSMEs to fund green and sustainable projects.

## THE QUESTION OF MSP: IS INCOME SUPPORT FOR FARMERS BETTER THAN PRICING THAT IS DELINKED FROM MARKET DEMAND?

Farmers, for the most part, operate in a buyer's market. Since their crops — barring maybe milk — are harvested and marketed in bulk, it leads to sudden supply increases relative to demand, putting downward pressure on prices.

Such market conditions, favouring buyers over sellers, also mean farmers are price takers, not price makers. Lacking the market power to influence the prices of their produce — or to even set the MRP (maximum retail price), as firms in most industries do — they sell at prevailing supply-and-demand-determined rates. Worse, while their crops are sold wholesale, they pay retail prices for everything from seeds, pesticides, diesel, and tractors to cement, medicines, toothpaste, and soap.

Not for nothing do farmers from time to time demand minimum support prices (MSP) for their crops. As the Lok Sabha elections approach, there could be a clamour for parties to include "legal guarantee for MSP" in their manifestos.

**Price versus income support**

Most economists, though, are opposed to government-fixed MSPs based on cost-plus pricing, sans any consideration to market demand. Farmers, they say, should plant what the market wants, as reflected in the prices for various crops at a given point in time. Cost-plus MSPs that are oblivious to demand conditions will distort farmers' production decisions, resulting in the oversupply of some crops and an undersupply of others.

Economists largely believe that it is better to give farmers "income", instead of "price", support. That would mean transferring a fixed sum of money annually into their bank accounts, whether on a per-farmer (as in the Centre's PM-Kisan Samman Nidhi) or per-acre (the Telangana government's Rythu Bandhu) basis. Direct income support schemes aren't market-distorting and benefit all farmers, irrespective of which crop they grow in whatever quantity, and sell to whomsoever at any price.

**However, the flip side to everyone being paid the same money is: where does this leave the real producing farmer, who invests more resources, time, and effort in the field?**

These farmers, unlike those for whom agriculture is a secondary or incidental livelihood source, may be justified in seeking some kind of price assurance for the crop they are sowing now and harvesting a few months down the line.

And given that they, more than other businessmen, are exposed to both price and production risks (from weather, pests, and diseases), MSP guarantee is probably not an unreasonable demand.

Moreover, price support can be a useful tool for promoting crop diversification. Farmers are more likely to grow pulses, millets, and other nutrient-dense, less water-intensive crops than rice, wheat, or sugarcane if they are assured of MSP on the former. So long as MSPs do not deviate excessively from market rates and inter-crop price parity, it's the next question that deserves answering.

**How can MSP be guaranteed?**

There are two conventional ways.

The first is to force buyers to pay MSP. Sugar mills are required, by law, to pay cane growers a "fair and remunerative" or "state advised" price within 14 days of purchase. But this approach risks implementation hurdles (recurrent cane payment arrears are proof), or worse, the private trade choosing to not buy at all. The second is for government agencies to buy the entire marketable produce of farmers offered at MSP. That is unsustainable, both physically and fiscally.

But there's a third option: price deficiency payments (PDP). It entails the government not physically purchasing or stocking any crop, and simply paying farmers the difference between the market price and MSP, if the former is lower. Such payment would be on the quantity of crop they sell to the private trade.

PDP was tried out first in Madhya Pradesh through a Bhavantar Bhugtan Yojana. Under this scheme, the market price for a crop was its average modal (most-quoted) rate in the Agricultural Produce Market Committee (APMC) mandis of Madhya Pradesh as well as two other growing states during the particular month of sale.

The price difference vis-à-vis the MSP was payable on the actual quantity sold by the farmer, backed by an "anubandh patra" (sale agreement with trader), "tol parchi" (weighment slip), and "bhugtan patra" (payment letter signed by both parties).

The Madhya Pradesh scheme was implemented during the 2017-18 kharif (post-monsoon) season for eight crops: urad (black gram), soyabean, maize, arhar (pigeon pea), moong (green gram), groundnut, sesame, and nigerseed. But despite 21 lakh-odd farmers registering and payments of about Rs 1,952 crore being made, the scheme couldn't be continued for lack of Central support.

**A model in Haryana**

Haryana's PDP scheme, called Bhavantar Bharpai Yojana (BBY), is being implemented mainly in bajra (pearl millet), mustard, and sunflower seed, although technically is also covers groundnut, chana (chickpea), moong, and 16 vegetable and 3 fruit crops.

BBY operates on the Haryana government's 'Meri Fasal, Mera Byaura' portal, in which farmers have to register themselves along with details of their land (village name, khasra plot number, holding size, etc) and area sown under different crops.

The registration for kharif crops is open from June to August, and that for the rabi (winter-spring) crop from November-February. On grant of registration, post "girdwari" (crop area verification) by revenue/ agriculture department officials and satellite imaging, the farmer is eligible to obtain MSP via BBY.

Haryana has opted for a mix of both physical procurement and PDP under BBY. In 2020-21, the state government directly procured 776,909 tonnes of bajra and 16,952 tonnes of sunflower at MSPs of Rs 2,150 and Rs 5,885 per quintal respectively.

In subsequent years, Haryana has undertaken both, depending on the gap between the MSP and market price. "If the difference isn't too large, we do procurement to push up the market price closer to MSP and cover the rest through PDP. If it is too high, then we only do PDP," an official said.

The PDP itself has tended to be on a fixed rate — Rs 450/ quintal for bajra and Rs 1,000/ quintal for sunflower in the 2022-23 marketing year — derived from average quotes at the National Commodity and Derivatives Exchange. Also, farmers are being paid not on actual production, but the three-year average yield for their block/ sub-district with lower and upper caps.

**So what is the road ahead?**

Both Madhya Pradesh and Haryana have demonstrated the feasibility of delivering MSP to farmers at least in some crops other than rice, wheat, and sugarcane.

One reason they have been able to do this is because of the already-created APMC mandi infrastructure and systems for farmer registration in these states. This makes it possible to record each transaction — what quantity of any crop a farmer has sold at a certain price — and to pay the difference vis-à-vis the MSP based on that.

