



CURRENT AFFAIRS FOR UPSC

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DreamIAS



INTERNATIONAL

EARLY LEAD

Former U.S. President Donald Trump has established a significant lead over other Republican Party candidates in the first formal event of the election season, the Iowa caucuses. This puts him in pole position to be the Republican nominee for the November 2024 presidential election House, even though the nomination process through state-level primaries and caucuses is usually hard-fought and can produce surprise outcomes. While the 45th President scooped up 20 delegates in Iowa, far ahead of the nine delegates of Florida Governor Ron DeSantis and eight delegates of former South Carolina Governor Nikki Haley, in order to win the Party's nomination a candidate would require a total of 1,215 delegates. Meanwhile, the next Republican presidential debate was cancelled after Ms. Haley declined to appear on stage unless Mr. Trump participates too, something he has refused to do so far. Indeed, it is Ms. Haley who perhaps represents the greatest possibility of posing a challenge to Mr. Trump, and the next Republican contest in New Hampshire, a swing state, will be her best opportunity to dent his momentum. The state has a more white and rural population and nearly 40% of its electorate is comprised of independent voters who may prefer a more moderate candidate than Mr. Trump.

Regardless of what twists of fate might lie ahead for the three candidates in the Republican primaries, it is clear from the Iowa results that Mr. Trump has bounced back from what some consider the political embarrassment and legal quagmires of the four indictments that he has been slapped with for alleged improprieties of conduct during his time in office. The latest voting suggests that his popularity among conservatives has not dwindled much; contrarily, he appears to be their candidate of choice more than in previous elections. The Iowa caucuses surveys suggest that nearly 50% of Republican considered themselves to be members of Mr. Trump's "Make America Great Again" movement, and the breadth of his victory included older and younger age cohorts, men and women, and far-right and evangelical caucus-goers. Reports from Iowa indicate that nearly 90% among this group believed the Trump campaign falsehoods that the 2020 election was "stolen" and thus tend to overlook federal and state charges that he faces relating to the January 6, 2021 attack on the U.S. Capitol and election interference in Georgia. An early assessment of Mr. Trump's overall position suggests that he would be well placed to win his party's nomination and perhaps successfully challenge his Democratic rival, incumbent Joe Biden, in November. Whether this will be a positive development favouring the U.S.'s long-term national interest is an entirely different question.

REGIONAL TURMOIL

The war on Gaza is no longer about Israel and Hamas. Israel has carried out targeted strikes in Lebanon and Syria, killing Hezbollah, Hamas and Iranian commanders. From southern Lebanon, Hezbollah is exchanging fire with Israeli troops. Iran-backed militias in Syria and Iraq have attacked U.S. forces in Syria and Iraq. The Houthis, the Iran-backed rebels of Yemen, have turned the Red Sea into a battlefield. The U.S.'s air strikes in Iraq, Syria and Yemen, seek to retaliate against Shia militias. As chaos and instability spread, Sunni Islamist militants attacked Iran, killing at least 100 people. In the latest escalation, Iran claims to have destroyed an Israeli intelligence outpost in Iraq's Kurdistan and training camps of Sunni Islamists in Syria and Pakistan, in air strikes. This is now a classic case of regional anarchy where countries are taking unilateral military measures to address their perceived security challenges, throwing international laws and



the idea of sovereignty, the bedrock of the international system, to the wind, thereby risking a wider all-out war.

Just weeks before the October 7 attack, Jake Sullivan, the U.S. National Security Adviser, had said “the Middle East is quieter today than it has been in two decades”. The Abraham Accords were on a strong footing, and Saudi Arabia and Israel were moving closer towards normalisation. Iraq had become quieter; Gulf Arabs and Iran had reached a rapprochement; and a ceasefire was holding in Yemen. Most of these changes, however, ignored the oldest crisis in the region — Israel’s continuing occupation of the Palestinian territories. The October 7 Hamas attack and Israel’s subsequent vengeful offensive in Gaza have not only brought Palestine back to the centre of West Asia but also lit fires, triggering perhaps the deepest security crisis in the region since 1967. The involvement of non-state actors and the absence of an off ramp complicate matters. After 100 days of war with Hamas, Israel has achieved little in Gaza. The Houthis, a militia that survived seven years of Saudi bombing, are unlikely to be deterred by America’s strikes. Even though Iran wants to showcase strength and boldness, it cannot mask its inherent weakness, which also makes it unpredictable. The old order, anchored by America’s domineering regional presence, is in tatters. What West Asia needs is a new security equilibrium. There has to be an immediate ceasefire in Gaza, and peace between Israel and Palestinians could be used as a springboard for further talks aimed at regional security between the main stakeholders — Israel, Arab nations, Iran, the U.S. and their respective allies and proxies.

WHY HAS SOUTH AFRICA DRAGGED ISRAEL TO THE ICJ?

The story so far:

The two-day proceedings before the International Court of Justice (ICJ) at The Hague between South Africa and Israel attracted global attention. South Africa had in late December moved the ICJ, invoking the Convention on the Prevention and Punishment of the Crime of Genocide, 1948, against Israel, accusing it of committing genocide during its ongoing military campaign in Gaza. South Africa has sought the indication of provisional measures to stop the genocide while Israel has rebutted the allegation that it had any genocidal intent in its response to the October 7 terrorist attack by Hamas.

What gives ICJ jurisdiction?

The ICJ is the principal judicial organ of the United Nations. The statute that created it makes it clear that only states may be parties in cases before the Court. Both South Africa and Israel are signatories to the Genocide Convention of 1948, which has now been invoked by South Africa. Provisional measures are interim rulings of the ICJ aimed at preventing either party from doing irreparable harm to the main case. Proceedings instituted before the ICJ usually take years for disposal. In this instance, in its 84-page filing, South Africa has sought a series of measures including the immediate suspension of Israel’s military operations in Gaza and to desist from the commission of any act within the scope of the Convention against the Palestinian people. A request for provisional measures in this case will not involve a determination on whether a genocide has taken place, but it is enough for South Africa to demonstrate an intent to commit genocide.

What is the Genocide Convention?

The Genocide Convention, 1948, was the first human rights treaty to be adopted by the UN General Assembly. It primarily arose from a commitment to ‘never again’ allow mass killing of people such



as the Holocaust. South Africa's case is based upon Article II which says genocide means acts such as killing members of a national, racial, ethnic or religious group; causing serious bodily and mental harm to the members of the group; and deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part. It has also accused Israel of causing hunger, dehydration, and starvation in Gaza by impeding sufficient humanitarian assistance, cutting off water, food, fuel, and electricity, and failing to provide shelter or sanitation to Palestinians in Gaza, including its 1.9 million internally displaced people. South Africa put the death toll at 23,000, 70% of them being women and children.

How did South Africa make its argument?

Lawyers appearing for South Africa drew heavily upon statements and remarks attributed to Israeli officials and military leaders, to contend that one could infer genocidal intent from their words and deeds. They also quoted extensively from remarks made by officials of the United Nations, the World Health Organization and the International Committee of the Red Cross, among others, to the effect that civilians throughout Gaza faced grave danger and the health care system had collapsed after hospitals were turned into battlegrounds. They emphasised that "nowhere is safe in Gaza" amid constant bombardment by Israel Defence Forces. They argued that the current operations should be seen in the context of the 'Nakba' of 1948, 75 years of 'apartheid', 56 years of occupation and 16 years of siege. Nakba, which means 'catastrophe' in Arabic, refers to the mass displacement of Palestinians during the Arab-Israeli war. A remark by Israel Prime Minister Benjamin Netanyahu referring to the Biblical character Amalek found particular mention in South Africa's presentation to indicate "genocidal intent" as "it is being used by Israel soldiers to justify the killing of civilians in Gaza." Amalek, according to the Hebrew Bible, was a persecutor of the Israelites and it is the duty of Israelites to eliminate Amalekites.

How did Israel counter the arguments?

Israel in its presentation on January 12 rejected any genocidal intent behind its ongoing campaign and argued that its response was legitimate and based on the norms of international law. It anchored its presentation on its right to self-defence. It claimed that its operations in Gaza were not aimed at destroying its people, but to protect them and that it was directed solely against Hamas and its allied groups and were aimed at removing Hamas' capacity to threaten Israel. Its representative questioned the invocation of the term genocide in the context of Israel's conduct in a war it did not start. They rejected the charge that any remarks attributed to its Prime Minister or Defence Minister indicated any genocidal intent. Rather, routine rhetoric has been twisted out of context in South Africa's presentation. It also accused South Africa of relying on statistics provided by Hamas about casualties. Israel also put the blame on casualties on Hamas, claiming that its use of civilians as human shields was aimed at maximising harm to civilians. Unintended civilian casualties occurring during the pursuit of lawful military objectives do not indicate genocidal intent, it argued.

When is a provisional ruling expected?

A ruling on whether to issue provisional measures and, if so, what these measures will be, is expected within weeks. However, the ICJ has no means to enforce its own orders. It is possible for the UN Security Council to take measures, but it is subject to the veto power of permanent members. In the event of an adverse ruling, Israel may be banking on the U.S. to veto any attempt to enforce any such order.



EXPRESS VIEW ON IRAN-PAKISTAN CONFLICT: STEP BACK FROM BRINK

The complex relationship between Iran and Pakistan is teetering on the edge. On Tuesday, Iran carried out strikes in Pakistan's Balochistan province — its aircraft reportedly crossed into Pakistani air space — ostensibly to target Jaish al-Adl, a Sunni group that has carried out attacks within Iran. Pakistan has claimed that two minors died in the attack. Islamabad's first reaction was diplomatic: It recalled its ambassador from Tehran, registered a protest with the Iranian Ministry of Foreign Affairs and suspended bilateral visits. On Thursday, Pakistan launched its own strikes in Iran's Sistan-Baluchestan province, claiming to target "Pakistan-origin terrorists" who have bases in Iran. Neither Iran nor Pakistan can afford an escalation of this conflict. The former is already involved in multiple proxy wars in West Asia, not least the Israel-Hamas conflict. Pakistan has volatile and militarised borders with India and Afghanistan, and is mired in deep economic crisis.

Pakistan and Iran are Islamic republics yet in both countries Muslim minorities at the so-called periphery have not found adequate representation or equal rights. The Balochistan region (the province in Pakistan that is the country's largest) has a large area and a sparse population. Among the Baloch people, while there is a broad cultural and linguistic affinity, there are also significant internal differences — of sect, class and tribe. The community has often been treated with suspicion and outright discrimination by both states. This has been taken advantage of by violent separatist groups as well as external actors. The former has used the frontier regions of each country against the other. Both Tehran and Islamabad have often accused each other of providing tacit support to — or at the very least, of not doing enough to counter — these violent groups. Jaish al-Adl is one of several Sunni-Salafist outfits fighting for an independent Sistan-Baluchestan said to operate from Pakistan. The group has claimed responsibility for bombings and attacks on Iran's border police in the past. Last year, there were several attacks on both sides of the border in which security forces were killed.

The immediate trigger for Iran's audacious attack remains unclear. Given the regional context — it carried out similar strikes in Syria and Iraq earlier this week — the action against Pakistan could be part of a larger muscle-flexing in light of the Israel-Hamas war spreading to other parts of West Asia. There has also been a reported increase in Jaish al-Adl activity recently. Whatever the provocations, it is now imperative for both sides to act with maturity. Pakistan's Foreign Office has said that the sole objective of the attack was protecting the country's security while the Army has said that "dialogue and cooperation" can solve bilateral issues. Beyond the current moment, governments and armies need to cease their support for terrorism. In the long run, addressing the concerns of disaffected minorities in the region will help tackle the challenge posed by violent separatist movements.

WHERE DO CHINA-TAIWAN RELATIONS STAND?

The story so far:

On January 13, Taiwan concluded its democratic elections. Lai Ching-te of the Democratic Progressive Party (DPP), who was the Vice President under Tsai Ing-wen, whom China has called the "troublemaker", is the newly elected President of Taiwan. This is a third term for the DPP, with the win being perceived as a major blow to China. However, within days of the results, Nauru, a small island nation, has announced that it is shifting its relations from Taipei to Beijing.



What brought on the shift?

Nauru's decision is very much on expected lines. A number of countries have shifted their diplomatic relations from Taipei to Beijing during the previous Taiwan President, Tsai Ing-wen's term in office. Beijing has followed a pattern of luring smaller nations with the promise of financial investment and infrastructure development. Since Ms. Tsai and DPP came to power in 2016, the diplomatic space for Taiwan has consistently reduced. Today, just 11 countries recognise Taiwan while in 2016, this number stood at 22. The DPP is perceived as a pro-independence party and thus the pressure from Beijing and the pace at which Taiwan has been losing allies is increasing. This is also because Taiwan is unable to match China's deep pockets.

What is status of China-Taiwan ties?

One of the main reasons for China's assertiveness is the refusal of Ms. Tsai to accept the '1992 consensus'. The 1992 consensus acknowledges that there is 'one China'. It was agreed upon between the Kuomintang (KMT, pro status-quo party) and the Communist Party of China (CPC). However, Ms. Tsai has publicly said that this consensus goes against the 'Taiwanese consensus'. There has also been a rise in 'Taiwanisation', where the younger generation of Taiwan do not feel any historical affinity with China. This generation recognises itself as Taiwanese and have grown up in a democratic political environment and do not feel any bond with the historical narratives of a united China. All these developments have intensified aggressiveness towards Taiwan under Chinese President Xi Jinping. Rejuvenation of the Chinese nation and reunification of Taiwan are two very prominent and essential goals for Mr. Xi. China had consistently made comments and indicated its displeasure of the DPP, given its pro-independence stance. In his New Year's address, Mr. Xi had remarked that "reunification with Taiwan is inevitable" and Taiwan is a "sacred territory". However, DPP's electoral victory is a clear indication that the Taiwanese people are not in a hurry for reunification.

What about democracy in Taiwan?

Taiwan conducted its first democratic elections in 1996. The elections happened under the shadow of Chinese ire with missiles being fired across the Taiwan Straits. Since then, the democracy has only strengthened and regularised. What is interesting is that Beijing had been aggressive during the 2020 elections too, underscoring its discontent towards Ms. Tsai. Beijing has been uncomfortable with Taiwanese democracy, as it considers the island a renegade province. The fact that Taiwan has a functioning democracy strengthens the idea of a separate Taiwanese political identity which is in complete contrast to the one-party system in China. It also challenges the notion that the CPC is the only political option for the Chinese people.

What next?

Even though it is clear that Taiwan's future path under Mr. Lai and DPP's tenure is going to be tougher, it is a major win for Taiwan's democratic future. The election results will be clearly regarded as a challenge to China's political aspirations of reunification.

Though Mr. Xi has denied any set timeline for ultimate reunification, the pressure on Taiwan is only going to increase. When one juxtaposes this with the intensifying nationalisms on both sides of the straits, the situation will be difficult and Mr. Lai will have to be adept and manoeuvre these various diplomatic challenges.



CHINA'S POPULATION FELL FOR THE SECOND YEAR IN A ROW IN 2023. BUT WHY?

The year 2023 saw 11.1 million deaths and 9 million births in China, marking the second year in which the country's total population has reduced. In the same year, India overtook China as the most populous country in the world.

In numbers released on Wednesday (January 17), the Chinese government said that the total population stood at 1.4 billion. Here's what you need to know about the reasons behind this fall, and what its possible impact can be for China.

The fall is part of recent population trends.

Since 2016, the Total Fertility Rate or TFR (the number of children a woman, on average, is expected to bear in her lifetime) has been falling in China. Another important concept here is that of replacement rate. It is the number of children a woman is to have, to replace the present generation in the future. A couple having two children would mean maintaining the same level of population in the future as well.

China's TFR, according to its 2020 Census, was 1.3 births per woman — marginally up from the 1.2 in the 2010 and 2000 censuses, but way below the replacement rate of 2.1.

Is the One-child policy to be blamed for China's falling population?

Introduced in 1980, the One-child policy restricted couples to have only one child, or face harsh penalties. The Communist Party of China, the most powerful entity in the country and one that has been in power since 1949, did so in a bid to accelerate economic growth.

For years, including under the first Chinese President Mao Zedong, the matter of birth control was touched upon, though not accorded great importance. Initially, the focus was on the Great Leap Forward (1958-62), a social and economic overhaul programme that was meant to increase production and improve the quality of life for all. However, its radical measures failed to do so and instead led to the deaths of millions through starvation. As the policy was rolled back, population growth bounced back.

By the 1970s, several Five-year Plans from the government saw mentions of reducing the birth rate and the concept was widely promoted, even to the point of coercion. In the 2015 article 'Challenging Myths About China's One-Child Policy', researchers wrote: "The slogan that summarized the three demographic components of the campaign was "later, longer, and fewer" (wan, xi, shao 晚、稀、少)." It referred to encouraging late marriages, longer gaps between the birth of children and fewer children given birth to.

Throughout this decade, TFR fell in China. In fact, the need for a stringent policy in 1980 was questioned later not just over issues of privacy and the state's overreach, but on whether it was needed at all.

Researchers added that it was "a damning indictment of the Chinese record" because neighbouring countries in East Asia achieved rapid declines in fertility rates. They did so "via robust economic growth supplemented by voluntary birth planning campaigns, thus avoiding the massive abuses that China's misguided launching of the one-child program produced." Countries such as Japan and South Korea have also flagged falling fertility rates as a cause of concern of late.



So what other factors are responsible?

In 2016, the One-child policy officially ended and couples were allowed to have up to two children. This was increased to three children in 2021. However, this has not helped achieve the goals of population growth.

As is the case with its two neighbours, China's demographic trends have in part to do with an increasingly educated population. Women's education and employment allow them the agency to make choices about their reproductive health. High pressures of modern society, with increasing competition for jobs, is also a factor.

An AP report said, "People are marrying later and sometimes choosing not to have children. Even those who do often have only one child because of the high cost of educating children in cities in a highly competitive academic environment."

The Financial Times said in a recent report, "It is a vicious cycle. An economic slowdown should mean young couples delay having children. The resulting decline in fertility rates eventually pushes the economy's productivity rates lower."

How could a falling population impact China?

While the contribution of the Covid-19 pandemic to deaths in a population will drop in 2024, it is likely the broad trend will continue.

The AP's report added that the working-age population between 15 to 59 years, which is seen as being productive in an economy, has now fallen to 61% of the total population. The proportion of those aged 60 and older has increased. Life expectancy has also increased for both men and women over time as a result of advanced healthcare systems.

In the short run, the trend will result in the need for greater investments in elderly care, including palliative care, and hiring more medical professionals and nursing staff. In the longer run, it could lead to greater pressure on the young population to support the 'dependants' (those under the age of 15 and over the age of 59). It also comes at a time when China's overall economic growth is lower than expected and yet to go back to the highs it reached in the 2000s.

The AP report further noted how Chinese President Xi Jinping said last October that it is necessary to strengthen guidance for young people's views on marriage, parenthood and the family, and to promote policies that support parenthood and actively cope with the ageing of the population. "We must tell good stories about family customs, guide women to play a unique role in promoting the traditional virtues of the Chinese nation and establishing good family customs, and create a new culture of family civilisation," he was quoted as saying.

EXPRESS VIEW ON SOUTH KOREA'S DOG-MEAT BAN: SOMETHING ABOUT DOGS

What's the difference — from an objective moral lens — between pigs and goats and dogs? They all walk on four legs, they were domesticated by humans. As far as intelligence and emotion are concerned, the jury is out — pigs, especially, can be quite bright. The answer, perhaps, lies in what Jules Winnfield (Samuel Jackson) said to Vincent Vega (John Travolta) in Pulp Fiction: "... dogs got personality, personality goes a long way." It may well be that the undeniable charm of the Canis Familiaris has led to centuries of culinary tradition being upended in South Korea. Earlier this month, the country passed a law banning the breeding, slaughter and sale of dog meat.



Over the years, there has been much international criticism of South Korea's consumption of dogs. The culinary practice, though, has been on the decline, limited now largely to older people, nostalgic for a traditional meal. Activists have highlighted the cruelty dogs bred for meat are subjected to, from unhygienic living conditions and life in cages to disease and deprivation. There have also been high-profile supporters of the ban. President Yoon-suk Yeol and First Lady Kim Keon are family to many fur balls and made their opposition to the consumption of dogs well known.

Yet, is there a germane difference between the cruelty that canines face in South Korea and other animals bred for food? The answer is important, especially in contexts where policing dietary choices is often a weapon against the weak. The difference between dogs and cows, pigs, goats and sheep, is that dogs were not domesticated — at least not widely — for food. In fact, there is research to show that humans as we know them — with language and emotion — evolved with and even through dogs, in a sort of emotional symbiosis. Or maybe that's just what people tell themselves as they stare into puppy eyes while enjoying lamb chops.

SECOND COMING

For the newly elected 58-year old Prime Minister of Bhutan, understatement and modesty are often devices to overpower his audience. Stepping up to the podium at the 'Vibrant Gujarat' conclave in India in 2015 during his previous tenure (2013-18), Tshering Tobgay faced a daunting task: to make an impression with others at the event, including host Prime Minister Narendra Modi, U.S. Secretary of State John Kerry and UN Secretary General Ban Ki Moon.

"Our economy is small, with a GDP of barely \$1.7 billion, I am acutely aware that many of the delegates here are worth more individually," he began, saying in fluent Hindi that he was on an "economic pilgrimage" to India.

Once the laughter died down, however, he came in for the punch. "Our economy may be small, but we have used our resources wisely. Healthcare, for example, is completely free, so is education. Our economy may be small, but it is green and sustainable," he added.

"Bhutan is open for business," he said, but that only "sustainable" investment would be welcomed, one that folded in with Bhutan's Gross National Happiness (GNH) philosophy, that he said was more important than the GDP of a country.

His speech came in for thunderous applause, with many of the leaders no doubt wondering if they had been unexpectedly upstaged. Few knew that the seemingly modest bespectacled young man wearing a traditional Bhutanese 'Goh', had once studied at school in India, Dr. Graham's Home in Kalimpong.

He then graduated from Bhutan's eastern Sherubtse College, took an undergraduate degree in mechanical engineering at the University of Pennsylvania while on a UN scholarship, and a Master's degree in Public Policy at Harvard's Kennedy School. After a few years in civil service, he resigned to help found Bhutan's first registered political party — the People's Democratic Party (PDP).

After being elected again this month, five years after he was ousted by voters in the first round of previous elections in 2018, Mr. Tobgay repeated the same words from nearly a decade ago. "Bhutan is open for business," he posted online this week. This time, the words have an urgency to them, as he takes over the economy at a time of considerable cross-winds in the country, with

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



the post-pandemic impact on tourism and growth, high inflation and high unemployment, as well as low currency reserves (about \$464 million).

'Egg between rocks'

The announcement last month by Bhutan's King Jigme Khesar of plans for the world's first carbon-negative Smart City called the 'Gelephu Mindfulness City' in the south of the country bordering Assam is a gambit to reverse those trends, one that will need both heavy initial infrastructural investment, and intense efforts by the government to shore up international ties. Maintaining ties with Bhutan's two big neighbours, in a small country that often likens itself to the "egg between two rocks", remains the most sensitive task. Mr. Tobgay will be watched most closely for his efforts to resolve boundary issues with China, while keeping ties with India steady. Mr. Tobgay's constituency, Haa, lies close Bhutan's borders with China and India at the tri-junction near the Doklam Plateau, the point of the 2017 military stand-off.

Amid the uncertainty, it is perhaps some comfort with Mr. Tobgay's experience at the helm, and his push for the economy that won his party a massive 30 of 47 seats in the election. "We are a small population and if we take our foot off the pedal on the economy, our youth are going to migrate in larger numbers, that would be difficult to reverse," he told The Hindu in an interview in December.



DreamIAS



NATION

EXPRESS VIEW ON MODI-PUTIN CALL: THE NEW MULTI-ALIGNMENT

The current moment in international affairs is marked by renewed great power rivalry. The conflicts in Europe and West Asia – between Russia and Ukraine, Israel and Hamas – and the broader tussle between the US and China on economic, technological and strategic fronts make it tempting to view the global scenario in binaries. Two recent events, however, show that New Delhi has managed to engage with diverse partners who are often at odds with each other. If India's non-alignment during the Cold War was — in principle if not practice — defined by its claim of equidistance from the two blocs, its current “multi-alignment” is guided by national interest and the need to forge bilateral relationships.

On Monday, Prime Minister Narendra Modi and Russian President Vladimir Putin had a phone conversation in which they reportedly discussed the “special and privileged strategic partnership” between the two countries, the Ukraine conflict and a further deepening of bilateral ties. Around the same time, External Affairs Minister S Jaishankar was concluding a two-day visit to Iran, where he met his counterpart and other senior officials and finalised cooperation on developing the Chabahar Port. Russia and Iran are, in a sense, on the “other side” vis-a-vis India and China.

In the early stage of the Ukraine conflict, the US put considerable pressure on Delhi to take a stronger position against Russia's aggression. Iran, too, is embroiled in a regional cold war with Israel and Saudi Arabia — India has deep partnerships with both nations. That it has managed to maintain these bilateral ties even as its partnership with the US and Europe grows is significant. Significantly with both nations, Delhi hasn't compromised on its core principles: PM Modi reportedly reiterated India's position to Putin — that war cannot be a solution and Jaishankar communicated zero tolerance for terror and how the Houthi attacks on merchant vessels harm India's interests.

It is equally important to recognise the underlying conditions that have allowed New Delhi room to manoeuvre on the global stage. The first of these is India's continuing economic rise. The size of its market as well as its potential for future growth give Delhi both strategic and diplomatic heft. Second, as China has grown more aggressive in Asia, and beyond, many in the US and the West see India as a crucial regional counterbalance. Among the many factors that make India an attractive partner is its credentials as a liberal, pluralist democracy. As it continues to navigate the choppy waters of geopolitics and geoeconomics to secure its interests, India must ensure it does not slip on either front.

EXPRESS VIEW ON INDIA-MALDIVES RELATIONS: DON'T OVERREACT

Since the election of Mohamed Muizzu as president, Maldives has undoubtedly been moving away from India and closer to China. The China-Maldives joint statement at the end of Muizzu's visit bears testimony to their bonhomie. The trip saw barely veiled references to India's “bullying”. Then on Sunday, Ahmed Nazim, policy director at the Maldives President's office reportedly said that the “Maldivian delegation” at the first India-Maldives High-Level Core Group meeting “proposed the removal of Indian troops by March 15”.

The deadline did not find a mention in the official statements by the foreign offices of the two countries. The statement, coming as it does on the heels of the controversy over the juvenile



remarks by Maldivian ministers about Prime Minister Modi's Lakshadweep visit, deserves attention. But an outsize reaction must be avoided.

Muizzu's turn to Beijing may seem like a decisive shift but it is of a piece with the political see-saw in Male, which has had an unfortunate effect on the country's external orientation. Muizzu's predecessor, Ibrahim Mohamed Solih, was seen as being pro-India and the current president ran on an "India out" campaign.

The withdrawal of Indian troops from the country was a poll promise, more political than strategic — India reportedly has less than 90 soldiers in Maldives. Solih's predecessor Abdulla Yameen tilted towards Beijing. The fact that India plays a significant role in Maldivian politics should not be surprising.

Militarily, economically and strategically, India looms large over its neighbours. Some aspects of India's internal politics — expansionist rhetoric, conflating religion and illegal migration during polls — too can make many in the neighbourhood uncomfortable and be used to whip up sentiments by those seeking power. Social media jingoism and calls for boycotting a smaller neighbour do not help matters.

How should Delhi react to the Muizzu government's snubs? The answer is clear and was framed by External Affairs Minister S Jaishankar on Saturday: "... politics is politics," he said and added that "it can't be guaranteed that every country will support or agree with India every time." Smaller countries like Maldives will do their best to leverage the rivalries among greater powers — in this case, India and China. What makes the current "India Out" push disturbing is the all-or-nothing approach. There seems to be little recognition of the realities of geography or convergent interests. The fact remains that Maldives is a mere 700 km from the Indian coast and over 6,000 km from China. From the tsunami in 2004 to the drinking water crisis a decade later, India was the first to rush to the Maldivians' aid. At the same time, China's strategic interests in the Indian Ocean make smaller littoral states perfect targets for Beijing's diplomatic outreach. Delhi must continue to engage with Male, as well as the people of Maldives. As the regional power, it need not be thin-skinned.

LOOKING FOR JOB OPPORTUNITIES IN ISRAEL? READ THE FINE PRINT

As officials in at least two States — Uttar Pradesh and Haryana — prepare to screen thousands of applicants for jobs in Israel, activists and trade unions say the Union government is bypassing protections it offers for workers going to conflict zones abroad.

These workers will not even be required to register themselves on the "e-migrate" portal run by the External Affairs Ministry, and several Ministries and agencies have disclaimed responsibility for their welfare and safety.

Official promotional documents accessed by The Hindu give no details of contractual protections. They say the workers will have to pay for their tickets, apart from a facilitation fee of ₹10,000 charged by the National Skills Development Corporation. They will not receive any insurance or medical coverage, and job guarantees which the government insists on for those heading to other labour markets.

Activists are planning to move the court after the NSDC issued a detailed document calling for workers. Calling the move "inhumane", the activists condemned the government's decision to fast-track recruitment.



The process involves the hiring of construction workers, nurses and caregivers even while Israeli operations continue in Gaza and the West Bank. The latest push to screen Indian workers comes after Israeli Prime Minister Benjamin Netanyahu requested Prime Minister Narendra Modi to “advance” the date of arrival of workers, during a telephone call on December 19.

“This step is against Indian ethos. We are for a ceasefire in Israel. We are concerned about the safety and security of workers,” Amarjeet Kaur, general secretary, All India Trade Union Congress (AITUC), told The Hindu, adding that trade unions now plan to approach the courts. A pamphlet linked to the NSDC portal billed the job-call as a “passport to dreams abroad”, and a chance to “discover new horizons in Israel”. It lists 2,000 openings for plastering workers, 2,000 for ceramic tile workers, and 3,000 each for iron bending and frame workers. Monthly salaries are approximately ₹1.37 lakh (6,100 Israeli shekels), from which accommodation, food, and medical insurance costs will be deducted. Advertisements placed by the employment departments of U.P. and Haryana in January have each advertised 10,000 jobs, for which screening will take place.

Passing the buck

While various government agencies formally distanced themselves from the documents themselves from the screening call put out in the name of NSDC International, government sources confirmed that the recruitment process will begin this week with interviews and screening in several cities. NSDC Chief Executive Officer Ved Mani Tiwari told The Hindu that the advertisements had been issued by the State governments, not by the NSDC. “We are not a recruiting company. Some State governments have invited applications for jobs in Israel and our mandate is to provide skill training for workers,” Mr. Tiwari said.

The Union Labour Ministry declined to comment on the plans, as did Haryana Labour Minister Anoop Dhanak. “It is the External Affairs Ministry that monitors such migration of workers,” an official said on condition of anonymity. However, the Ministry declined to reply to a detailed list of questions sent by The Hindu asking what kind of assurances were being requested from the Israeli labour agency — the Population and Immigration Authority, known as PIBA. Officials said that the recruitment was taking place as a “B2B” or business-to-business arrangement, offering little clarity on who will actually be responsible for the eventual fate of the workers.

Some 80 to 100 foreign workers had been killed during the October 7 attacks against Israel and the conflict that has followed, leading many countries — including India — to fly out their expatriate citizens. However, only 1,300 of the 18,000 Indian citizens in Israel opted for the government-run flights as part of Operation Ajay.

The PIBA declined to comment on specific questions about the welfare of the workers, but sources said that they would proceed on the basis of an agreement signed with the Indian government. Last November, the Ministry of Skill Development and Entrepreneurship, which oversees the NSDC, signed a three-year agreement with Israel on the “Facilitation of the temporary employment of Indian workers in specific labour market sectors (construction and care-giving) in Israel”.

MOTIVATED LITIGATION

In staying the execution of an Allahabad High Court order to appoint a commissioner to inspect the Shahi Idgah Mosque in Mathura, the Supreme Court has stalled for a while a likely move to get the status of the place of worship altered through the courts. The top court has halted the



appointment of the commission after finding it was sought on vague grounds without any particular reason. It has also taken into account a recent precedent in which the Supreme Court has ruled that civil courts should not grant any interim relief if there is a question about the maintainability of the suit or if the suit is barred by law. The committee of management of the Shahi Idgah Mosque has questioned the maintainability of the suit in the name of the deity, Bhagwan Sri Krishna Virajman, and other Hindu worshippers on the ground that it is barred by the Places of Worship (Special Provisions) Act, 1991, which prohibits the conversion of the religious character of any place of worship as it was on August 15, 1947. It also bars any fresh suit aimed at altering the status of a place of worship. Hindu devotees have been claiming that the mosque, located adjacent to a Krishna temple there, is standing on the birthplace of Lord Krishna. Several suits are pending in connection with the mosque in Mathura and the Allahabad High Court has transferred all the suits to itself for disposal.