If a nationwide PDP scheme with 50% Central funding were to be implemented, it can perhaps incentivise other states to follow the examples of Madhya Pradesh and Haryana. They could, for a start, build the market infrastructure and systems that would ultimately enable even their farmers to get MSP, whether by law or otherwise.

## FOCUS ON BEST PRACTICES AS GLOBAL MEET ON PULSES RETURNS TO INDIA

About 800 representatives of governments, as well as commercial and non-profit organisations involved in the production and processing of pulses, will attend the Global Pulse Convention to be held here in February. Jointly organised by the National Agricultural Cooperative Marketing Federation of India Ltd. (NAFED) and the Global Pulse Confederation (GPC), the conference will see experts in the field sharing their views and experiences with various stakeholders and policymakers.

Union Consumer Affairs Secretary Rohit Kumar Singh said that pulses production has increased in India and the government is keen to learn and share practices globally. "It's a tricky task to keep the balance between the interest of the domestic farmers and the consumers. Despite the weather differences, we managed to keep the prices reasonably low," Mr. Singh said, addressing a press conference on the event to be held between February 14 and 17.

The 2023 convention was held in Sydney. Organisers said that more than 40 countries will participate in the conference this year.

GPC president Vijay Iyengar said that the convention would amplify the message of pulses as smart crops.

### India's lentil production set to touch all-time high: Govt

India is set to become the world's largest producer of lentil (masoor) during the 2023-24 crop year on account of higher acreage, Consumer Affairs Secretary Rohit Kumar said Friday. This is significant for India which, despite being among the world's top five lentil growers, second only to Canada, depends on imports to meet its domestic demands.

India's lentil production has tapered since 2017-18 when the country recorded its highest output of 1.62 million tonne. According to official data, in the 2022-23 crop year, the country's lentil production stood at 1.56 million tonne,

With the government incentivising farmers to grow more pulses, the country has reported a higher area under lentil crop during the current year. Data from the Agriculture Ministry show 19.45 lakh hectares under lentil till January 12, 2024. This is 1.06 lakh hectare (or about 6%) higher from last year's area of 18.39 lakh hectare, and 37% higher than the normal area (14.37 lakh hectare) under lentil.

"As the Home Minister (Amit Shah) has said… if a farmer grows pulses he will have a full fertiliser factory in his field due to inherent benefits of the crop and we firmly believe in the same," he said. Speaking at an event on January 4, Home Minister Shah, who's also the Union Minister for Cooperation, said India needed to be self-reliant in arhar, urad and lentils. He said the NDA government had increased the MSP of lentils to Rs 6,425 per quintal for the Rabi Marketing Season 2024-25 from the Rs 2,950 per quintal in 2014-15.

According to the data available with the Food and Agriculture Organization (FAO), the world top lentil growers in 2022 were Canada (2.3 million tonnes), India (1.26 million tonnes), Australia (0.99 million tonnes), Turkey (0.44 million tonnes), and Russia (0.26 million tonnes) during 2022.

Despite being the second largest producer of lentil, India has so far been relying on imports to meet its domestic requirements, buying mainly from Australia, Canada, Russia, Singapore, and

Turkey. During the current year, it also imported some quantities of lentil from UAE, USA, Sri Lanka and Nepal.

During the April-October period of the current financial year (2023-24), India imported 9.46 lakh tonne of lentils, 159% higher than the 3.65 lakh tonne imported in the same period last year.

## BOEING'S BESTSELLER 737 MAX HITS AN AIR POCKET AGAIN

Boeing's best-selling 737 MAX aircraft experienced yet another setback last Friday when a cabin panel blew out of an Alaska Airlines plane, compelling the pilots to make an emergency landing in Portland airport in the U.S.

The incident happened in a 737 MAX 9, one of the aircraft's four variants. Soon after, the operators grounded many of the 737 MAX 9 planes. An inspection ordered just before the accident also led to reports of missing components in two variants.

The U.S. is impacted the most by this incident, as it is the biggest customer of the 737 MAX planes, particularly the 737 MAX 9. Alaska Airlines, which operates from the U.S., grounded all 65 of its Boeing 737 MAX 9 planes. Another U.S. operator, United Airlines, has suspended service on all 78 of its 737 MAX 9 aircraft. Both the carriers reported "loose bolts" on the doors of their MAX 9 planes this week, following the global inspection ordered by Boeing last December.

No airline in India has the 737 MAX 9 in operation as of now. However, three Indian companies — Air India Express, Akasa Air, and SpiceJet — together have 44 planes of the 737 MAX 8 type. Four of them are not in service right now and are parked at various locations. In particular, all the 22 planes operated by Akasa Air are of this variant.

The Directorate General of Civil Aviation said on Tuesday that an Indian airline discovered that a "washer" of a 737 MAX 8 plane was missing. However, other than this, inspection of other planes in operation in India did not result in any problematic findings. So, the incident in the U.S. and the inspection ordered earlier did not have any impact on India's operations.

The U.S., Ireland, and China are the top three recipients of 737 MAX. India is ranked 14th on the list. It is important to note that only 18 deliveries have been made directly to airlines in India, whereas 40 planes are in operation. This is because many Indian airlines lease their planes from other operators or companies such as the Air Lease Corporation. The top three recipients of 737 MAX planes from Boeing are Southwest Airlines, United Airlines, and Ryanair. Airlines in India do not feature in the top 10 recipients as many orders are still in the pipeline.

This is not the first time a Boeing's 737 MAX aircraft has encountered issues. The aircraft was involved in two fatal plane crashes — in October 2018 in Indonesia and in March 2019 in Ethiopia — which together killed 346 people. These accidents triggered the grounding of all 737 MAX planes for nearly two years. Boeing had other woes, too, as it suspended delivery several times over the course of two years of its long-haul 787 because of manufacturing and inspection flaws. Before the latest inspection ordered in December, an earlier check found defects in the plane's rear bulkhead.