The appointment of a commission to inspect the premises appeared to be an exercise to show that architectural features and artefacts of Hindu provenance could be found. The legal strategy is similar to the one through which Hindu worshippers obtained official sanction for gathering purported evidence to back their case at the Gyanvapi Mosque, Varanasi, where the Archaeological Survey of India (ASI) has been asked to do a scientific survey. The Mathura dispute, however, was settled through a compromise between the Sri Krishna Janmasthan Seva Sansthan and the Shahi Idgah Trust in 1968, and implemented through a decree in 1973. As part of the settlement, the Sansthan had given up a portion of the land to the Idgah. The current suits challenge this compromise as 'fraudulent' and seek the transfer of the entire parcel of land to the deity. The use of the judiciary to make a concerted attack on Muslim places of worship by claiming that they were built on structures of Hindu origin has become an unfortunately regular feature. Courts must be wary of encouraging such motivated litigation, and determine at the earliest stage whether such suits are maintainable in view of the statutory bar in the 1991 Act.

WHAT IS 'PRIOR APPROVAL', AND WHY IS IT NEEDED BEFORE INVESTIGATING PUBLIC OFFICIALS ACCUSED OF CORRUPTION?

The Supreme Court on Tuesday delivered a split verdict in former Andhra Pradesh Chief Minister Chandrababu Naidu's plea to quash an FIR in the alleged skill development scam case. Justices Aniruddha Bose and Bela M Trivedi disagreed on whether the AP CID was required to seek 'previous approval' from the state government before conducting an inquiry into the allegations against Naidu.

Justice Bose held that prior approval was necessary, which the CID did not have when it opened the inquiry. Justice Trivedi held it was necessary to seek approval only to investigate offences committed after 2018, the year this requirement was introduced.

Prior approval requirement

In 2003, the Delhi Special Police Establishment Act, 1946, which governs agencies like the CBI, was amended. Under Section 6A, it was required to seek approval from the central government before investigating alleged offences under the Prevention of Corruption Act (PCA), 1988, if the employee in question held a rank higher than joint secretary.

The Supreme Court struck down this requirement in 2014. Four years later, the PCA was amended and a similar provision was introduced as Section 17A. Under this section, if a public servant commits an offence under the Act while discharging their official duties, investigators must



receive approval from the central/ state government, or a competent authority to open an inquiry or investigation.

Challenge to provision

In 2018, the NGO Centre for Public Interest Litigation (CPIL) challenged the constitutionality of the previous approval requirement. It argued that it would be “extremely difficult” to determine if an offence was committed by a public official while they were discharging their duties if no investigation could be conducted in the first place. Placing this burden on police officers and investigating agencies would in effect protect corrupt officials, and the levels of corruption would rise.

The CPIL also pointed to the 2014 case in which the Supreme Court had struck down a similar requirement.

In July 2023, the case was listed before a Bench of Justices B V Nagarathna and Sanjay Karol.

‘Previous approval’ in SC

The case involving Chandrababu Naidu is not the first time that the SC has decided whether the ‘previous approval’ requirement should apply retrospectively. Last September, a Constitution Bench held that officials cannot claim immunity under Section 6A, even if the offence was committed before this provision was struck down. (CBI v R R Kishore)

In 2018, when former Delhi Police Commissioner Rakesh Asthana was being investigated for allegedly accepting bribes, then Additional Solicitor General P S Narasimha had opined that there was no need for prior approval to lodge an FIR.

The case against Asthana reached the Supreme Court in 2021 but was adjourned repeatedly without being heard, and was declared infructuous after Asthana retired in 2022.

EXPRESS VIEW ON ATTACKS ON INTERFAITH COUPLES: THE MORAL POLICE AGAIN

Across states, individual rights – including those enshrined in the Constitution – seem to be under constant threat from the mob, acting as a self-styled moral police. Last week, two horrific incidents of assault in Karnataka underlined, once again, the disturbing intolerance for inter-faith relationships among consenting adults – real and imagined – and the casual resort to violence. In these cases, the criminals objected to Muslim women being involved with men from other communities. Their logic is the same as those who raise the bogey of “love jihad” and the prevalence of this disturbing phenomenon across communities and geographies needs a more robust response from the criminal-justice machinery.

On January 13, seven men were arrested after they assaulted two people – mistaking them for an inter-faith couple – at a park in Belagavi city. The young Muslim woman was with her cousin, a Hindu. A day later in Haveri district, five men barged into a hotel room and allegedly assaulted a man and attacked and raped the woman. They recorded and circulated videos of their criminal act. State Home Minister G Parameshwara said the law will take its course. Perhaps it will. But the violence on couples for “love jihad” in UP, Haryana Rajasthan, or in the case of Karnataka between Muslim women and non-Muslim men, the casual manner in which incidents of violence are recorded and distributed online, call for a broader response. Chief Minister Siddaramiah had promised action against such crimes when he took office. Thus far, it seems his government has



fallen short. Instead, his colleague, Parameshwara, is engaging in whataboutery by asking, “Weren’t there crimes against women doing BJP’s rule”.

Governments – whether of the Congress, BJP or any other party – need to draw sharp lines. Leaders and parties cannot hint at even tacit support for such acts of violence. Unfortunately, many of those who have sworn their oath on the Constitution have equivocated on the issue of inter-faith and sometimes, even inter-caste relationships. Another disturbing aspect of the attack in Haveri was the culprits using the internet to broadcast their crime. The misuse of technology in this manner requires the police to increase their capabilities in dealing with cybercrime. Campaigns that address the stigma that often gets attached to victims of sexual violence must be launched. As of 2021, the conviction rate in India for crimes against women was an abysmal 26 per cent. That figure represents a shortcoming that must be urgently addressed by investigating and prosecuting agencies. For the broader political class and civil society, the task is simple: The freedom of choice of individuals must be protected, not sacrificed at the altar of thin-skinned prejudice.

EXPRESS VIEW ON ANNAPOORANI TAKEDOWN: COSTS OF CAVE-IN

The removal of the Tamil film *Annapoorani* from OTT platform Netflix and the apology from its makers point to a disturbing trend of capitulation to the whim of the moral police, whose opprobrium regularly threatens to cramp the freedom of expression guaranteed by the Constitution. At the heart of director Nilesh Krishna’s film is an upper-caste Hindu woman who harbours an innocuous dream — to follow her father’s vocation, but to do it her way. This means stepping out of her conservative family home and into the wide world, where she will have to master the art of cooking items that are anathema to her strictly-vegetarian, devout household — non-vegetarian food. Support comes in the form of her Muslim love interest, who helps her conquer both the kitchen and her own prejudices.

A storm of “hurt” religious sentiments at the film’s purported promotion of “love jihad” and non-vegetarianism saw its removal from Netflix. But what the withdrawal essentially does is to cede ground to the prejudices of a faceless mob. It also points to the blind spots and limits of the OTT “revolution” that had arrived with the promise of greater openness and choice. It was a win-win for directors, producers and viewers in that it freed them from the constraints of access and certification boards and made room for content that was original and diverse and catered to a wider demographic. But, from the web series *Tandav* on Amazon Prime in 2021 to *Annapoorani* on Netflix, the increasing weaponisation of “hurt sentiments” that results in legal action, calls for boycott, and raises the spectre of violence, has seen global new media behemoths protect their commercial interests by caving in to majoritarian demands. At a time when social media amplifies messages of polarisation with alacrity and when there seem to be insufficient protective safeguards, their first instinct is to limit the damage.

The challenge, and the pushback, lies closer home. Any possible solution will involve all stakeholders to come together to thwart the mob’s sway. Creators of content must hold their ground if spaces in which they can give free rein to their imagination have to be protected and widened. The onus is also on audiences to reclaim their freedom to watch what they want and steer clear of that which they find offensive. If diversity and freedom of expression are threatened into submission, the only one poorer for it are the people.



EXPRESS VIEW ON CROSSDRESSING FOR LOVE: THE LOVER'S TEST

In 1746, an Englishman, Charles Hamilton, married Mary Price. Hamilton was born a woman and had been living as a man since the age of 14. Upon discovery, Hamilton was sentenced to hard labour and public whippings. British novelist Henry Fielding coined the term the “female husband” in a fictionalised and sensationalised account of the incident. There are numerous accounts of lesbian lovers (and transgender men, possibly like Hamilton) in literature who would don male attire and present themselves as men to be able to live with the one they loved. Shakespearean plays such as *The Twelfth Night* and *The Merchant of Venice* have both men and women cross-dressing for a variety of purposes.

He might not yet be immortalised in literature but the latest addition to this esteemed list of cross-dressers is one Angrez Singh. Hailing from Punjab's Fazilka, Singh impersonated his girlfriend so he could take the multi-purpose health workers exam held by the Baba Farid University of Health Sciences on her behalf. He walked into the examination hall in a salwar-kameez and was quickly caught and handed to the police. For the examination, Singh had even got a fake Aadhaar card, voter card and I card made in the name of Paramjeet Kaur (his girlfriend). Since the incident came to light on January 7, the internet has offered overwhelming support and admiration to Singh. Comments like “This or nothing”, “Relationship goals”, “#Truelove” are all over the internet.

In a society that remains biased against cross-dressers and effeminate expressions in men, Angrez Singh is a refreshing deviant. To willingly put oneself on the wrong side of the law just to make sure that one's girlfriend passes an exam is the epitome of loyalty, albeit a slightly warped idea of it. Singh may have failed to help Kaur pass her exam, but he passed the lover's test with flying colours.

CLOSER TO CLOSURE

The long arm of the law finally caught up with Savad, a fugitive in the notorious case of chopping off the palm of a college professor in Kerala's Thodupuzha, 13 years after the crime. Sleuths of the National Investigation Agency (NIA) arrested him, the first accused, from a village in northern Kerala's Kannur where he was living under a fake identity, on January 10. The agency will rightly seek his custody in order to unearth the latent network of the banned Popular Front of India (PFI), which is believed to have planned the barbaric assault on the professor in July 2010 and arranged for Savad's life in hiding thereafter. Religious extremists targeted Professor T.J. Joseph on his way home from church for drafting a question paper with supposedly a ‘blasphemous’ reference to the Prophet; actually, it was an adaptation of a passage from an essay on a screenplay written by noted Malayalam film-maker P.T. Kunju Muhammad. The State was able to ensure that the incident did not spark communal tensions, but it set off a series of irreversible losses for the professor. With the Catholic church, which managed the college where he was teaching, turning its back on him, he was terminated from service, with a recall on the eve of his retirement made possible, ruefully, by the suicide of his disconsolate wife, as he recalls in his memoirs, *A Thousand Cuts* (2020).

The NIA took over the investigation in 2011. While it was able to get the conviction of 19 of the accused for various offences including those under the Unlawful Activities (Prevention) Act in the two-phase trial, the fact that the key accused remained at large prevented its closure. The agency announced a bounty of ₹10 lakh for information on Savad. His arrest has shifted the focus to the conspirators who masterminded the assault and the underlings who harboured him. Given that it was the outlawed Students Islamic Movement of India that metamorphosed into the National



Development Front and subsequently into the PFI, the key to averting its resurgence in another avatar lies in uprooting the entire network of its underground supporters. Prof. Joseph has, as his words suggest, overcome any ill-will or feeling of vengeance towards his assailants, but he rues that action against the foot soldiers of religious terror would not guarantee peace and harmony in society. For that to happen, their handlers should be brought to book. It is vital that the NIA stays the course and prosecutes the key accused. The terror network that plotted the heinous attack must be disabled entirely.

UNDERSTANDING THE TENTH SCHEDULE

The story so far:

The Maharashtra Assembly Speaker has refused to disqualify 40 MLAs of the Eknath Shinde faction after recognising it as the real Shiv Sena. He held the appointment of whip by this group as valid. He also did not disqualify 14 MLAs of the Uddhav Balasaheb Thackeray (UBT) group due to technical reasons under the Tenth Schedule.

Why was the Tenth Schedule made?

The defections of legislators during the 1960s and 70s from their parent parties created political instability in many States, bringing down elected governments. Therefore, to ensure the stability of elected governments, the 52nd constitutional amendment introduced the 'anti-defection' law through the Tenth Schedule in 1985. This Schedule provides that a member of a House of Parliament or State legislature who voluntarily gives up the membership of their political party or votes against the instructions of their party in a House are liable for disqualification from said House. This instruction with respect to voting is issued by the 'whip' of a party. A 'whip' is a member of the 'legislature party' in a House who is appointed as such by the respective 'political party'. The 'political party' is the entire organisation of a party including the legislators, while the 'legislature party' is only the members of a political party in a House of Parliament or State legislature.

The Tenth Schedule originally provided for two exceptions that would not render the members liable for disqualification. First, one-third members of the 'legislature party' splitting to form a separate group (para 3). Second, merger of their 'political party' with another party that is approved by two-third members of its 'legislature party' (para 4). However, considering the need to strengthen the 'anti-defection' law, para 3 was omitted in 2003.

What are the issues involved?

With the deletion of para 3, there have been instances of two-third members of a legislature party 'practically' defecting but claiming to be the original political party in order to escape disqualification. There have also been instances where more than two-third members of a State 'legislature party' of a national political party merged themselves with another political party to escape disqualification. This happened in September 2019, in Rajasthan, when all six Bahujan Samajwadi Party MLAs merged themselves with the Congress Party and in September 2022, in Goa, when eight out of 11 Congress MLAs merged themselves with the BJP.

The authority to decide on the disqualification of members is vested in the Speaker of the House. While they are expected to perform this constitutional role in a neutral manner, the past instances have hardly inspired confidence with Speakers favouring the ruling dispensation. The Supreme



Court in *K. M. Singh versus Speaker of Manipur (2020)*, recommended that Parliament amend the Constitution to vest these powers in an independent tribunal headed by judges.

What happened in Maharashtra?

In June 2022, a faction of the Shiv Sena headed by Eknath Shinde moved with 37 of the 55 MLAs and claimed to be the real Shiv Sena. It appointed Bharat Gogawale as its whip. However, the UBT faction claimed that they were the original political party and that Sunil Prabhu of its faction will continue to be the whip.

The Speaker has now recognised the Eknath Shinde faction as the real Shiv Sena and held the appointment of whip by this group as valid. This was based on the strength of members of the Shinde faction and the party's 1999 constitution. The Speaker based on this ruling refused to disqualify 40 MLAs of the Shinde faction. He also refused to disqualify 14 MLAs of the UBT group as the whip instructions from Bharat Gogawale could not be physically served on them.

What are the reforms needed?

The Supreme Court in *Sadiq Ali versus Election Commission of India (1971)*, laid down the three-test formula for determining which faction is to be recognised as the original political party by the Election Commission. These are aims and objects of the party; its affairs as per the party's constitution that reflect inner party democracy; and majority in the legislative and organisation wings.

The first test is subject to competing claims by rival groups. But it is lack of inner party democracy that results in most of these defections. In fact, the Election Commission in February 2023, recognised the Eknath Shinde faction as the real Shiv Sena, solely based on votes polled by legislators supporting Eknath Shinde in the Maharashtra Assembly elections of 2019. An authoritative Supreme Court judgment in these matters and setting up of an independent tribunal to decide on disqualification of members will reduce the ambiguities surrounding the Tenth Schedule. The real reform required is institutionalising internal democracy through regular inner-party elections in our political parties with strict monitoring by the Election Commission.

EXPRESS VIEW ON MANIPUR CRISIS: STATE GOVERNMENT, STEP UP

Recurring instances of violence in Manipur point to the obvious — the unrest that erupted in the state last year in May is far from over. This week alone, a mob targeted the 3rd Indian Reserve Battalion in Khangabok, Thoubal; Thoubal Police Headquarters was also attacked. Though authorities managed to repel the mobs in both instances, three BSF personnel were injured. In Moreh, a beleaguered border town, an Indian Reserve Battalion jawan and a havildar on deputation with the Manipur police commandos were killed and two others injured. The state's Home Department Commissioner has put in a request with the Home Ministry requesting "air assets" in Imphal to meet with similar emergency situations.