Despite such recurring issues, the 737 MAX is the most ordered and most delivered aircraft of the Boeing family. Lately, the aircraft's share in both orders and deliveries has been around the 70% mark, making this Boeing's most selling aircraft.

## LIFE & SCIENCE

### SCIENCE MINISTRY TEAM VISITS HAWAII TO TAKE STOCK OF TELESCOPE PROJECT

In a signal of renewed enthusiasm for a global scientific project, an official delegation from the Department of Science and Technology visited Mauna Kea, an inactive volcano on the island of Hawaii in the U.S., to discuss "challenges" to the Thirty Meter Telescope (TMT) project, a press release said.

The TMT has been conceived as a 30-metre diameter primary-mirror optical and infrared telescope that will enable observations into deep space. It is proposed as a joint collaboration involving institutions in the U.S., Japan, China, Canada, and India. Indian participation in the project was approved by the Union Cabinet in 2014. India expects to be a major contributor to the project and will provide hardware worth $200 million.

Mauna Kea hosts multiple telescopes. However, upcoming projects have invited local opposition on the grounds that building telescopes violates religious and cultural customs, with many of these projects having been imposed upon the region without addressing the concerns of inhabitants.

### SOUTH KOREA SUPERCONDUCTIVITY CLAIM REVIVED WITH NEW DATA

A group of scientists affiliated with research institutes in China and Japan have reported finding a sign of superconductivity in a material that was at the centre of a controversy last year over similar claims.

Their study is described in a preprint paper they uploaded to the internet on January 2. (A preprint is a paper the authors have finished writing and is yet to be peer-reviewed.)

While the study has already drawn some attention in the scientific community, the researchers who conducted it and others are proceeding with caution – some rooted in the superconductivity controversies that erupted last year and some in the study itself.

**What is the Meissner effect?**

The sign in question is called the Meissner effect. It is one of a few 'effects' certain materials exhibit when they're able to conduct electric currents without any resistance – i.e. when they become superconductors. The researchers have reported in their paper that they observed the Meissner effect in a compound called copper-substituted lead apatite.

Scientists know many types of materials that become superconducting in different conditions – metals, metallic compounds, ceramics, hydrides, etc. They all have one thing in common: they become superconducting either when they're cooled to extremely low temperatures or when they're subjected to extremely high pressures.

Many scientists are looking for a material that becomes superconducting at room temperature and pressure (RTP). Aside from scientific curiosity, such a material would have applications worth several billion dollars. It could be used to make wires that transport electricity with zero loss; such transmission losses are the largest source of electric energy loss in the world today.

The material will also have uses in medical diagnostics, computing, power generation, advanced electronic circuits, and many other fields. For example, the water-absorbing properties of modern diapers were first tested with particle accelerators, which use superconducting magnets to work.

### How has hype influenced science?

Unfortunately, these lucrative opportunities have had a knock-back effect on scientists' search for an RTP superconductor. Discovering such a thing would make a scientist instantly famous, the recipient of many coveted awards, and very rich. But these incentives have also encouraged some to rush their findings.

There were multiple superconductor-related controversies in 2023. One set was centred on the University of Rochester physicist Ranga Dias, who reported limited evidence of superconductivity in lutetium hydride in March, only for his co-authors to later ask for the study to be retracted. In August, a journal retracted another paper of a study led by Dr. Dias, reporting superconductivity in manganese sulphide, for faulty data.

Another set focused on a material called LK-99 that, a South Korean research group claimed, was an RTP superconductor. Independent studies soon found that when LK-99 was prepared the way the South Korean group had indicated (albeit not clearly), it didn't become a superconductor. Instead, it acquired an impurity whose presence the group hadn't accounted for, and which distorted measurements of the material's heat capacity and magnetism in a way an actual superconductor would have, misleading the scientists.

But before this became clear, a tsunami of hype about commercialising LK-99 inundated X and other social media platforms washed ashore.

### What did the new study report?

The authors of the new preprint paper may have wished to sidestep this hype because they've reported that their material may be an RTP superconductor.

Specifically, they have reported a sign of near-RTP superconductivity in LK-99, which is in fact copper-substituted lead apatite.

According to their preprint paper, they continued to study the material even after other studies had failed to find signs of superconductivity because the latter tested specific claims made by the South Korean group.

Instead, the new group has said it synthesised LK-99 samples using a "state of the art" approach and tested it for some other signs of superconductivity.

In particular, the group looked for "hysteresis loop … in the [direct current] measurements".

The Meissner effect is explained as the expulsion of a magnetic field from the bulk to the surface of a superconductor when it transitions to its superconducting state. This effect is observable only with direct current (DC), not alternating current (AC). Type I superconductors completely lose their superconducting state when subjected to a strong magnetic field, while type II superconductors experience a gradual decrease in superconductivity until it vanishes at a higher threshold.

The researchers in the study applied a slowly strengthening magnetic field to LK-99 samples at various temperatures, performing a classic hysteresis experiment. The hysteresis loop, which represents the forward and backward path of material properties under changing conditions, was analyzed to understand the superconducting states of LK-99. The researchers suggested the material might exhibit room-temperature superconductivity at around -23 degrees Celsius.

However, the study faced challenges, including small portions of superconducting material and interference from cuprous sulphide affecting the analysis of LK-99's molecular structure. Despite these challenges, the researchers expressed optimism about the possibility of observing room-temperature superconductivity in LK-99 but acknowledged the need for further efforts and improvements in material synthesis techniques.

Vijay Shenoy, a professor of physics, emphasized the importance of identifying the material contributing to superconductivity and improving synthesis techniques for a more significant fraction of that material. He also suggested that additional efforts might be required to achieve room-temperature superconductivity, if it exists in the studied material.

## HOW A SUPER-ENERGETIC PARTICLE FROM OUTER SPACE COULD HELP PHYSICS

When Japanese scientist Toshihiro Fujii discovered a very high energy cosmic-ray event in May 2021, he christened it 'Amaterasu'. It turned out to be the second-highest-energy cosmic ray to be discovered — so it was apt that he had named it after the sun goddess in Japanese mythology.