These instances, only the latest in a dismal series, highlight how eight months into the ethnic conflict, the state government is yet to step up to its challenge. The attacks on security personnel are disturbing on multiple counts. After the initial inertia, the state has seen a larger deployment of security forces, including the Army and paramilitary forces, to bring the situation under control. Yet, accusations of partisanship are rife on the ground, posing hurdles in their way. Despite the Army chief's recent assertion of growing stability in the state, violence against the security forces also highlights that force alone cannot tame a situation that requires sensitivity and compassion

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



in equal measure. The instability in Myanmar, where Arakan insurgents claim to have taken control of Paletwa town in Chin state, that lies close to Myanmar's border with India and Bangladesh, is a troubling development, compounded by the fact that of the estimated 4,500-odd arms looted from state police armouries in Manipur in the early days of the ethnic clash, only about 30 per cent have been recovered so far. This means that unaccounted-for arms remain in circulation in a state where borders and buffer zones have deepened along ethnic lines between the hill and valley people and where each feels distrust for the other and for those meant to govern and protect them.

In June last year, Home Minister Amit Shah had announced the formation of a peace committee, with representatives from different ethnicities, political parties and civil society, to begin the process of healing. The committee ran into internal differences soon after and is yet to meet. In the unending season of anger and grief in the state, this shows both a lack of will and an obduracy in failing to acknowledge that far more needs to be done.

ON DELISTING SOME KUKI-ZOMI TRIBES

The story so far:

The Manipur Government has been asked by the Centre to examine a representation seeking the delisting of certain Kuki and Zomi tribes from the Scheduled Tribes (ST) list of Manipur. Following this, Chief Minister N. Biren Singh announced in Imphal that a special committee might be formed to look into it. The representation was sent by Maheshwar Thounaojam, National Secretary of the Republican Party of India (Athawale) in Manipur, who argued for the inclusion of Meiteis in the ST list by seeking the exclusion of certain Kuki and Zomi tribes.

What led to the representation?

This attempt to initiate a process for the possible de-scheduling of certain Kuki and Zomi tribes comes as the State runs into the eighth month of the ethnic conflict between the valley-based Meitei people and the hills-based Kuki-Zo (ST) people. The conflict, that began on May 3, 2023, is said to have been triggered by an order of the Manipur High Court, which directed the State government to send a recommendation on the Meiteis' inclusion in the ST list to the Centre.

Now that a similar request has been forwarded by the Centre to the State government, this time over a representation to delist Kuki and Zomi tribes, there is potential for the widening of existing divides among the communities in the State. Among the key reasons for which Meiteis have argued for ST status has been their inability to own land in the forested hill districts, where only STs can own land. This is the first time members of the Meitei community have tried to argue for their inclusion on the ST list by arguing that certain Kuki and Zomi tribes did not deserve to be on it. This move could also have implications on the criteria used to define groups as STs; unchanged since the Lokur Commission introduced them in 1965.

What does the representation say?

In Mr. Thounaojam's representation, objections have been raised against the inclusion of three specific entries in the ST list of Manipur — "Any Mizo(Lushai) Tribes", "Zou", and "Any Kuki Tribes" over time. The principal argument being made for the exclusion of these three entries has been that they are not "indigenous" to the land of Manipur. The representation claimed that there had been no mention of these particular tribes residing in the land of Manipur in pre-Independence Censuses. It also said that the ambiguity of "Any Mizo (Lushai) Tribes" and "Any



Kuki Tribes” in the ST list has allegedly aided illegal immigrants from Myanmar and Bangladesh in obtaining benefits meant for STs in India.

Do these claims hold true?

The argument that these communities were not residing in the land of Manipur at the time the first Constitution (Scheduled Tribes) list was published in 1950 does not hold ground. To begin with, this order had listed three tribes for Manipur — “Any Kuki Tribe”, “Any Lushai Tribe” and “Any Naga Tribe”, under which respective sub-tribes were to be subsumed. Secondly, there is no empirical evidence, as of yet, to show that these tribes names’ presence in the ST list has aided any form of organised illegal immigration into Manipur, beyond individual instances and the rhetoric presented by the Meitei community.

However, the First Backward Classes Commission had noted in its 1955 report that these three broad tribe classifications originated under the British administration, adding that several communities such as Paite and Hmars refused to be identified under the umbrella of Kukis. Accordingly, the Commission had recommended that for tribes of Assam and the hills of Manipur, individual tribe names be added to the ST list instead of umbrella tribes, for which these lists must be redrawn entirely given the dated nature of the information. Subsequently, when the ST list for Manipur was revised in 1956, it included 29 entries with individual tribe names, save for one — “Any Mizo (Lushai) Tribe” — which was retained. This list also included the tribe “Zou”. But Mr. Thounaojam’s representation has claimed that neither of these entries were specifically recommended by the First Backward Classes Commission.

Again in 1965, when the Lokur Commission prepared its report, it had also noted that there has been a “splintering tendency” among Kuki tribes. “Sub-groups and even clans wish to establish themselves as distinct entities in the political and social structure,” the Commission had said of the Kuki tribes. This “splintering tendency” among the Kuki tribes grew over the years, according to representatives of Kuki-Zo communities in Manipur, which eventually led several communities to adopt their unique community’s identity. By the end of the century, most people who would be considered under the umbrella of Kukis had already established their independent tribe names that had been added to the ST list over the years. Yet, there remained a need to address the need of a minority number of people who wanted to identify as Kukis, a Zomi representative explained. As a result, in 2002-2003, the entry “Any Kuki Tribes” was added to the ST list of Manipur. But the Bhuria Commission Report of 2002-2004 on Scheduled Tribes had observed that this particular addition had led to confusion about who would be classified under this entry. It had thus recommended mentioning tribe names in the ST list in order to nip “inter-tribe differences” in the bud.

WITH 2 LAKH JOBS IN 70 DAYS, BIHAR RULING ALLIANCE BETS ON A BIG HAUL IN LOK SABHA POLL

The Bihar caste survey and employment generation are emerging as the ruling Rashtriya Janata Dal and Janata Dal (United)-led Mahagathbandhan alliance’s principal poll pitches as the countdown to this year’s general election begins. With the INDIA bloc also taking cue and pitching for a nationwide caste survey on the lines of the exercise in Bihar, Chief Minister Nitish Kumar and his deputy Tejashwi Yadav are now putting focus on creating jobs in every department.

A few months ago, 70,000 recruitments were made by Bihar Police. The State government has already announced that it would recruit about 1,40,000 people in the Health department in the



days to come. In between, the focus has been on the Education department with two events in quick succession where job letters were distributed to over two lakh newly recruited teachers.

‘Over 3.6 lakh jobs’

After the success of the first phase of recruitment (November 2) in which 1,20,000 teachers got jobs, the Bihar Cabinet on December 26 approved State government employee status for four lakh contractual teachers. On Saturday, the State government handed over job letters to another 96,823 teachers at a function at Gandhi Maidan in Patna, bringing the total to 216,823 posts in just 70-odd days.

In Patna, 26,925 teachers from 16 districts were given job letters at the event attended by both the CM and Deputy CM while the rest were given by District Magistrates in their respective districts.

“Soon, the employed teachers will be made government teachers; they just need to clear an exam. Our government is busy in creating a large number of jobs. Until now, more than 3.60 lakh jobs have been given to the youth. Soon, we will reach 5 lakh jobs. We will provide more than 10 lakh government jobs,” Mr. Kumar said in his speech, alluding to the figure promised by Mr. Yadav during the 2020 Assembly election in which the RJD emerged as the single-largest party before going on to form a government later with the JD(U) in August 2022.

The CM stressed that 51% of the total appointments made are female teachers, highlighting the State government’s focus on women empowerment. “Of the over 2 lakh newly recruited teachers, 85% are from Bihar, while the remaining are from Rajasthan, Haryana, West Bengal, Kerala, Maharashtra, Jharkhand, Odisha and Chandigarh. People hailing from Bihar also get appointments in other States,” he said.

In his speech, the Deputy CM asked governments of other States to learn from Mr. Kumar. “Within 70 days, more than 2 lakh jobs have been given by a single department. The Chief Minister made an announcement at Gandhi Maidan last year on August 15 that he will provide 10 lakh government jobs and steps in that direction have gone a long way. We are distributing pens and some people are busy distributing swords,” he said.

‘Brotherhood feeling’

Ambika Sharma from Odisha, another successful candidate, said that there is a feeling of brotherhood as both Bihar and Odisha were together till 1936 as one province after being separated from the Bengal Presidency in 1912.

The Opposition Bharatiya Janata Party had earlier alleged that the jobs were like old wine in a new bottle and people who were recruited earlier were being given job letters now.

SMALLER CITIZENS

The pandemic was difficult for India’s youngest citizens, the children, but the true import of its impact is coming to light now. The Annual Status of Education Report, titled “ASER 2023: Beyond Basics” and released on Wednesday, a survey by the civil society organisation Pratham among rural students aged 14 to 18, reveals that more than half struggled with basic mathematics, a skill they should have mastered in Classes 3 and 4. The household survey, the first field-based one in four years, was conducted in 28 districts across 26 States and assessed the foundational reading



and arithmetic abilities of 34,745 students. In other findings, about 25% of this age group cannot read a Class 2 level text in their mother tongue; boys are, however, better in arithmetic and English reading skills than girls. Overall, 86.8% in the 14-18 year age group are enrolled in an educational institution, but there are gaps as they grow older — while 3.9% of 14-year-olds are not in school, the figure climbs to 32.6% for 18-year-olds. Also, for Class 11 and higher, most students opt for Humanities; while girls are less likely to be enrolled in the science stream (28.1%) compared with boys (36.3%), only 5.6% have opted for vocational training or other related courses.

The proportion of children opting for private tuition nationwide went up from 25% in 2018 to 30% in 2022. Close to 90% of the youngsters surveyed have a smartphone and know how to use it, though many are unaware of online safety settings. The trends, especially the lag in reading and solving simple arithmetic, give an inkling of what ails the education system, and the corrective measures required. The National Education Policy 2020 says the top priority is to “achieve universal foundational literacy and numeracy in primary school by 2025”. The report says all States have made a major push in foundational literacy and numeracy under the NIPUN Bharat Mission, but the numbers show that in a diverse and vast country such as India, there is a lot of catching up to do. While rising enrolment is a good thing, what awaits the students after they finish the compulsory school cycle (Class 8) is not all that rosy, sometimes because they are simply not able to cope with the ambitious curriculum set for the higher secondary level. The Right to Education Act, 2009 may have ensured universal access to education, but there is many a gap to fill before it touches every child in the true spirit of the legislation.

THE IMPORTANCE OF PERIODIC TESTING FOR HUMAN PAPPILOMAVIRUS

January is Cervical Cancer Awareness Month.

Cervical cancer, which develops in a woman’s cervix (the entrance to the uterus from the vagina) is the second-most common cancer among women in India. It is caused by persistent infection by the human papillomavirus (HPV). Almost all sexually active people are infected by HPV at some point in their lives, but usually without symptoms, the World Health Organisation (WHO) states. In most people, the immune system clears up the virus. In some cases, certain high-risk strains of the virus persist in the body and could lead to cancer. India accounts for nearly a quarter of all cervical cancer deaths in the world. It is estimated that every year around 1.25 lakh women are diagnosed with cervical cancer, and nearly 75,000 of them die.

In 2022, the WHO adopted a strategy aimed at eliminating cervical cancer as a public health problem, worldwide. The strategy had three pillars – 90% of girls fully vaccinated by 2030 with the HPV vaccine, this to be done by age 15; 70% of women screened with a high-performance test between 35 and 45 for early treatment of pre-cancerous lesions, and 90% of women identified with cervical disease, to receive treatment.

Though India is unlikely to meet the 2030 goals, the silver lining, says Arvind Krishnamurthy, professor and head, surgical oncology, Cancer Institute, WIA, is a decline in incidence. “Despite not having a robust national screening or vaccination programme as yet, the number of cases are decreasing. This could be attributable to a number of factors including sexual hygiene, age of pregnancy and number of children, use of contraception and the immune status of individuals,” he said.

Dr Krishnamoorthy stressed the need for a combination of awareness programmes, a vaccination programme and regular screening to prevent new cases and deaths. He also pointed to the need



to eradicate stigma through education programmes. “The goal should be to detect at the precancerous stage so they do not progress to full-blown cancer. At that stage, it is 100% curable,” he said.

Cervical cancer screening

Up until some years ago, the gold standard, world over, to screen for cervical cancer, used to be the pap smear, says Jaishree Gajaraj, former president of The Obstetric & Gynaecological Society of Southern India. The pap smear involves the scraping and brushing of cells from the cervix. These cells are then examined. The smear is recommended every three years, for women between the ages of 25 and 65, barring high-risk groups, for whom the recommendation is once a year, says Dr. Gajaraj.

“The problem with the pap smear however is that it requires a cytologist to study the smear, and many places, especially in rural India, may not have access to the test itself, or to cytologists to study the samples. The second issue is that awareness continues to remain low, and even in urban areas where women come forward to do the test, it is difficult to get them to come back for follow-up screenings. Many women believe that if they’ve taken the pap smear once, it is enough for a lifetime, but this is not the case,” she says.

As of 2019, the WHO says, fewer than one in 10 women in India had been screened in the previous five years.

Now, says Dr. Gajaraj, HPV DNA testing is the recommended method for screening for cervical cancer: this involves testing cells from the cervix for infections with any of the HPV types that could cause cancer. The WHO, too, recommends that HPV DNA testing be the first-choice screening method for cervical cancer prevention — these tests are less prone to quality problems and human errors, it says.

Dr. Krishanmoorthy added that self sampling could offer an additional option for cervical cancer screening: “Studies have shown that in the yield of results, samples taken by patients seem to be equivalent to physician-collected samples. Not all women may be able to do it or want to, but it would be useful for them to be given this option,” he says.

The vaccine

There is some history to the HPV vaccine rollout in India: in 2010, a U.S.-based international non-profit PATH, which began a trial of the vaccine in Gujarat and Andhra Pradesh, faced major backlash after the deaths of seven girls. A Parliamentary Standing Committee that looked into the issue in 2013 strongly criticised both PATH and the Indian Council of Medical Research and the Department of Health Research, stating: “The choice of countries and population groups; the monopolistic nature, at that point of time of the product being pushed; the unlimited market potential and opportunities in the universal immunization programmes of the respective countries are all pointers to a well planned scheme to commercially exploit a situation.”

Cervical cancer is one of the most preventable and treatable forms of cancer if detected early and managed effectively. The WHO’s Strategic Advisory Group of Experts on Immunization (SAGE) says that the HPV vaccine is highly effective for the prevention of HPV serotypes 16&18, which cause 70% of cervical cancers.

In a recommendation in April 2022, SAGE stated that its review concluded that even a single-dose of HPV vaccine delivers solid protection against HPV that is comparable to two-dose schedules.



“The new SAGE recommendation is underpinned by concerns over the slow introduction of the HPV vaccine into immunisation programs and overall low population coverage, especially in poorer countries,” it stated.

What are the government’s plans?

There are currently two vaccines available in India that protect against the disease: Merck’s Gardasil and Serum Institute of India’s Cervavac, which was launched last year. A Serum Institute of India spokesperson, in an email, said its vaccine, Cervavac, was priced at Rs. 2,000 per dose. The Institute has a production capacity of around 2-3 million doses of the vaccine, but it plans to expand this capacity, with a target of reaching 60 to 70 million doses.

In 2018 Sikkim became the first State in the country to introduce the vaccine. The vaccine (Gardasil) was provided free, under the State budget. All girls aged between 9 and 14 years were given two doses, separated by six months. Coverage of the first and second rounds was reported at over 95%. In 2022, India’s National Technical Advisory Group on Immunisation (NTAGI) had recommended introducing the HPV vaccine in the country’s Universal Immunisation Programme (UIP). A one-time catch-up vaccine was to be provided for 9 to 14-year-old adolescent girls, and subsequently, with a routine introduction at nine years.

Initially, reports had indicated that the Central government would roll out a vaccination programme in six states in June 2023, targeting girls between the ages of nine and 14, covering 2.55 crore girls. However, this did not materialise. This month, media reports suggested that the drive may be rolled out in the second quarter of this year, to be executed in three phases over three years. Despite these reports though, the Union Health Ministry, as of last week, has maintained that it is yet to take a decision on starting the HPV campaign.

Globally, 100 countries have introduced the HPV vaccine into their national schedule, but significantly, this covers only 30% of the global target population, as per the WHO.

Paediatricians are now recommending the vaccine routinely for girls from the ages of nine to 15, says R. Somasekar, a member of the Indian Academy of Paediatrics. “Giving the dose early ensures the best efficacy and maximum protection,” he says, pointing out that the vaccine can be given to adults as well, as it protects from ano-genital warts. “The ideal age is about 10 to 12 as the vaccine offers the best and longest protection when taken early, but it can be given any time up to the age of 45,” says Dr. Gajaraj.

EXPRESS VIEW ON DELHI’S POLLUTION CRISIS: A DREARY WINTER

Delhi’s problems with poor air quality usually attract attention during late autumn, especially in the run-up to, and after, Diwali. That’s when stubble burning is at its peak in the states neighbouring the NCR. However, data shows that good or even moderately satisfactory air eludes the capital’s residents for most parts of the year, especially in winter. This season has been particularly harsh for the city’s residents this year, bringing back memories of 2016 when the Delhi government was forced to implement the odd-even scheme of road rationing at the Supreme Court’s directive. On Sunday, Delhi registered severe on the AQI register.

The Commission for Air Quality Management (CAQM) — the Union government pollution monitoring agency set up in 2021 — has resorted to a familiar set of measures. It has brought back the ban on the construction and BS-III petrol and BS-IV diesel four-wheelers. These measures



might provide temporary relief. But from the history of the NCR's pollution crisis, one thing is clear — Delhi, and most Indian cities, need an all year action plan to improve air quality.

There is now considerable information on the variables linked to the capital's pollution. But data is only an enabler — it can facilitate action. The CAQM is mandated to do that. But the agency has functioned more like a regulator whose primary responsibility is to implement the Graded Action Response Plan, which comes into play when bad air becomes an emergency.

At times, the Commission has taken stock of measures to control dust in the capital. It needs to do more. CAQM hasn't, for instance, developed a synergy between the different bodies whose work is crucial to ensure that residents in the capital and its neighbourhood breathe clean air — the Delhi government, CPCB, the city's transport department and emission monitoring outfits in the NCR.

In 2019, the government launched the National Clean Air Programme (NCAP) to reduce pollution by 20-30 per cent by 2024 compared to 2017. In 2022, the programme's goalposts were shifted — 40 per cent reduction in pollution by 2026. Most independent studies show that progress under NCAP has been slow and at best incremental. Last month, the Centre told Parliament that cities in Delhi-NCR have utilised less than 40 per cent of the funds allocated to curb air pollution. The omissions are clearly at multiple levels. Measures to improve matters, even when they have been made, are not showing results.

HOW SATELLITES TRACK THE WEATHER

The story so far:

Large parts of North India, including Bihar, Uttar Pradesh, Uttarakhand, Haryana, Delhi, and Punjab, have been grappling with heavy fog since December 2023. At around 2 pm on January 16, for example, the India Meteorological Department (IMD) warned of a high likelihood of "very dense fog" in Haryana, Chandigarh, and Delhi, where it said visibility would be lower than 50 metres in "night/morning hours". It issued similar alerts for Uttar Pradesh, Punjab, and Madhya Pradesh, where it said visibility could be limited to 50-200 metres. On the social media platform X (formerly Twitter), the IMD has accompanied these alerts with maps from the INSAT 3D satellite, and sometimes from the INSAT 3DR satellite. The fog in these maps is both clearly visible and annotated by the IMD.

How does one read the maps? What do the colours represent?

At the bottom right of a map from 2021 (map 1) is a clue — 'Night Microphysics'. According to a paper published by IMD scientists in February 2019, the INSAT 3D satellite has a red-green-blue, or RGB, imager whose images' colours are determined by two factors: solar reflectance and brightness temperature.

Solar reflectance is a ratio of the amount of solar energy reflected by a surface and the amount of solar energy incident on it. Brightness temperature has to do with the relationship between the temperature of an object and the corresponding brightness of its surface. It is different from temperature as we usually understand it — like the temperature we 'feel' when we touch a glass of hot tea — because brightness temperature also has to do with how the tea glass emits the thermal radiation, which is at different frequencies in different directions.



The INSAT 3D's 'day microphysics' data component studies solar reflectance at three wavelengths: 0.5 micrometres (visible radiation), 1.6 micrometres (shortwave infrared radiation) and 10.8 micrometres (thermal infrared radiation). That is, detectors onboard the satellite track radiation coming from over India in these wavelengths. The strength of the 0.5 micrometre visible signal determines the amount of green colour; the strength of the 1.6 micrometre shortwave infrared signal, the amount of red colour; and the strength of the 10.8 micrometre thermal infrared signal, the amount of blue colour. This way, the INSAT 3D computer determines the colour on each point of the image.

How does the satellite track snow?

According to the paper, "the major applications of this colour scheme are an analysis of different cloud types, initial stages of convection, maturing stages of a thunderstorm, identification of snow area, and the detection of fires."

While the solar reflectance of snow and that of clouds is similar in the visible part of the spectrum, snow strongly absorbs radiation of wavelength 1.6 micrometre, that is the shortwave infrared. As a result, when the satellite tracks snow, the red component of the colour scheme becomes very weak.

How are the colours determined?

The satellite's 'night microphysics' component is a little more involved. Here, two colours are determined not by a single signal but by the strength of the difference between two signals. The computer determines the amount of red colour according to the difference between two thermal infrared signals — 12 micrometre and 10 micrometre. The amount of green colour varies according to the difference between a thermal infrared and a middle infrared signal — 10.8 micrometre and 3.9 micrometre. The amount of blue colour is not a difference but is determined by the strength of a thermal infrared signal of wavelength 10.8 micrometre.

For example, in map 3, the data indicates three kinds of clouds. ('K' denotes the temperature differences in kelvin.) A mature cumulonimbus ("CB") cell, possibly part of a tropical storm, hangs over West Bengal and is visible mostly in red, but whose blue component indicates it is also very cold. Further north of Delhi, flecks of green dominate, indicating a preponderance of lower clouds. The sky even further north is dominated by a high and heavy cloud system that encompasses lower clouds as well.

By combining day and night microphysics data, atmospheric scientists can elucidate the presence of moisture droplets of different shapes and temperature differences over time, and in turn track the formation, evolution and depletion of cyclones and other weather events. For example, taking advantage of the fact that INSAT 3D can produce images based on signals of multiple wavelengths, the authors of the 2019 paper have proposed day and night microphysics data that they say would indicate a thunderstorm impending in one to three hours.

How do the satellites collect weather data?

Both INSAT 3D and INSAT 3DR use radiometres to make their spectral measurements. A radiometre is a device that measures various useful properties of radiation, typically by taking advantage of radiation's interaction with matter, for example in the form of temperature or electrical activity.



Both satellites also carry atmospheric sounders. These are devices that measure temperature and humidity, and study water vapour as a function of their heights from the ground. Scientists combine the radiometer and sounder measurements to understand various atmospheric characteristics.

What weather satellites does India have?

According to the INSAT 3DR brochure, its radiometer is an upgraded version of the very-high-resolution radiometer (VHRR) that the Kalpana 1 and INSAT 3A satellites used (launched in 2002 and 2003, respectively). The Space Application Centre's brief for INSAT 3A states: "For meteorological observation, INSAT-3A carries a three channel Very High Resolution Radiometer (VHRR) with 2 km resolution in the visible band and 8 km resolution in thermal infrared and water vapour bands." The radiometers onboard 3D and 3DR have "significant improvements in spatial resolution, number of spectral channels and functionality".

The Kalpana 1 and INSATs 3A, 3D, and 3DR satellites aided India's weather monitoring and warning services with the best technology available in the country at the time, and with each new satellite being a better-equipped version of the previous one. So while Kalpana 1 had a launch mass of 1,060 kg and carried a early VHRR and a data-relay transponder, INSAT 3DR had a launch mass of 2,211 kg — in 2016 — and carried an upgraded VHRR, a sounder, a data-relay transponder and a search-and-rescue transponder. India deactivated Kalpana 1 in September 2017, after 15 years in orbit.

The INSAT 3D and 3DR satellites are currently active in geostationary orbits around the earth, at inclinations of 82 degrees and 74 degrees east longitudes respectively. In February 2024, the Indian Space Research Organisation is expected to launch the INSAT 3DS meteorological satellite onboard its GSLV Mk II launch vehicle, with a launch mass of two tonnes. While "3DR" stood for "3D repeat", "3DS" stands for "3D second repeat".

GEARING UP FOR CHANGE

Earlier this week, the India Meteorological Department (IMD), entered the 150th year of its existence. While at present, it analyses the entire spectrum of climate and weather, from cyclones to fog, it was conceived, in colonial times, to probe the mysteries of the southwest monsoon. The needs were practical. The British administration, concerned about revenues, was intimately aware of the influence of the monsoon on harvests and thus extremely invested in determining whether past observations of wind, rain and sunshine could be used to predict future torrents and droughts. In the years since then, the IMD has collected gargantuan stores of meteorological data that underlie its forecasts of the monsoon. One such analysis of this data by researchers at the Council on Energy, Environment and Water (CEEW) examines monsoon trends at the sub-divisional (tehsil) level, from 1982-2022. This finds that monsoon rainfall is increasing in more than half, or 55%, of India's roughly 4,400 tehsils. About 11% of them saw decreasing rainfall. In those tehsils, about 68% experienced reduced rainfall in all four monsoon months, while 87% showed a decline during the June and July -- crucial for the sowing of kharif crops. Most of these tehsils are in the Indo-Gangetic plains, which contribute to more than half of India's agricultural production, northeastern India, and the Indian Himalayan region.

The study also found that 30% of India's districts witnessed several years of deficient rainfall years and 38% many years of excessive rainfall. Some tehsils in Rajasthan, Gujarat, central Maharashtra, and parts of Tamil Nadu that historically were dry were also getting wetter. There



were also changes underway in the northeast monsoon, which sets in during October, November and December but primarily impacts peninsular India. The northeast monsoon rain has increased by more than 10% in the past decade (2012-2022) in approximately 80% of tehsils in Tamil Nadu, 44% in Telangana, and 39% in Andhra Pradesh, respectively. The southwest monsoon accounts for nearly 76% of India's annual rainfall, with about 11% from the north-east monsoon. That India's monsoons are increasingly prone to long, dry spells and punctuated by torrential wet spells is well documented though how much of it can be explained by natural variability and how much from global warming is an active area of research. While revenue extraction guided colonial interest in weather at the regional levels, such analyses have a new, contemporary relevance. This is to make region-specific plans to improve climate resilience and channel necessary funds and resources. Prioritising regional and sub-district forecasts over national ones, would be a commendable step forward by the government.

WHY KASHMIR AND LADAKH ARE WITHOUT SNOW THIS WINTER, ITS IMPLICATIONS

One of Kashmir's main winter tourism attractions, Gulmarg, has been bereft of snow this season, leading to a plunge in the flow of tourists and severely hitting the business of ski resorts. Government data shows that 95,989 tourists, including 547 foreigners, had visited Gulmarg in January last year, and though the data for the first half of this month is not yet available, officials said the footfall seemed to be at least 60 per cent lower. Snowfall in Kashmir, however, is much more than just a tourist attraction. It is crucial for the local climate, winter crops and horticulture, availability of waters in streams and rivers, and for the local economy.

Dry winter

Though the lack of snow is the most visible in Gulmarg, a major tourist destination during this time of the year, the whole of Jammu and Kashmir and Ladakh have remained largely without rains or snow this winter. Winter precipitation in Jammu and Kashmir, as also Ladakh, is mainly in the form of snowfall. Normally, the region gets its first snowfall in the first half of December, and then through most of January. But it has been mostly dry this season. Jammu and Kashmir saw 80 per cent rainfall deficit in December, and 100 per cent (absolutely no rain) deficit in January so far, India Meteorological Department (IMD) data show. Ladakh has had no precipitation at all in December or January.

While snowfall in the region has been showing a declining trend in recent years, this season is remarkable. The overall decreasing trend of snowfall has been attributed to a decline in western disturbance events and gradual rise in temperatures, which involves the role of climate change. The prevailing El Nino event in the eastern Pacific Ocean might be the additional factor to account for this year, scientists say.

Western Disturbances

Winter precipitation in the Himalayan region is caused mainly by Western Disturbances. These are large eastward-moving rain-bearing wind systems that originate beyond Afghanistan and Iran, picking up moisture from as far as the Mediterranean Sea and even the Atlantic Ocean.

Western Disturbances are the primary source of rainfall over north and northwest India during the post-monsoon and winter months. Along with the south-west monsoon season that runs from June to September, and the north-east monsoon that brings rains to Tamil Nadu and some other regions, Western Disturbances are the third major contributors to India's annual rainfall.



During winters, about four to six western disturbance events happen every month on an average. This season there was one feeble western disturbance event in December that did not bring any rains, and another similar one in January.

“Western disturbances have been showing a declining trend in recent times. In some years we have seen just two or three events a month, when normally five or six are expected. Because of this, the overall precipitation during the winter months in the northern regions has also been declining.” The mean frequency of strong and extreme Western Disturbances, ones that definitely result in rainfall or snowfall, had declined as much as 43 per cent in recent years.

“The other, connected, thing is that temperatures in these regions are rising. The rate of increase of temperature is seen to be higher in the upper elevation areas than in the plains... In fact, look at the temperatures in Kashmir this winter. On many days, Srinagar temperatures are comparable to those of Delhi, sometimes they appear to be even higher,” Dimri said. “This is also contributing to the decline in snowfall,” he added.

El Nino impact

Indeed, there have been several years in the last one decade — 2022, 2018, 2015 — when winters have been relatively dry in Jammu and Kashmir, and snowfall has been very low. Mukhtar Ahmad, head of the Srinagar centre of IMD, said the situation this winter might be compounded by El Nino.

“For the past few months, El Niño has persisted and will continue to do so in the coming months. This has affected the global atmospheric circulation, and might be contributing to the deficit precipitation in the region as well,” Ahmad said, while adding that El Nino alone was not the reason.

He pointed out that even in the absence of El Nino, some years had seen very less snowfall. “In recent years, 2022 (December), 2018 (December-January), 2015 (January), 2014 (December), 1998 (December-January) and 1992 (December) were dry,” Ahmad said.

Dimri agreed that the declining snowfall in Kashmir could be a direct fall-out of climate change. “Indeed. I do think that climate change has a role to play here. Many of our studies point in that direction,” he said.

Repercussions

Less snowfall in the region is expected to have both short-term and long-term implications. Long-term implications include the generation of less hydroelectricity, an increase in the rate of glacier melting, and an adverse impact on the drinking water supply, since scanty snowfall means very little recharge of groundwater.

In the short term, a dry spell can result in an increase in forest fires, agricultural drought, and a drop in crop production. “It can lead to an early spring, which means early flowering, which can cause a reduction in yield,” Ahmad said.

The winter snow is a source of steady moisture to the soil that is vital for winter crops, particularly horticulture. Yields of apples or saffron, important ingredients of local economy, are badly affected in the absence of snowfall.



MODI GALLERY: BALAKOT TO MOONSHOT, INDIA'S STORY OF PROGRESS, ALL TOLD THROUGH HIGH TECH

The Narendra Modi Gallery, located within the Pradhanmantri Sangrahalaya or PMs' Museum, offers an immersive experience showcasing India's progress during the 10 years since Narendra Modi became Prime Minister. The gallery includes a 21-seater '7D' theatre called Suraksha, providing an eight-minute experiential journey through Modi's initiatives on national security, including events like the Balakot strike and the Tejas fighter jet landing. The 7D experience incorporates various sensory elements such as motion chairs, cold and hot air effects, mist, lightning, smoke, and smells. The last two minutes of the show focus on the private sector's role, self-reliance initiatives, and infrastructure strengthening in border areas.

The main gallery sections cover aspects of Modi's governance model, foreign policy initiatives, development model, cultural rejuvenation efforts, public participation, environmental causes, and advancements in science and technology. A central feature is a banyan tree around which a cinematic reel depicts Modi's early life and influences that shaped his policies. The gallery also explores Modi's tenure as Gujarat Chief Minister, showcasing his experimental exercises at the state level.

"Balya Kaal se Shasan Tak" also captures Modi's term as Gujarat Chief Minister. It showcases his experimental exercises at the state level and how these were expanded and extended at the national level, said Nripendra Mishra, chairperson of the executive council of the PMs' Museum & Library (PMML), which decided the concept and content of the gallery.

Delhi-based Tagbin, which handled the tech part, has worked on the galleries of the other PMs as well, besides several other key projects with the Ministry of Culture, including the Pravasi Bharatiya Museum at Indore and the Netaji Bose hologram at India Gate.