According to a paper published in the journal Science in November, Dr. Fujii, an astronomer at Japan's Osaka Metropolitan University, discovered the cosmic ray when analysing data collected between May 2008 and November 2021 by the Telescope Array Project in the U.S.

Cosmic rays are streams of energetic particles and clusters of particles coming from outer space and the sun. They include protons and alpha particles (nuclei of helium atoms). Only low-intensity cosmic rays reach the earth's surface. Their energy is mostly lost in the atmosphere itself, as they smash into atoms of the atmospheric gases and produce a shower of other particles. Otherwise life wouldn't have been possible on the earth.

From the 1930s, studies of cosmic rays led scientists to discover many then-unknown subatomic particles. Yet the sources of cosmic rays and the reason they're so energetic remain a mystery even 86 years after their discovery.

**How much energy?**

Data collected by the Telescope Array Project indicated the Amaterasu cosmic ray had an energy of 240 exa-electron-volt (EeV). The electron-volt (eV) is a unit of energy, like joules, used to measure the energy of subatomic particles. The energy of 1 eV is approximately $1.6 \times 10\text{-}19$ joules. One joule is the energy required to light a one-watt bulb for one second. It is easy to see how small this amount is when we realise a lamp we use at night uses about 15 J per second, or about 0.004 J/s.

The light-particles in sunlight have an energy of about 1.6-3.1 eV, for example. When one deuterium nucleus and one tritium nucleus undergo fusion, they release one helium atom, one neutron, and 17.6 million eV of energy. The mass-energy of a single Higgs boson particle, which is considered 'heavy', is 125.1 billion eV.

Cosmic rays typically range in energy from about one billion eV to about 100 billion billion eV. The Amaterasu cosmic ray had an energy of 240 EeV – or 240 billion billion eV. This is extremely high.

In fact, it's about 40-million-times higher than the energy imbued in protons by the Large Hadron Collider (LHC), the world's most powerful particle-smasher, located in Europe. So cosmic rays are our only source of very high energy particles, in spite of our best efforts.

The discovery of the Amaterasu cosmic ray could thus boost efforts to spot more such events as well as help make sense of their properties.

## HOW RADIOCARBON DATING REVOLUTIONISED SCIENCE

From thermodynamics to GPS, from social systems theory to studies of consciousness, time plays an essential role in how we study, interpret, and understand the natural universe and the peoples and technologies that occupy it. Keeping time in particular allows us to understand its passage and the change by which that passage is characterised.

The technique called radiocarbon dating brought the first verifiable way to do this to many fields of science, transforming them – and our world – to a significant degree.

**What is radiocarbon dating?**

'Dating' is a method by which the age of an object can be determined. Radiocarbon dating refers to a method that does this using radiocarbon, a name for the isotope carbon-14.

Carbon-14 is created in the earth's atmosphere when cosmic rays – energetic streams of charged particles coming from sources in outer space – slam into the atoms of the gases and release neutrons. When these neutrons interact with the nitrogen-14 nitrogen isotope, they can produce carbon-14.

Since cosmic rays are ceaselessly passing through the earth's atmosphere, carbon-14 is created constantly there.

Carbon-14 readily combines with atmospheric oxygen to form radioactive carbon dioxide. This compound then enters the bodies of plants (via photosynthesis), animals (when they consume plants), and other biomass through the carbon cycle.

In the early 1940s, the American chemists Martin Kamen and Sam Ruben found a way to synthesise carbon-14 in the lab as well as that its half-life – the time taken to decay to half its original mass – was around 5,000 years, and not a few hours as expected. In 1939, the Finnish-American physicist Serge Korff found that it's possible to produce carbon-14 by bombarding nitrogen-14 with neutrons – as cosmic rays do. Inspired by these findings, the American physical chemist Willard Libby is credited with conceiving the idea of using carbon-14 to date organic materials, which he published in the journal Physical Review in 1946.

Notably, Libby's idea made two assumptions that weren't exactly known to be true at the time.

First, the concentration of carbon-14 in the earth's atmosphere doesn't change across thousands of years. If it did, radiocarbon dating – which dates organic materials by measuring the amount of carbon-14 they contain – wouldn't work.

Second, carbon-14, in the form of carbon dioxide and other carbon compounds, would have to be able to diffuse into the earth's various ecosystems such that the concentration of carbon-14 in the atmosphere was comparable to the concentration of carbon-14 in the planet's other biospheres.

Some preliminary studies Libby conducted at the time, with his student Ernest Anderson, indicated this was the case.

Fortunately for Libby, scientific studies that came later proved both these assumptions to be valid.

**How does radiocarbon dating work?**

When an organic entity – like the human body – is 'alive', it constantly exchanges carbon with its surroundings by breathing, consuming food, defecating, shedding skin, etc. Through these activities, carbon-14 is both lost from the body as well as replenished, so its concentration in the body is nearly constant and in equilibrium with its surroundings. When this individual dies, the body no longer performs these activities and the concentration of carbon-14 in the body begins to dwindle through radioactive decay.

The more time passes, the more the amount of carbon-14 lost, and the less there will remain. This decay rate can be predicted from theory.

Radiocarbon dating dates an object by measuring the amount of carbon-14 left, which scientists and/or computers can use to calculate how long ago the body expired. In the late 1940s, Libby and chemist James Arnold tested this technique by dating objects whose ages were already known through other means – including redwood trees (age estimated from tree rings) and a piece of the funerary boat of an Egyptian pharaoh (whose death had been recorded at the time).

They found the technique could indeed estimate their ages correctly and published their findings in the journal Science in 1949.

Since carbon-14 decays with a half-life of around 5,730 years, its presence can be used to date samples that are around 60 millennia old.

Beyond that, the concentration of carbon-14 in the sample would have declined by more than 99%.

**What are the tools of radiocarbon dating?**

The instrument of choice in Libby's time to study radioactive decay was the Geiger counter. It consists of a Geiger-Muller tube connected to some electronics that interpret and display signals.

The modern radiocarbon dating setup is more sophisticated, of course. For example, one of the most sensitive dating setups uses accelerator mass spectrometry (AMS), which can work with organic samples as little as 50 mg.