Even though the display is largely digital and interactive, with QR codes, scanners, touch screens and kiosks being used, a few physical objects are on display as well, including artefacts, a few letters and some memorabilia.

While the area devoted to the Modi Gallery is the same as for other PMs, the campus will make space for future Prime Ministers as well. Said Misra: "We plan to include Prime Ministers over the next 25 years as well, so there will be a need for extension of galleries, and more construction will be required eventually."

SOMNATH: A BRIEF HISTORY OF THE TEMPLE, AND WHY NEHRU OPPOSED THE PRESIDENT INAUGURATING IT

Prime Minister Narendra Modi will inaugurate the Ram temple in Ayodhya on January 22. Seventy-three years ago, another temple was inaugurated in a grand ceremony by the President of India, even as the Prime Minister opposed the government associating closely with a religious event.

While the story of Jawaharlal Nehru expressing his reservations about President Rajendra Prasad's participation in the ceremony is well-known, often missed out in popular accounts are the reasons Nehru gave for this. Also ignored is the role the British played in painting Somnath as a symbol of Hindus' victimisation by Muslims.



Somnath, till 1947

Located in Prabhas Patan, Veraval, in Gujarat, Somnath is an important Hindu pilgrimage. According to the temple's website, it is "the holy place of the First Aadi Jyotirling Shree Somnath Mahadev and the sacred soil where Lord Shri Krishna took his last journey..."

By most historical accounts, the temple faced several attacks from raiders, with the most damaging by Mahmud of Ghazni in 1026 CE.

Of course, not all Muslim rulers opposed it. Historian Romila Thapar, in her book *Somanatha: The Many Voices of History*, writes that "in the sixteenth century, Akbar permitted the worship of the linga in the Somanatha temple and appointed desais /officers to administer it."

She also cites a remark by Abul Fazl about the temple — while he does not criticise Mahmud of Ghazni, he describes the temple raid as "the plunder of the virtuous". "...fanatical bigots representing India as a country of unbelievers at war with Islam, incited his unsuspecting nature to the wreck of honour and the shedding of blood and the plunder of the virtuous," Fazl writes.

Three generations after Akbar, however, Aurangzeb gave orders for its destruction. He subsequently issued "a further and later order for its destruction and its conversion into a mosque in 1706 just before he died," Thapar writes.

Gradually, the temple fell into disuse and disrepair. According to the temple website, in 1782, Maratha queen Ahalyabai Holkar built a small temple at the site.

The temple was first highlighted as a symbol of Islam's excesses on Hindus by British Governor General Lord Ellenborough. In 1842, the British Army suffered heavy losses in its Afghanistan expedition. A retaliatory strike was carried out, and it is during this time that the "gates of Somnath" carried away by Mahmud of Ghazni surfaced in a major way. The British brought back a pair of sandalwood gates from Ghazni, claiming they were the original gates of Somnath taken by the invader. They eventually turned out not to be connected to the temple.

Ellenborough framed this exercise as the "avenging of an insult".

On November 16, 1842, he issued a proclamation "to all the Princes and Chiefs, and people of India", which read: "Our victorious army bears the gates of the temple of Somnath in triumph from Afghanistan...That insult of eight hundred years is at last avenged."

He added: "I have ever relied with confidence upon your attachment to the British Government. You see how worthy it proves itself of your love, when, regarding your honour as its own, it exerts the power of its arms to restore to you the gates of the temple of Somnath, so long the memorial of your subjection to the Afghans."

This narrative persisted, and as the communal divide worsened in the run-up to Independence, many Hindus started regarding the restoration of Somnath as a project essential to Hindu pride. Among the more vocal of such people was Congress leader K M Munshi.

After Independence

After Independence, the Nawab of Junagadh, where Somnath was located, decided to accede to Pakistan, even though most of his subjects opposed this. The Nawab soon had to flee in the face of



rebellion, and on November 12, 1947, Sardar Vallabhbhai Patel, the then Home Minister of India, visited Junagadh. At a huge public gathering, he announced the decision to reconstruct Somnath.

This was endorsed by the Union Cabinet headed by Nehru. However, when Patel, Munshi and others conveyed the decision to Mahatma Gandhi, he suggested that instead of the government funding the project, the money should come from the people. The others agreed, and a Trust was set up for the purpose under Munshi.

Nehru's letters to Rajendra Prasad on Somnath

By the time the temple was ready, Patel had passed away. Munshi approached Prasad for the inauguration. Nehru made no secret of his opposition to this. In a letter to Prasad in March 1951, he wrote, "I confess that I do not like the idea of your associating yourself with a spectacular opening of the Somnath Temple. This is not merely visiting a temple, which can certainly be done by you or anyone else, but rather participating in a significant function which unfortunately has a number of implications."

Prasad, however, maintained that he saw nothing wrong in attending the event. A month later, Nehru wrote to him again, "My dear Rajendra Babu, I am greatly worried about the Somnath affair. As I feared, it is assuming a certain political importance... In criticism of our policy in regard to it, we are asked how a secular Government such as ours can associate itself with such a ceremony which is, in addition, revivalist in character."

When newspaper reports emerged of the Saurashtra government contributing Rs 5 lakh towards the ceremony, he wrote to Prasad, "At any time this would have been undesirable, but at the present juncture, when starvation stalks the land and every kind of national economy and austerity are preached by us, this expenditure by a government appears to me to be almost shocking. We have stopped expenditure on education, on health and many beneficent services because we say that we cannot afford it."

He also wrote to Chief Ministers on May 2, 1951, "It should be clearly understood that this function is not governmental and the GoI has nothing to do with it...We must not do anything that comes in the way of our state being secular."

Another thing Nehru opposed, as Thapar writes, "was a circular sent round to Indian ambassadors, asking them to collect and send to Somanatha containers of water from the major rivers of the countries to which they were accredited, as well as soil and twigs from the mountains of these countries." Nehru asked the Ministry of External Affairs to ignore these requests.

WHAT IS THE NAGARA STYLE, IN WHICH AYODHYA'S RAM TEMPLE IS BEING BUILT

The Ram temple in Ayodhya will be inaugurated on January 22. Chandrakant Sompura, 81, and his son Ashish, 51, have designed the complex in the Nagara style of temple architecture.

A 'language' of architecture

The Nagara style of temple architecture emerged some time in the fifth century CE, during the late Gupta period, in northern India. It is seen in juxtaposition with the Dravida style of southern India, which too emerged in the same period.

The use of the term 'style', however, is debated.



“Nagara and Dravida may be called ‘styles’, but they cover vast areas and time spans,” Adam Hardy wrote in his highly influential *The Temple Architecture of India* (2007). Instead of ‘styles’, he refers to the two as “the two great classical languages of Indian temple architecture”.

“‘Languages’ seems a [more] suitable term, in that each is a system providing a ‘vocabulary’, a kit of parts, along with a ‘grammar’ which regulates the ways of putting the parts together,” he wrote.

Distinguished by a towering shikhara

Nagara temples are built on a raised plinth, with the garbha griha (sanctum sanctorum) — where the idol of the deity rests — the most sacred part of the temple. Towering over the garbha griha is the shikhara (literally ‘mountain peak’), the most distinguishable aspect of Nagara style temples.

As the name suggests, shikharas are human-made representations of the natural and cosmological order, as imagined in Hindu tradition.

“Meru, Mandara and Kailasa are the first three names amongst the twenty types of temples described in the early texts ... all three are the names of the Mountain, which is the axis of the world,” Stella Kramrisch wrote in her pioneering work, *The Hindu Temple Vol I* (1946). “In these names rises the temple, the image, aim and destination of this world edifice.”

A typical Nagara style temple also comprises a circumambulatory passage around the garbha griha, and one or more mandapas (halls) on the same axis as it. Elaborate murals and reliefs often adorn its walls.

Five modes of Nagara architecture

Depending on the period and geography, there is a large variation when it comes to what a shikhara looks like, or how it is used in a temple’s design. On this basis, Hardy identifies five modes of Nagara temple architecture — Valabhi, Phamsana, Latina, Shekhari, and Bhumija.

The first two are associated with what scholars have classified as Early Nagara Style. “The Valabhi begins as a masonry rendering of the barrel-roofed [wooden] structure, simple or with aisles, familiar through chaitya halls [prayer halls, most associated with Buddhist shrines]. A formalisation of multi-eave towers, wedded to a piling up of slabs, leads to the Phamsana,” Hardy wrote.

From these modes emerged the Latina — a shikhara which is a single, slightly curved tower with four sides of equal length. “The mode emerged in the Gupta heartland, was complete with curvature by the early seventh century, and during that century spread across the entire breadth of northern India,” Hardy explained. “For three centuries it reigned supreme, the peak — literally — of Nagara temple architecture,” he wrote.

The tenth century onwards, composite Latinas began to emerge, giving rise to Shekhari and Bhumija styles. The Shekhari shape has attached sub-spires or spirelets, echoing the main shape. These may run up most of the face of the shikhara, and be of more than one size. The Bhumija, on the other hand, has miniature spires, in horizontal and vertical rows, all the way to the top, creating a grid-like effect on each face. The actual shikhara often approaches a pyramidal shape, with the curve of the Latina less visible.

Important to note is that these modes are somewhat simplified scholastic classifications. Temple architects of yore did not consciously choose to adhere to any mode — they simply followed and



innovated on existing design traditions they saw around them, and over time, broader trends emerged.

Consequently, there is also immense variation within these modes. Temples can even contain multiple kinds of shikharas on top of a simple structure, with the tallest always being on top of the garbha griha.

Comparison to Dravida style

The Dravida counterpart to the shikhara is the vimana. There exists, however, a fundamental difference.

In the Dravida style temples, vimanas are typically smaller than the great gatehouses or gopurams, which are the most immediately striking architectural elements in a temple complex. Moreover, while shikharas are mentioned in southern Indian architectural sources, they refer to only the dome-shaped crowning cap atop the vimana.

The existence of gopurams also points to another unique feature of the Dravida style — the presence of a boundary wall. Few Nagara style temple complexes are lined with distinctive boundary walls that are a part of the temple's design.

This is one of Ayodhya's Ram temple's 'hybrid' features — although no elaborate gopuram has been built (citing paucity of space), a 732m long wall runs around the temple compound.

PRAN PRATISHTHA AT AYODHYA RAM TEMPLE DRAWS NEAR: WHAT IS THIS CEREMONY, HOW IT IS PERFORMED

The day of the pran pratishtha of the idol at Ayodhya's Ram temple is coming closer. The pran pratishtha ceremony will be held on January 22, and various rituals will begin from January 16.

While the basic meaning of pran pratishtha — giving life to the idol — is simple enough, the ceremony involves various rituals taken from the Vedas and Puranas, each with its own significance.

So what exactly is pran pratishtha, and how is it carried out? How can the worshipper impart prana, or life, to the worshipped? The answers lie in the strong role nature plays in many Hindu rituals, and the interdependence of the devotee and the divine in the Hindu worldview.

What is Pran Pratistha?

Pran pratistha is the act which transforms an idol into a deity, giving it the capacity to accept prayers and grant boons. For this, the statue has to go through various stages. Here we describe some of the prominent steps. The number of steps involved will depend on the scale of the ceremony.

Shobha yatra

One of the first stages is a shobha yatra, or a procession of the idol, taken out in the neighbourhood of the temple. For the Ram idol in Ayodhya, the shobha yatra is on January 17. During this yatra, as the idol is greeted and cheered on by onlookers, some of their devotion is transferred into it, imbuing it with devotion and divine strength. It is, thus, the devotee who begins the alchemy of turning a statue into God.



Once the idol comes back to the mandap begin the rituals that make up pran pratishtha.

Dr Dipakbhai Jyotishacharya, who runs the Parashar Jyotishalaya in Gujarat's Vapi, told The Indian Express that pran pratishtha can be held for both chalit moorti (household idols that can be moved about) and sthir moorti (temple idols that once fixed remain so).

Dr. Sunder Narayan Jha, professor at the Department of Veda at the Shri Lal Bahadur Shastri National Sanskrit University, New Delhi, said when the mantra is chanted for pran pratishtha, the prayer is both for the idol to come to life and to be prepared to give up that life. "This is because, in case that particular statue is damaged, another will have to be installed in its place, and life should flow from the damaged idol to the new one," he explained.

The adhivas

To ready the idol for the pran pratishtha, multiple adhivaas are conducted, in which the idol is submerged in various materials. For one night, the idol is kept in water, which is called jalādhivās. Then it is submerged in grain, which is called dhānyādhivās. Jha explained that when an idol is being crafted, it sustains various injuries from the craftsman's tools. These adhivaas are meant to heal up all such injuries. Dipakbhai explained that the process serves another purpose: "If the idol has a defect, or if the stone is not of a great quality, it will be found out when it is submerged in various materials," he said.

Ritual bath

After this, the idol is given a ritual bath and its abhishek is performed with various materials, depending on the scale of the ceremony. According to the BAPS Swaminarayan Sanstha, this rite can involve "108 different types of materials, such as panchamrut, water containing the essence of various fragrant flowers and leaves, water which has been poured over the horns of a cow, and sugar cane juice."

The most important ceremony is that of netronmeelan, or the opening of the deity's eyes.

Opening of the eyes

After the statue has adequately recovered from the stress of its fashioning and has been given its ritual bath comes the time for it to be awakened. Many mantras are chanted, asking for various Gods to come and animate its various parts — Soorya the eyes, Vayu the ears, Chandra the mind, etc.

Then comes the final step, the opening of the statue's eyes. This ceremony involves putting anjan, somewhat like kohl, around the deity's eyes, with a gold needle. This process is carried out from behind, as it is believed that if one looks into God's eyes the moment they open, their brilliance can be too much to take.

"Originally, the anjan was supposed to have been brought back from the Kakood mountain. A black stone found on the mountain is rubbed to create the black powder needed for the ceremony. But since that mountain is now in China, we make do with ghee and honey," Jha said.

Once the anjan has been applied and the deity's eyes have opened, it has 'come to life' and can now receive devotees.



Where are these steps mentioned?

The process of the pran pratishtha is mentioned in the Vedas and elaborated upon in various Puranas, such as Matsya Puran, Vaman Puran, Narad Puran, etc.

Is there an idol that does not need pran pratishtha?

Jha said two divine objects — the Shaligram found in the Gandki river, and the Narmadeshwar, a shivling found in the Narmada river, do not need pran pratishtha, for they carry divinity within them.

Can pran pratishtha be held in an incomplete temple?

According to Dipakbhai, the idol should ideally be brought to life before a temple's construction is completely finished. Only the garbha griha, or the sanctum sanctorum, needs to be fully ready before pran pratishtha.

FROM IQBAL TO CHAKBAST, AN ADDRESS TO LORD RAM THROUGH THE CENTURIES

Around a century ago, famous Urdu poet Mohammed Iqbal, who, wrote 'Sare Jahan Se Achcha Hindustan hamara', called Ram Imam-e-Hind. The expression gained currency during the Babri Masjid-Ram Janmabhoomi movement with votaries of the Ram Temple reminding the Muslim community of the august status Iqbal had for Ram. Of course, secular Muslims were not found lagging in this bid for appropriation of Ram. They too quoted Iqbal with convenience. Amid all this what is often forgotten is that Ram has been celebrated in many literary works for centuries. Though not as popular as Krishna with Raskhan, Ram's has been an abiding presence in Urdu shairi or Hindi kavita (poetry) and modern English literature.

If Zafar Anjum reminded us of the greatness of Iqbal in his work, Iqbal: The Life of a Poet, Philosopher and Politician, it would have been incomplete without talking of the inclusive nature of the greatness of Ram by alluding to the expression 'Imam-e-Hind' which formed part of the nazm where he called Ram the spiritual leader of India. Iqbal wrote, 'Labrez hai sharāb-e-haqīqat se jam-e-hind/Sab falsafi hain khitta-i-maghrib ke Ram-i-Hind/Yeh Hindiyon ke fikr-i-falak ras ka hai asar/Rifat men asman se bhi ooncha hai bam-i-Hind/ Is des men huey hain hazaron malak sarisht/Mashoor jinke dam se hai duniya mein nam-i-Hind/Hai Ram ke wujood Pe Hindostan ko naz/Ahle nazar samajhte hain usko imam-i-Hind!'. (The cup of Hind overflows with the wine of truth/Philosophers of the Western world are its devotees/The mysticism of her philosophers makes Hind's star soar above all constellations/Thousands of angels have descended to proclaim Hind's name before the world/And proud of his existence the discerning eye sees in Ram, a prophet).