AMS adds one more filter to this setup: a particle accelerator that energises the ions a thousand-times more. As a result, isotope ions of the same mass and different ions with the same mass-to-charge ratio also become more separable. In this way, all the carbon-14 from a sample can be isolated and examined to estimate the bone fragment's age.

For example, AMS has allowed geologists to date rocks by measuring the relative amounts of the strontium-87 isotope.

Naturally occurring rubidium-87 decays to strontium-87 with a half-life of 49.2 billion years. Strontium-87 is one of four strontium isotopes and the only one to not also be produced by stars. So measuring the ratio of strontium-87 to any of the other isotopes could yield a rock's age.

**How did radiocarbon dating change science?**

According to the American Chemical Society, "radiocarbon dating provided the first objective dating method – the ability to attach approximate numerical dates to organic remains".

For this reason, its effects on the fields of archaeology and geology have come to be called the "radiocarbon revolution".

Radiocarbon dating allowed researchers to date sites of archaeological importance, check whether two objects found at the same time are equally old, and compare the ages of objects found at far-flung sites.

In essence, it allowed scholars a clearer and measurable view of the past, opening the door to findings whose importance resonate to this day – including the history of human migration, the rise and fall of civilisations, the birth of languages and religions, the evolution of human-animal interactions, and undulations of the earth's climate.

Radiocarbon dating is also of political significance in India, where researchers and politicians alike have invoked its use to date objects retrieved from temples and mosques. Scientists have also continued to refine the technique and account for any remaining flaws. For example, in 2018, archaeologists at Cornell University, New York, reported evidence of the radiocarbon cycle deviating from the expected version at certain points between 1610 and 1940.

As a result, they said, radiocarbon dating to these periods could be off by around 19 years.

In 2020, researchers from Cyprus, the Netherlands, and Russia reported a way to improve the time resolution of radiocarbon dating – the smallest period of time to which it could date objects – from decades to specific points within a year, using "recent developments in atmospheric science".

## HOW THE UNITED STATES' CLIMATE RESPONSE HAS BEEN LACKING

When the Loss and Damage Fund was opened for capitalisation at the recently concluded COP28 climate meeting in Dubai, hosts UAE promised US$ 100 million, as did Germany. France and Italy committed about US$ 110 million each. United Kingdom promised about US$ 60 million. In contrast, all that the United States could muster was US$ 17.3 million. Even Ireland, Denmark and Norway put in more money into the fund.

Its small contribution to the Loss and Damage Fund was particularly jarring, but this was not the first time that the United States was found wanting in playing its expected role in the global fight against climate change. As the country with the largest share of historical emissions, and the world's biggest economy, the United States carries a greater burden than any other nation in taking climate actions. Both the UN Framework Convention on Climate Change (UNFCCC) and its 2015 Paris Agreement repeatedly mention that developed countries must take the lead in the fight against climate change.

But far from taking leadership, United States has been one of the biggest laggards on climate action. Not only has it not cut down on its emissions so far, it has done little to meet its financial

and technological obligations. It never ratified the Kyoto Protocol, and therefore never abided by the emissions reduction targets assigned therein. The Paris Agreement was negotiated largely on terms dictated by it, but it still walked out. It has rejoined the Paris Agreement now but its contributions to the climate cause have been extremely modest. The lack of enthusiasm from the United States is one of the biggest reasons why the world is not on track to meet the 2030 targets.

**Historical Responsibility**

Despite China emitting much more in the last 15 years, the United States continues to have the largest share of historical emissions, accounting for more than 20 per cent of all carbon dioxide emissions since 1850. Around the early 1990s, when the first international rules on climate change were emerging, US accounted for more than 30 per cent of historical emissions till that time.

Broadly in line with the polluters' pay principle, developed and industrialised countries with the maximum share of historical emissions at that time were asked to take the lead in reducing emissions. That group of about 40 countries came be known as Annex-I countries because they were listed in Annexure-I of UNFCCC. The 1997 Kyoto Protocol, the precursor to the Paris Agreement, had assigned specific emission reduction targets to each of these countries.

But since the US never ratified the Kyoto Protocol, it was not bound by those targets. And it did nothing to reduce its emissions voluntarily.

A recent assessment by UNFCCC shows that by 2020, when the Kyoto Protocol came to an end, the Annex-I countries, as a group, had reduced their net greenhouse gas emissions by about 25 per cent from 1990 levels. The contribution of the United States in this was next to nothing. Its emissions came down by just 0.4 per cent during this period, that too after including the effect of Covid pandemic. In 2019, US emissions were about 6 per cent higher than in 1990.

Of course, there are other Annex-I countries which have fared worse — eight of them — including Canada and Turkiye. But the United States alone emits about four times the combined emissions of all eight.

The US still maintains that it has met its 2020 emission targets. That is because it had pegged its target — 17 per cent reduction by 2020 — to a 2005 baseline, unlike most other Annex-I countries that use a 1990 baseline. So, the United States let its emissions grow by about 15 per cent between 1994 and 2004, and then made some reductions from that peak to claim victory. Had it not been for the Covid-induced drop in 2020, the annual emissions of the United States in 2021, the last year for which official data is available, would have been well over 1990 levels, as it indeed was in 2019.

This year's Emissions Gap Report, an annual publication of the UN Environment Programme, showed that the US emissions were estimated to be about 1.6 per cent higher in 2022 than the previous year.

**Modest Targets**

The targets for future are not very ambitious either. The United States has promised to reduce its emissions by 50-52 per cent by 2030 on 2005 levels. The Intergovernmental Panel on Climate Change (IPCC) says global emissions have to drop by at least 43 per cent by 2030 from 2019 levels to retain any hopes of keeping the 1.5 degree Celsius alive.

The upper limit of US emission reduction target, 52 per cent, on 2005 levels translates to less than 46 per cent from 2019 baseline. That is just about doing the bare minimum and nowhere close to the leadership role that it is expected to play.

And even that is not certain to be achieved. According to the same UNFCCC assessment, mentioned earlier, current policies and measures by the United States could result in just about 20 per cent reduction from 2005 baseline by 2030. The United States is banking heavily on the Inflation Reduction Act which it passed recently to enable the emissions reductions that would help it to achieve the 50-52 per cent target.

### Against Equity, Justice

Even if it does, the bare minimum act of the United States means that the global target for 2030 is almost certain to be missed. Meeting the global target from hereon would mean every country, even developing countries, would have to match the effort made by the United States. It is violative of the principles of equity and justice enshrined in the UNFCCC and the Paris Agreement.

The United States, indeed, has been working actively in the negotiating rooms to do away with the differentiation between developed and developing countries that is at the heart of the international climate change framework. Even in its public utterances sometimes, the US has suggested that every country must be held equally responsible, at least for certain aspects of climate actions, and subjected to the same standards. That is the reason why, at every climate change conference, a lot of energies of the developing countries is consumed in fighting to prevent further dilution of the differentiation principle.

### Fossil Fuel Guzzler

While Saudi Arabia took most of the blame for attempting to prevent a mention of fossil fuel phase-out in the final outcome from Dubai meeting, the United States has largely got away with its record on fossil fuels. It continues to be the largest producer of fossil fuels — oil, natural gas and coal taken together – and more than 80 per cent of its energy needs are still met by these sources. This has remained like this for the last three decades.

Yet, the United States has never faced the kind of pressure that India faces for its use of coal. In fact, till 2015, the US was using as much coal as India, and it is only in recent years that it has reduced its reliance on coal a little. But the shift away from coal has been compensated largely by natural gas and oil, and only partly by renewable energy.

Despite constant criticism, India has a far better record on fossil fuels than the United States. Data from International Energy Agency shows that about 27 per cent of India's energy needs were being met by non-fossil sources compared to less than 20 per cent in the case of United States.

### No Money

As the world's leading economy, home to some of the largest global corporate houses, and the biggest influence on international financial institutions, the United States is uniquely positioned to mobilise financial resources for climate actions. But just like on emission reductions, it has not delivered on its climate finance obligations as well. A day after facing criticism for its paltry contribution to the Loss and Damage fund in Dubai, the US announced a US$ 3 billion commitment to the Green Climate Fund (GCF) for the next four years, by far the largest sum from any single country.

GCF is the main financial instrument of the Paris Agreement geared towards raising funds to help developing countries carry out their climate actions. It had raised about US$ 10 billion for its first four-year cycle of funding climate projects. In Dubai, it was raising money for the next four-year cycle. The US had promised US$ 3 billion for the first round of capitalisation as well but delivered only US$ 2 billion.

But GCF handles a very small fraction of the money that is required for climate actions, estimated to be a few trillions of dollars every year. It was the United States that, way back in 2009, had come up with a US$ 100 billion per year figure to be mobilised by the developed countries from 2020 onwards. That target has never been achieved though developed countries claim that it was reached in 2022. Developing countries complain of double-counting, repurposing and greenwashing.

A major concern has been the lack of money for adaptation activities. In Glasgow, countries had decided to double the financial flows to adaptation, but a recent Adaptation Gap Report showed that far from doubling, the money meant for adaptation had seen a year-on-year decline. The United States was among the countries that ensured that no separate financial provisions were included in the decision on Global Goal on Adaptation that was reached in Dubai this year.

## EXPRESS VIEW ON EU CARBON TAX: COSTS OF A LEVY

According to a report in this newspaper, Indian industry has expressed concerns about the European Union's Carbon Adjustment Mechanism (CBAM). The regime came into effect on October 1 last year, but it won't be before 2026 that tariffs will be imposed on imports to the 27-nation bloc. India Inc's immediate worries are about a CBAM clause that requires exporters to submit nearly 1,000 data points about their production methods. Brussels contends that the requirement is meant to ascertain carbon footprint-related information but Indian exporters fear that they could lose critical competitive advantage in the process. Industry says that besides being a burdensome process, the data-sharing exercise could compromise sensitive trade secrets.

A more serious challenge for industry will be to navigate CBAM's definitive phase when tariffs start getting imposed. In 2022, more than a fourth of India's exports of iron, steel and aluminium were to the EU. According to industry estimates, the EU tariffs could raise the costs of Indian exports by 20 to 35 per cent. A multi-pronged effort will be required. For one, India will have to contest CBAM's protectionist underpinning. The government has already questioned the mechanism at the WTO. It will also need to join hands with other affected countries to contest CBAM at climate fora. The measure is being imposed in an already unequal context, due to the failure of rich countries to honour commitments to make clean technologies accessible to developing countries. One suggestion by experts is, therefore, to impose the tariff but channel the fund to developing countries — instead of the proceeds going to the EU's corpus. Given the already contentious nature of climate financing, implementing this recommendation will require tough talking. The government is reportedly contemplating a levy similar to CBAM to nudge industry to reduce its carbon footprint — the revenue would then be used to fund the domestic green transition. There are, however, imponderables, including whether the EU will play ball and withdraw its tariff.

There are apprehensions that other developed economies could follow in the EU's footsteps — the US, for instance, opposes CBAM, but conversations have already started in America about imposing a similar levy. Big companies like Tata Steel and JSW seem to be bracing for this challenge — they have ambitious decarbonisation targets. However, abating emissions from the

steel sector is tough. Technological interventions — carbon capture and storage, for example — could be costly for small companies. They will require handholding by governments, regulators and financial institutions.

## CO2 LEVEL IN A PLANET'S ATMOSPHERE COULD INDICATE HABITABILITY

New research shows that a lower amount of carbon dioxide gas in a planet's atmosphere compared to that of its neighbours could hint at the presence of liquid water on that planet.

Researchers said that the drop in the carbon dioxide levels relative to the neighbouring planets implied a possible absorption of the gas by an ocean or isolation by biomass on a planetary scale.

While multiple studies have made attempts to identify planets lying in the habitable zones of the stars they orbit, the researchers said that until now there was no way of knowing whether they truly have liquid water.