Gandhi and Ram

On a little lower note flowed Akbar Allahabadi's tryst with the soil of the land and the presence of Ram. Soon after Mahatma Gandhi assumed charge of the freedom movement after his arrival from South Africa, Akbar is reported to have stated, 'Bhai Gandhi ka nihayat hi muqaddas kaam hai; Rampuri saath hai aur Ram hi ka naam hai'. (Gandhi's work is extremely sincere; the Rampuris are with him, and Ram's name prevails.)

Then we had Maulana Zafar Ali Khan, a freedom fighter and a noted Urdu poet who wrote, Sri Ram Chandar se Khitab (Address to Shri Ram Chandar). In this, the Maulana called Ram a symbol of a



living Indian civilisation. Addressing the avatar of Vishnu, he wrote, 'Na to naaquus se hai aur na asnaam se hai/Hind ki garmi-e-hungama tere naam se hai'. (Neither because of conch nor by its idols/The excitement and love thriving in India is by your name).

No discussion of Urdu poets' fascination for Ram can be complete without a mention of Brij Narain Chakbast. His Ramayan ka Eik Scene is a masterclass in pure emotion, in the poet's depiction of an obedient son leaving his mother's house, taking nothing with him except blessings.

The persona

Talking of Ram's mother, Kaushalya, Devdutt Pattanaik fills in details with admirable ease in his biography The Book of Ram. Beginning with the story of Dashrath and his three wives, he writes, "Dashrath had three wives but no children. So he conducted a yagna and invoked the gods who gave him a magic potion...In time the queens gave birth to four sons. Ram was the eldest, born to the chief queen Kaushalya, Bharat was second, born to Dashrath's favourite queen, Kaikeyi, and Lakshmana and Shatrughna were twin sons of the third queen, Sumitra."

Ram completed his early education under Rishi Vasishth. He was once asked to defend Rishi Vishwamitra's hermitage from an attack by demons known as Rakshasas. Ram killed the demons. As a reward, the rishi taught him magical chants that turned mere arrows into powerful missiles. The rishi, we are informed by Pattanaik, took Ram to Mithila, the capital of Videha. Here he found Ahilya, wife of Gautam. Ahilya had been turned into a stone for being unfaithful to him. Ram stepped on the stone that was Ahilya who immediately came to life. Such was the purity of his character. Replete with such anecdotes, Pattanaik's book is a primer for acquaintance with the persona of Ram. A Telugu prayer, recalled by Pattanaik, sums up the character beautifully. It says, "Sweeter than sugar, tastier than curd/ Sweeter indeed than honey is the name of Ram/Constant repetition of this sweet name/Gives one the taste of divine nectar/Therefore, chant the name of Ram constantly".

Noted author Pavan K. Varma completes the picture with his book The Greatest Ode to Lord Ram: Tulsidas' Ramcharitmanas. Varma writes with characteristic flair, "Tulsidas spent the early years of his life in Ayodhya, the birthplace of Ram. He began to write Ramcharitmanas in 1574, on Ram Navami, the birth date of Ram. After writing the first three sections of the book, he wrote the other four in Kashi, for which he had to depart because of a dispute with one of the religious heads in Ayodhya...There are many stories of how Ram and Lakshman, and Hanuman, appeared before him and blessed him." The noble spirit animating the story of Ram is like Chitrakoot, where Ram, Sita and Lakshman spent months of their 14-year banishment. "The lush forest around Chitrakoot," Tulsi says, "is symbolic of the deep love in the midst of which Ram and Sita reside."

JAGANNATH TEMPLE CORRIDOR: AN ATTEMPT TO COUNTER BJP'S HINDUTVA PUSH AHEAD OF ELECTIONS

Odisha Chief Minister Naveen Patnaik on Wednesday unveiled a sprawling heritage corridor around the Jagannath Temple in Puri, a project being seen as an attempt to counter the BJP's Hindutva push ahead of the Lok Sabha and State Assembly elections later this year.

Mr. Patnaik reached Puri in the afternoon during the culmination of three-day-long rituals presided over by Puri's titular king Dibyasingha Dev.



The heritage corridor facilitates circumambulation by devotees around the 12th-century shrine. Public convenience facilities such as restrooms, cloakroom and a police kiosk have also been set up.

Over the next fortnight, the State government will be facilitating the visit of around 10,000 villagers to the temple daily, apart from carrying out activities to spread awareness about the Jagannath culture, the initiatives for which it has set aside a corpus of ₹177 crore.

The heritage corridor is one of the two major temple projects the State government has undertaken in recent years — the other being the renovation of the Maa Samalai Temple at a cost of ₹200 crore in the western Odisha town of Sambalpur. A grand inauguration ceremony is scheduled for January 27 there.

Both events come against the backdrop of the consecration ceremony of the Ram Temple in Ayodhya, a cause championed by the BJP for years.

Living up to the hype

According to political analysts, the “lokarpan” (dedication) ceremony of the Shree Mandir Parikrama Prakalpa (SMPP), constructed at a cost of ₹800 crore, lived up to the hype created by the Biju Janata Dal (BJD) government.

Similar to the collection of bricks from devotees for the construction of a Ram temple during the Ayodhya movement in 1992, arpan rathas (dedicated chariots) were taken out across Odisha, while rice and betel nuts were collected as contribution from villagers.

The government also carried out a massive advertising campaign to highlight the project, which was recommended by the Justice B.P. Das Commission, constituted in 2016 to examine governance issues relating to the temple.

It had recommended the creation of a 75-metre-wide buffer zone around Meghanad Prachir (temple boundary wall) to deal with any threat to the shrine.

Initially, it appeared to be a Herculean task to acquire properties around the temple as these had been occupied by people for several generations. The State government offered lucrative land acquisition deals.

Mr. Patnaik also made an emotional appeal to people to relinquish their properties for the corridor, which was dubbed a once-in-a-century project.

Despite numerous setbacks, the project was initiated in November 2021 and executed at breakneck speed. V. K Pandian, the Odisha CM's trusted aide, said the project was the outcome of Mr. Patnaik's conviction that the temple deity forms the bedrock of Odia culture.

Political dividends

However, Opposition parties accuse the Odisha CM of milking the mass devotion around the temple for political gains.

Senior journalist Prasanna Mohanty said Mr. Patnaik is an astute politician, who did not want to concede his party's vote base to the BJP by allowing it to champion the Hindu cause.



The BJP had replaced the Congress as the main Opposition party in Odisha, increasing its vote share from 18% in the 2014 Assembly poll to 32.5% in 2019.

Mr. Mohanty said the Jagannath Temple project mirrored the BJP's successful creation of a sense of Hindu resurgence at the national level. The BJD government also ensured that the message reached people effectively.

Rabi Das, a veteran journalist, said villagers from across Odisha will be taken to Puri to witness the transformation of the temple town.

He said BJD strategists have carefully planned to ensure that efforts for temple development remain ingrained in the minds of people.

He said temple development has positioned the BJD as the primary party, not playing the second fiddle to the BJP, when it comes to championing of the Hindu cause.

INDIA'S OLDEST LIVING CITY FOUND IN VADNAGAR: MULTI-INSTITUTION STUDY

A joint study by five prominent institutions, including the Indian Institute of Technology (IIT), Kharagpur, Archaeological Survey of India (ASI), Physical Research Laboratory, Jawaharlal Nehru University, and Deccan College, has discovered evidence of a continuous human settlement in Vadnagar, Gujarat, dating back to 800 BCE. The findings challenge the notion of a "Dark Age" between the collapse of the Indus Valley Civilization and the emergence of the Iron Age. The research suggests that climate-driven changes, such as rainfall or droughts, influenced the rise and fall of different kingdoms over a 3,000-year period.

Vadnagar, a multicultural and multireligious settlement, displayed seven cultural stages, including Mauryan, Indo-Greek, Indo-Scythian, Hindu-Solankis, Sultanate-Mughal, and Gaekwad-British colonial rule. The excavation revealed artifacts from various periods, including potteries, copper, gold, silver, iron objects, and intricately designed bangles. Notably, one of the oldest Buddhist monasteries was discovered during the excavation, along with coin moulds from the Indo-Greek rule.

The research challenges the idea of a Dark Age, suggesting cultural continuity in India for the last 5,500 years. Professor Anindya Sarkar of IIT, the lead author, noted that recent radiocarbon dates suggest Vadnagar's settlement could be as old as 1400 BCE, contemporaneous with the late post-urban Harappan period. If confirmed, this finding implies that the Dark Age might be a myth. The study was funded by the Directorate of Archaeology and Museums (Government of Gujarat) and received support from Sudha Murthy, former chairperson of the Infosys Foundation.



BUSINESS & ECONOMICS

WHAT IS THE WORLD ECONOMIC FORUM MEETING, HELD ANNUALLY IN DAVOS?

The World Economic Forum (WEF) is holding its Annual Meeting from January 15 to 19 in Davos, Switzerland. Attendees include António Guterres, UN Secretary-General, Ajay Banga, President of the World Bank Group, Tedros Adhanom Ghebreyesus, Director-General of the World Health Organisation, and political leaders from India, the US, China France and Sri Lanka, among others.

Why is the global meeting held, and what happens as part of it? We explain.

Who initiated the World Economic Forum?

German professor Klaus Schwab founded the WEF. He was a mechanical engineering graduate who then earned a Master of Public Administration degree from the John F. Kennedy School of Government at Harvard University.

From 1972 to 2003, Schwab was a professor of business policy at the University of Geneva. He founded WEF in 1971, originally known as the European Management Forum. It introduced the concept of “stakeholder capitalism.” According to Schwab, “It is a form of capitalism in which companies do not only optimize short-term profits for shareholders, but seek long term value creation, by taking into account the needs of all their stakeholders, and society at large.”

The WEF website says of the idea: “A company should serve all its stakeholders, not just its shareholders: employees, suppliers, and the community it is part of.” As an extension of this, business, government and civil society leaders have made their way to the high Alps “to consider the major global issues of the day and to brainstorm on solutions to address these challenges,” it adds.

What happens at WEF?

Initially, Professor Schwab focused the meetings on how European firms could catch up with US management practices. Events in 1973, namely the collapse of the Bretton Woods fixed exchange rate mechanism and the Arab-Israeli War, saw the Annual Meeting expand its focus from management to economic and social issues.

Two years later, the organisation introduced a system of membership for ‘the 1,000 leading companies of the world’. The European Management Forum was the first non-governmental institution to initiate a partnership with China’s economic development commissions in 1979 – the same year China and the US established diplomatic ties.

Davos brings together some 3,000 participants (including paying members and selected invitees), among whom are investors, business leaders, political leaders, economists, celebrities and journalists, for up to five days to discuss global issues across 500 sessions. Thus, the WEF has become a forum for various stakeholders to meet and discuss global and regional socio-economic issues.

Who funds the WEF and why is the WEF Meeting held at Davos?

The WEF is largely funded by its partnering corporations. These are generally global enterprises with annual turnover greater than \$5 billion. Davos was the setting for Thomas Mann’s novel *The*



Magic Mountain. The book is the story of a young man who goes to Davos to stay at a sanatorium for three weeks and ends up spending seven years.

Relaxed in its serene environs, it seeks to cut through the many distractions of global politics to succeed in its mission to create a more prosperous global economy.

What else happens at WEF?

In the past, it has been used as a location for pivotal international diplomacy as leaders can break tensions in the town. The WEF website states that North and South Korea held their first ministerial-level meetings in Davos. At the same Meeting, East German Prime Minister Hans Modrow and German Chancellor Helmut Kohl met to discuss German reunification.

In 1992, South African President de Klerk met Nelson Mandela and Zulu prince Mangosuthu Buthelezi at the Annual Meeting, their first joint appearance outside South Africa and a milestone in the country's political transition.

In 1998, participants emphasised the need to include major developing countries in the process. One idea was to set up a body to include 20 countries – half developed economies and the other developing ones. Such a meeting of what became known as the G20 was held in Bonn, Germany, later that year. Participation was restricted to finance ministers and its scope was limited to global finance.

The G20 meeting was eventually elevated to a summit. This happened in 2008 when the US hosted a G20 summit in Washington DC to address the impact of the global economic crisis.

The WEF also went on to regularly publish global rankings and indices, such as the Global Competitiveness Report and the Global Gender Gap Report.

INDIA'S MULTIDIMENSIONAL POVERTY RATE DOWN TO 11.28% IN 2022-23 FROM 29.17% IN 2013-14

The share of India's population living in multidimensional poverty is estimated to have fallen to 11.28 per cent in 2022-23 from 29.17 per cent in 2013-14, according to a discussion paper released by NITI Aayog on Monday. In absolute numbers, NITI Aayog estimates a total of 24.82 crore people escaped multidimensional poverty in the last nine years.

States like Uttar Pradesh, Bihar, Madhya Pradesh, and Rajasthan recorded the sharpest decline in the number of people classified as poor based on the Multidimensional Poverty Index (MPI), which considers twelve different indicators of poverty included under three broad dimensions, namely health, education, and standard of living.

The discussion paper also notes that the severity of deprivation declined at a slightly lower rate between 2015-16 and 2019-21 compared to 2005-06 and 2013-14.

Severity of deprivation measures deprivations the average multidimensionally poor person suffers from. At the same time, reduction of deprivation was faster after 2015-16 in terms of reduction in share of MPI poor out of total population compared to the decade before, owing to a lesser number of years. In 2005-06, the share of MPI poor in India's total population was 55.34 per cent. The discussion paper, which uses previously released MPI data based on National Family Health Surveys (NFHS) conducted in 2015-15 and 2019-21, also uses NFHS-3 data from 2005-06 to understand long-term poverty trends.



Based on these three NFHS datasets, NITI Aayog estimated the share of MPI poor in the years 2013-14 and 2022-23 with technical inputs from Oxford Policy and Human Development Initiative (OPHI) and United Nations Development Programme (UNDP). The discussion paper was released by NITI Aayog Member Prof. Ramesh Chand in the presence of NITI Aayog CEO BVR Subrahmanyam.

Prof. Chand noted that without the impact of the coronavirus pandemic, the share of MPI poor in 2022-23 would have been much lesser. The paper also notes that it “may not fully reflect the impact of Covid on the economy” as part of NHFS-5 data collected between 2019-21 was collected before the pandemic. BVR Subrahmanyam added that India is likely to achieve Sustainable Development Goals (SDG) Target 1.2, which calls for reducing “at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions” much ahead of 2030.

As per the paper, indicators in the standard of living dimension showed highest levels of deprivation in 2005-06. For instance, 74.4 per cent of the population was deprived of cooking fuel in 2005-06, which fell to 58.47 per cent in 2015-16, and further to 43.9 per cent between 2019-21. Similarly, 70.92 per cent of the population was deprived of adequate sanitation facilities in 2005-06, which reduced to 51.88 per cent in 2015-16, and further to 30.93 per cent between 2019-21.

The sharpest decline between two periods was recorded by the indicator measuring deprivation of access to bank accounts, which fell to 9.66 per cent in 2013-14 from 58.11 per cent in 2005-06.

According to the estimated share of MPI poor in 2013-14 and 2022-23, Bihar recorded a 53 per cent drop from 56.3 per cent share of MPI poor in 2013-14 to 26.59 per cent in 2022-23. Jharkhand also recorded a 50 per cent drop from 47.13 per cent share of MPI poor to 23.34 per cent. Uttar Pradesh, which had a lesser share of MPI poor in 2022-23 than Bihar, Jharkhand, and Meghalaya, recorded a decline to 17.4 per cent from 42.59 per cent in 2013-14.

India’s definition of multidimensional poverty is measured using twelve indicators including nutrition, child & adolescent mortality, maternal health, years of schooling, school attendance, drinking water, electricity, housing, and assets. MPI seeks to measure poverty in a more holistic manner as opposed to solely relying on income levels to assess deprivation.

WHAT DECEMBER INFLATION DATA TELLS US, WHAT IT MEANS FOR BUDGET, MONETARY POLICY

According to the latest official release, India’s consumer price index (CPI) based inflation rate touched 5.7% in December. While this is a routine — monthly — release, its timing is significant for a variety of reasons.

For one, from the point of fiscal policy, this is the last inflation data release before the presentation of the Union Budget on February 1. Two, from the point of monetary policy, it will be the most recent data available with the Monetary Policy Committee of the Reserve Bank of India before its reconvenes in later February. Lastly, this is the first release in the election year and, as such, it can be more politically significant than normal.