The international team of researchers, led by the University of Birmingham in the U.K., and Massachusetts Institute of Technology (MIT) in the U.S., said that they had devised a new 'habitability signature' and that it was a "practical method for detecting habitability".

They have published their findings in the journal Nature Astronomy.

Planets that are neither too close to their star and thus too hot, nor too far from their star and thus too cold are considered to be in the just right 'habitable zone'. The planets could therefore be 'habitable' and capable of hosting and retaining liquid water on its surface.

The carbon dioxide, or $CO_2$, in a planet's atmosphere is a strong absorber in the infrared region of the light spectrum, the same property through which it is currently causing the earth's temperatures to rise, explained co-lead researcher Amaury Triaud, Professor of Exoplanetology at the University of Birmingham.

"It is fairly easy to measure the amount of carbon dioxide in a planet's atmosphere. By comparing the amount of $CO_2$ in different planets' atmospheres, we can use this new habitability signature to identify those planets with oceans, which make them more likely to be able to support life," said Triaud.

The earth's atmosphere too used to be mostly $CO_2$, but then the carbon dissolved in the ocean, making the planet capable of supporting life for the last roughly four billion years, Triaud said.

The researchers said examining $CO_2$ levels of other planets and measuring their habitability could reveal insights about the earth's environmental tipping points and the carbon levels at these points that could make our planet uninhabitable.

"For example, Venus and earth look incredibly similar, but there is a very high level of carbon in Venus' atmosphere. There may have been a past climatic tipping point that led to Venus becoming uninhabitable," said Triaud.

The 'habitability signature' devised by the team could serve as a biosignature as well, they said, because living organisms too capture carbon dioxide.

## EXPRESS VIEW: IT'S OFFICIAL — 2023 WAS THE HOTTEST YEAR ON RECORD

For the better part of 2023, it was all but certain that the year would be the warmest on record. Beginning June, the average global temperature registered a record high every month. Now the EU's Copernicus Climate Change Service (CCS) has confirmed that in 2023, the planet was 1.48 degrees hotter than the period when the large-scale burning of fossil fuels commenced. Scientists at the CCS have warned that the 12-month period ending in January or February 2024 could be 1.5 degrees above the 1850s. This does not mean that the threshold set by the Paris Pact is likely to be breached soon — the landmark agreement pertains to averages over a much longer time. But the weather pattern this year sets a worrying precedent, especially because the average temperature in 2023 was 0.17 degrees higher than in 2016, the previous record year — in global warming terms, a very large increase.

By all accounts, renewable energy installations have increased appreciably in the past five years. However, this does not seem to have had a meaningful impact on the decarbonisation of the planet. CCS data show that GHG concentrations in the atmosphere reached a record level in 2023 — this along with El Nino has driven most of the warming. The rate of increase in methane emissions was lower than in the past three years. But carbon dioxide in the atmosphere increased at a rate similar to that observed in recent years, indicating that RE deployment is being offset by the use of unclean energy. Blaming the Third World and emerging economies for this increase in the emissions burden would be simplistic, and unfair. According to a study published in the journal Nature last year, historically, the combined share of emissions (1850-2021) of the US and the EU is more than 32 per cent. India's share, in contrast, is less than 3.5 per cent.

Of course, this does not mean that countries in the Global South do not have work to do. India's remarkable growth in total RE capacity in the last nine years –from 35 GW in 2014 to close to 180 GW — means that it is well placed to attain its goal of 500 GW RE capacity by 2030. However, like most parts of the world, India is yet to develop technology that enables storing of excess energy when the sun isn't shining or the wind isn't blowing. In recent times, the US-China rivalry has hobbled RE supply chains. Last year, China wielded its national security rules to impose export bans on rare earth minerals — it dominates the world market in these commodities that are critical to the green energy transition. In a somewhat similar vein, the Biden administration has blocked US subsidies to Chinese battery manufacturers. In the last two months, the two countries have indicated their willingness to overcome tensions on the climate front. The weather record of the last year indicates that climate diplomats, especially in the big powers, need to be much more nimble.

## SWISS, THAI GROUPS CLOSE FIRST SALE OF PARIS PACT CARBON OFFSETS

A Thai electric bus operator said on Monday it had sold the first carbon offsets under a new system created by the Paris Agreement to a Swiss fossil fuel group, a major landmark for putting into action the eight-year-old United Nations climate accord.

The 2015 Paris Agreement allows for governments and companies to offset some of their greenhouse gas emissions by paying for steps to cut climate pollutants elsewhere. Those offsets are packaged as credits, each equivalent to reducing one metric tonne of carbon dioxide ($CO_2$) emissions.

Some environmentalists, however, criticise carbon offsets, saying they allow pollution to continue when the focus should be on eradicating it.

Switzerland's KliK Foundation, which represents fuel importers, said on Monday that it had completed the first purchase of 1,916 carbon credits from Thailand's Energy Absolute in December.

"We are pioneers," Chatrapon Sripratum, an Energy Absolute executive overseeing the project, told Reuters. "This market will really boom in the future."

Energy Absolute is generating the credits by launching a fleet of up to 4,000 electric buses in Bangkok, rather than using petrol-fueled vehicles.

Sripratum said the sales price was more than $30 per credit, declining to give the exact value of the deal.

Climate negotiators took years to agree on the rules for offsets, with many of the details still being worked out at annual U.N. climate negotiations, most recently at COP28 in Dubai.

This means that Energy Absolute and KliK — and regulators in both countries who must authorise the deal under the Paris Agreement — can influence a nascent market if the final U.N. rules follow their lead. But it also poses the risk that they will need to retroactively revise their transaction.

"There's no clear rule saying how this needs to be done, and in that sense being the first might be an advantage in the long run, but, at first, it's really hard work and also a lot of cost," KliK managing director Marco Berg said.

The Swiss government forced KliK's hand by obligating fuel importers to offset a steadily rising percentage of their emissions, either domestically or internationally through Paris Agreement compliant credits.

KliK has agreed to buy offsets for up to 1.5 million metric tonnes of carbon dioxide emissions through 2030 from Energy Absolute, representing just a portion of the 20 million credits it foresees needing to buy by decade's end, Berg said.

That compares to the roughly 40 million metric tonnes of CO2 that Switzerland expects to offset abroad through 2030 to meet its climate targets, the Swiss Federal Office for the Environment told Reuters.

## PANSPERMIA: LIFE FROM ONE WORLD TO THE NEXT

The question of how life began has invited numerous hypotheses. One that has prevailed since ancient Greece is panspermia. It was first posited by the Greek philosopher Anaxagoras (500-428 BC), who coined the term and first articulated life's potential to travel as 'seeds' between planets.

While this concept found echoes in the thoughts of other philosophers of his time, such as Anaximander and Thales, it remained in the realm of the speculative for many centuries until scientific advances in various fields brought it into focus.

Some of the more important studies demonstrated that microorganisms could endure the extreme conditions that come with being ejected from a planet, navigating the rigours of interplanetary travel, and withstanding the impact of reaching a new world.

Nineteenth-century researchers, including Swedish scientist Svante Arrhenius, also contributed to this discourse by suggesting mechanisms – like radiation pressure from the Sun – that microorganisms could be propelled by through space.

In its modern version, the idea of panspermia advances three stages: escape from a planet, transit through interplanetary space, and landing on another planet.

But because panspermia simply attributes the origin of life on one planet to a different planet, it doesn't actually explain how life came to be. It is in fact a fringe theory in the scientific community because scientists agree that it is hard – if not impossible – to prove.

It has also become the seed of many controversies, including one suggesting the interstellar object 'Oumuamua was an alien object engaged in panspermia.

## DINING ON WILD FOODSTUFFS

Great emphasis is laid on the concept of biodiversity in our times. The importance of preserving biodiversity has been accepted in the policy frameworks of most Governments. It is therefore ironic that the food eaten by the people of the world has become extremely low in diversity. Rice, wheat, maize, and sugar provide over 50% of the total calorie intake of all of us.

The fresh produce sections of our supermarkets also reflect this trend and carry a monotonously limited selection of vegetables.

This reduction in "dietary diversity" influences the quality of our diets. Eating food from many different food groups improves nutrition. But the practice of monoculture – growing one crop or vegetable on large tracts of land – only reduces "agricultural biodiversity". One alternative, to transport food groups from distant regions, raises costs and carries a heavy environmental penalty.

**Wide variety**

Farmers with small holdings, Shepherds on pastoral lands and tribal populations that practice agroforestry are major contributors to nutritional variety in our country. When we talk of local varieties, we usually refer to vegetables and crops provided on a small scale by these people. The choice, varying from region to region, can be quite extraordinary. In South India, we have leafy greens that are rich in iron and calcium, such as the Green Amaranth (Tamil, kuppi keerai; Hindi, junglee chaulayi) and Leucas (Tamil, thumbai; Sanskrit, Drona pushpi). Starchy tubers, such as east Indian arrowroot (Tamil, kuva or ararut-kizhargu; Hindi, tikhur) whose powdered tubers (also called Travancore starch) are nutritious and particularly good for sensitive stomachs.

More commonly available, and a vitamin C powerhouse, is the Indian gooseberry (Tamil, nelli; Hindi, amla). In Central India, we have the madhuca or Indian butter tree (Tamil, illupai; Hindi, mahua) whose flowers are edible, and the seeds have oil. The khejri, the state tree of Rajasthan (Tamil, parambai) has pods that make the tasty sighri bhaaji, while also warding off desertification. All of us probably have a favourite 'wild' vegetable, fruit, berry, or root that is rarely found.

**Jhum cultivation**

The indigenous people of Northeast India practiced a form of agriculture, called Jhum, in which about 20 different food crops would be grown on the same piece of land. This form of cultivation

is a total antithesis of modern agricultural practices but offers plenty of diversity in their diets. Sadly, this form of cultivation is losing ground. Researchers at the Central Agricultural University at Pasighat in Arunachal Pradesh have documented that the area under Jhum cultivation, in the West Garo district alone, had shrunk from 1,328 sq. km in the year 2000 to 112 sq .km. In 2015.Areca nut, black pepper and rubber became the preferred crops on this land (Pandey et al, Food Security, 2022).

The consumer and his tastes influence the availability of a wide variety of wild varieties.

Adding wood apples (velam pazham) and Jamuns (nagai) will only enhance the nutritive quality of your diet while helping small growers.

## EXPRESS VIEW ON THE 'EXERCISE PILL': CAN IT REALLY REPLACE A PHYSICAL WORKOUT?

Here's some good news for those who are already regretting their New Year resolution to start going to the gym. The result of a landmark experiment, currently underway in Norway, could make getting some exercise as simple as popping a pill.

The clinical trial involves injecting the blood plasma of regular exercisers into older adults showing early stages of Alzheimer's disease, thus transmitting to them the benefits of being physically active. If the results are positive and can be replicated in pills, it would change the lives of those who are unable to exercise — due to age, disability or disease. It would also turn upside down all the received wisdom of the "no-pain-no-gain" variety that gym trainers and physical coaches specialise in.

Few people really like to exercise. And anybody who can pop a pill to get rid of a bulging belly or thundering thighs, will do so. Put it down to human nature — a few years ago, a study by paleoanthropologist Daniel Lieberman had concluded that it is "natural and normal to be physically lazy".

This is why, over the last few years, drugs like Wegovy and Ozempic — used to treat people with obesity and diabetes — have been used by celebrities as a shortcut to weight loss. And why, obviously ineffective get-slim-quick fitness hacks, like using activated charcoal in food or wearing sauna suits, continue to find takers.

But could an exercise pill replicate the add-on benefits of physical activity, such as becoming a part of a community of other runners or lifters, or simply having a universally acceptable reason to just focus on oneself and spend some time in the sun? The fact is that beyond just physical benefits, like weight loss and improved cardiovascular health, physical exercise also yields more intangible benefits, like improved mood and higher self-esteem. There's no shortcut for these — and that is a bitter pill to swallow.