What is CPI inflation?

The CPI inflation is nothing but the rate of inflation that consumers face. It is different from the major inflation indicator — the wholesale price index-based inflation rate.

According to the Ministry of Statistics and Programme Implementation (MoSPI), which releases the data, the consumer price index measures “changes over time in general level of prices of a basket of selected goods and services that households acquire for the purpose of consumption”.

At an all-India level, the current CPI basket comprises 299 items.

Apart from an aggregate index, consumer price indices are constructed for both rural and urban consumers as well.

How is it calculated?

The “base year” for the current series of indices is 2012. In other words, the price index is given a value of 100 for 2012 and changes from these price levels are then calculated to arrive at inflation rates for each good or service.

According to the National Statistical Office within the MoSPI, the monthly price data is collected from 1181 villages and 1114 urban markets spread all across the country. The data for this purpose is collected on a weekly basis by the field staff of NSO.

What are its components?

The CPI has six main components, each with differing weights and many more sub-components within them. The main components as follows :

- 1> Food and beverages
- 2> Pan, tobacco and intoxicants
- 3> Clothing and footwear
- 4> Housing
- 5> Fuel and light
- 6> Miscellaneous (services such as education, health care etc.)

Among these, food articles currently weigh 45% of the total index. The second-biggest component is that of miscellaneous services. Within the food category, cereal prices are the biggest factor — they account for 9.67% of the total CPI.

This means that a spike in prices of food articles like cereals, vegetables, milk and pulses tends to have the biggest impact in raising consumer inflation. And the reason why food articles have been given such a high weightage is that most Indian consumers tend to spend a considerable portion of their income towards meeting their food demand.

What does the data show?

The inflation rate for any period can be analysed in two ways. One is to look at this December’s price level and compare it with the price level in December last year. The inflation rate — or the



rate at which prices have gone up — so calculated is called the year-on-year increase. This is the most often used inflation rate.

However, one can also calculate the month-on-month change by comparing the prices in December to the prices in November.

december inflation data

The data shows that the YoY inflation rate has started rising towards the end of 2023. The MoM data, however, shows deflation in December.

Deflation means that prices fell from one period to another. It is noteworthy that deflation is different from disinflation (which means a deceleration in the rate of inflation from one month to another).

Among the different components, it was the relative spike in food prices that caused the YoY inflation to rise in December. In particular, vegetable prices increased by almost 28% (relative to December 2022), while pulses were costlier by 21% and spices by 20%. Cereals, too, were costlier by 10%. Such high levels of inflation in just these four food groups, which account for 23% of the total index weight, pushed up the overall inflation rate.

Lastly, as always, the inflation rate varied across the country with Odisha registering the highest inflation at 8.7% and Delhi experiencing the lowest at 2.9%.

What is the significance?

Looking ahead, most analysts, like Dipti Deshpande of CRISIL expect the inflation rate to ease in the coming months as the Kharif harvest as well as government interventions bring down food inflation. On the whole, inflation for the full financial year is likely to be 5.5% with the March 2024 inflation rate expected to be at 5%.

Further, regardless of what is happening to headline inflation, the core inflation rate — that is inflation rate after removing the food and fuel inflation — has been trending down.

December inflation

However, from the perspective of monetary policy, the latest inflation data is likely to delay the cut in interest rates (read EMIs). Before the inflation reversed its trend and started rising in November and December, there were many who had hoped that the RBI may cut as early as April this year. However, it now looks unlikely that RBI will cut interest rates before August.

“Important to note is the RBI view that food shocks can have second order effects that impede attaining policy goals. Hence, we believe that the RBI is unlikely to pivot soon – both on the rates as also on the stance of monetary policy...Effectively, we think the expected growth-inflation dynamics can lead to a shallow rate cut only starting in August 2024,” said Indranil Pan, Chief Economist of Yes Bank.

Higher inflation is also not good news for fiscal policymakers. Partly this has to do with the political ramifications that rising inflation rate can have so close to the elections. But from the perspective of Budget making, too, uncertainty around inflation is hardly welcome.



EXPRESS VIEW ON EXPORT DATA: TRADE UPS AND DOWNS

After falling in November last year, India's merchandise exports picked up marginally in December. As per data released by the Ministry of Commerce and Industry this week, goods exports stood at \$38.45 billion in December 2023, up 1 per cent over the same period the year before. Stripping away petroleum exports, core non-oil exports grew at a higher 6 per cent. Alongside, the country's imports continue to fall, declining by 4.9 per cent in December. This combination of a mildly positive export growth and falling imports has led to the merchandise trade deficit narrowing to \$19.8 billion in December, down from \$20.6 billion in November. As a consequence, analysts at Nomura expect the current account deficit to touch around 1.6 per cent of GDP in the quarter.

In December, of the 30 key merchandise sectors, 17 showed positive export growth. Exports of electronic goods grew at a healthy 14.4 per cent, engineering goods by 10.2 per cent, and gems and jewellery by 14 per cent. For the year so far (April-December), while aggregate exports are almost 6 per cent lower than over the same period last year, 14 sectors have shown positive growth, with sectors like electronic goods and drugs and pharmaceuticals showing healthy performance. The former has grown by 22 per cent, while the latter has registered a growth of 8.2 per cent. On the other hand, even as imports on aggregate have declined by almost 8 per cent in the year so far (April-December), they remain healthy in segments such as iron and steel, non-ferrous metals, machinery and machine tools, electronic goods and gold.

Global trade is facing tremendous uncertainty due to the Houthi attacks in the Red Sea. The consequent increases in transportation costs, insurance premiums and the time involved — as per reports a substantial number of vessels are now being rerouted through the Cape of Good Hope — are likely to adversely impact India's exports, especially to Europe which accounts for around 15 per cent of the country's merchandise exports. As per the commerce ministry, around 80 per cent of the outbound shipping to Europe takes place through the Red Sea region. The full impact of these attacks in the Red Sea will only be visible in weeks and months ahead. However, if India's exports are sharply impacted, the merchandise trade deficit could widen more than currently expected in the last quarter of the financial year.

NEW HIGH FOR PM FASAL BIMA: NEW-LOANEE AREA 70% HIGHER COMPARED TO 2021-22

The Pradhan Mantri Fasal Bima Yojana (PMFBY) in India has achieved a new milestone as the insured gross cropped area of non-loanee farmers has surged to 180 lakh hectares during the 2022-23 crop year. This represents a substantial 70% increase compared to the previous year, demonstrating a growing acceptance of the government's crop insurance scheme. The data from the Ministry of Agriculture and Farmers' Welfare also reveals that the insured non-loanee area accounts for 36.07% of the total insured area under the PMFBY for the year 2022-23, marking the highest proportion in the last five years.

Over the past five years, the non-loanee area's share in the total insured area has seen a positive trend, rising from around 24% to the current 36.07%. In contrast, the loanee area has experienced a decline, decreasing from 444 lakh hectares in 2019-20 to 320 lakh hectares in 2022-23. The PMFBY, launched by the NDA government in 2016, initially made the scheme compulsory for loanee farmers but transitioned to a voluntary basis from Kharif 2020, which contributed to the decline in the loanee area.



Under the PMFBY, farmers pay a premium based on the type of crops, with subsidies available in various states. The scheme covers a wide range of crops and horticultural products. The increasing enrolment of non-loanee farmers is attributed to the scheme's popularity, as it provides significant benefits at highly subsidized premiums, making it widely accepted among farmers. In Kharif 2023, the scheme is notified by 21 states and Union Territories, covering 29 agricultural crops and 59 horticultural crops, further indicating its continued success and adoption by farmers across the country.

EXPRESS VIEW ON LOW WHEAT STOCKS: THE TEST

Wheat stocks in government warehouses are at a seven-year-low of 16.4 million tonnes (mt) as of January 1. That, by itself, is not cause for concern. The present stocks are more than the minimum buffer of 13.8 mt to meet the operational requirements of the public distribution system, plus a strategic reserve, for the next three months. By then, the new crop would start arriving in the mandis. Besides, the government has sufficient rice stocks to more than compensate for any shortfalls in wheat. That should keep both cereal and overall retail food inflation — at near double-digits now — somewhat under control, at least till the national elections scheduled in April-May. The measures taken so far — banning wheat and non-basmati white rice exports, not permitting large retailers and traders to hold more than 1,000 tonnes of wheat, and selling grain from the Food Corporation of India's stocks in the open market — are good enough for that.

The problem, if any, would be after the elections. If the current wheat crop, due for harvesting only from March-end, turns out not too good, it's the next government that will have to deal with the ensuing supply challenge. The Narendra Modi government, to its credit, has been proactive in supply-side management with regard to pulses and edible oils; imports of these have been allowed at nil or low duties till March 31, 2025. The same alacrity hasn't been seen in wheat, rice and sugar — perhaps because the growers of these crops are politically more organised than pulses or oilseeds farmers. While exports have been restricted, along with curbs on diversion of cane juice and intermediate-stage molasses for ethanol production by sugar mills, the Modi government has refrained from opening up imports. But given the finely balanced supply situation — the new 2023-24 sugar season, too, has begun with six-year-low stocks and no clarity on actual production — imports may be inevitable sooner than later.

Ideally speaking, keeping the import window open (like in edible oils and pulses) without resorting to any export and stocking controls (going against the letter and spirit of the Modi government's now-repealed farm laws) is what's required in all agri-commodities. India's farm sector, unlike industry and services, has suffered the most from lack of policy stability and predictability, impacting investments in processing, warehousing, marketing and research. The preoccupation with short-term goals has meant deploying the sledgehammer approach in response to every inflation event in onions or pigeon pea — and not doing anything when prices crash. It has taken the focus away from long-term policy that is in the ultimate interest of both producers and consumers. A strategic vision for Indian agriculture, going beyond food inflation, should be a priority for the next government.

THE ALLEGATIONS AGAINST PVR FOR ABUSE OF DOMINANT POSITION

The story so far:

Having found “no discernible competition concern,” the Competition Commission of India (CCI) rejected a complaint alleging that multiplex chain PVR had abused its dominant market position.

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



Yogesh Pratap Singh, a film director, had accused the multiplex chain of according preferential treatment to films from large production houses over those by independent film makers.

What were the allegations about?

The primary allegation was that the multiplex chain, utilising its dominant position in the film exhibition market, had accorded preferential treatment to films of the “powerful and monetarily affluent production houses.” Mr. Singh also said that PVR engaged in cartelisation and vertical integration. He cited PVR’s foray into the business of film production; and actions relating to film distribution and film exhibition with big production houses. In the context of film distribution, vertical arrangements entail agreements between entities at different levels of the production chain; that is, producer-distributor, producer-exhibitor and distributor-exhibitor.

Elaborating on his claim of discriminatory treatment, Mr. Singh said that his films *Kya Yahi Sach Hai* (2022) and *The Indian Supari Company* (2022) suffered because PVR had allegedly created entry barriers for films by independent film makers. He also argued that an added motivation was the chain being involved in the production of certain films with its own company, Starlight Pictures Private Limited. For example, as described by the complainant, Ranbir Kapoor-starrer *Brahmastra*’s trailers would be played several times at screenings free of cost and that the film was assigned an “overwhelming” number of screens. Mr. Singh alleged that the screen allocation policy of the chain was “opaque” and “discriminated” against him.

What was PVR’s response?

PVR denied the allegations. It said that the allegations were not backed by evidence. Further, the chain argued that the purpose of the complaint was to “pressurise” it to exhibit his film, in the absence of any legal obligation to do so. PVR clarified that it has no special tie-ups or recurring/long-term arrangements. Further, the terms of agreement, including those of promotion, agreed upon with independent film makers were similar to those with larger production houses. More importantly, the multiplex chain said that it was not in their interest to accord preferential treatment to a specific producer or distributor, and that it does not offer any preferential treatment to its own films. It argued that a majority of its exhibition revenue is earned from films produced and distributed by third parties. PVR clarified that screen allocation is determined on “mutually objective criterion” — this primarily entails the revenue generation potential of the movie.

What does the CCI’s order say?

After examining the submissions of the multiplex chain, CCI concluded that there existed no perceptible concern about competition. Its order held that the commercial wisdom of the exhibitors is largely driven by consumer demand. Unless harm to competition was apparent, any intervention on its part would only lead to “undesirable consequences,” it noted. This would amount to taking away the autonomy of the entities and substituting that with the decisions of the regulator. About vertical integration, the order held that it was not per se prohibited under the provisions of the Competition Act. Further, the complainant had not submitted any evidence to substantiate these allegations. It held that most of the agreed terms for both independent filmmakers and larger production houses were largely the same — including revenue sharing terms. Finally, upholding autonomy in screen allocation, the regulator concluded that the guiding factor for selection and allocation was maximisation of revenue. The specific criteria include the revenue generating potential of the movie, the buzz around the film, marketing, advertising and promotions done etc.



WHAT ARE THE COMPLAINTS ABOUT DIGI YATRA?

The story so far:

In December 2023, as air travel peaked in the holiday season, it was found that security personnel and private staff were collecting facial biometrics at airport entry gates without the consent or knowledge of passengers for the Digi Yatra app.

What are the complaints from air travellers?

Last month, there was a surge in complaints from passengers using various airports about the “coercive and deceptive” manner in which both private staff and CISF personnel were enrolling them for Digi Yatra. Travellers said CISF personnel at the entry gate of passenger buildings were asking travellers to scan their boarding pass and capturing their photos, following which they would provide consent on behalf of the passengers for registering for Digi Yatra without seeking permission or even informing them.

The CEO of Digi Yatra Foundation, Suresh Khadakhbavi, told The Hindu that enrolment for Digi Yatra was stepped up in December as airports record high footfall. He said this was part of the “day of travel” enrolment drive at airports, which is for those who haven’t downloaded the app and registered themselves ahead of travel. “This is to allow passengers to experience the Digi Yatra process and understand and appreciate the benefits of the seamless, hassle-free passenger travel so that they can do permanent enrolment on the Digi Yatra app,” said Mr. Khadakhbavi.

What is Digi Yatra? What are its objectives?

The Digi Yatra initiative aims to promote digital processing of passengers for paper-less and seamless movement through various checkpoints at airports such as the entry gate, security check area and boarding gate. The Digi Yatra policy was unveiled by the Ministry of Civil Aviation in 2018 as an entirely voluntary programme. After some delay, it was rolled out from December 2022 at three airports, including Delhi’s Indira Gandhi International Airport. Today, it is present at 13 airports, and will be expanded to 24 more airports in 2024.

The Digi Yatra app is not owned by the government, but by a consortium called the Digi Yatra Foundation whose shareholders comprise the Airports Authority of India and five private airports, including Delhi, Mumbai, Bengaluru, Hyderabad and Kochi. The government does not provide any funding for its implementation, and airports are required to spend from their kitty. The implementation involves an app that passengers can download. They need to provide their name, mobile, email address and Aadhaar document to register. They also have to upload a selfie so that their image can be matched with the one on the Aadhaar. These two steps lead to the creation of a digi yatra travel id. When passengers upload their air tickets, the digi yatra id gets updated with their travel details.

At airports, passengers scan their boarding pass at an e-gate and look into a camera that captures their image. Once the face verification is successful, the e-gate opens. This also creates the passenger data-set which is a combination of their facial scan and PNR. This data is then used as a single token at the remaining check points so that a passenger can simply zip through them with a mere facial scan without the need to produce a boarding pass. The aim is to improve operational efficiency and allow faster processing of passengers, allowing airlines to track delayed passengers and enhancing security by ensuring there is no exchange of passes among passengers or wrong boarding.



What are the issues about implementation?

The government maintains that there is no central storage of a passenger's data, which is encrypted and stored in a secure wallet on his or her mobile device. Though the data is shared with the departure airport on the day of travel, it is purged within 24 hours. According to a detailed analysis by the Internet Freedom Foundation, the Digi Yatra policy states that the airports using the Digi Yatra Biometric Boarding System will adhere to the data protection law as mandated by the Government of India. But the Digital Personal Data Protection Act, 2023 was passed by Parliament in August 2023 and the rules are yet to be framed. The Bill has also been criticised for giving the government broad powers to exempt any of its agencies from all its provisions. Additionally, these exemptions are also granted in the Digi Yatra policy. According to the policy document, "any security agency, Bureau of Immigration or other government agency may be given access to the passenger data based on the current/existing protocols prevalent at that time." It also provides that the Biometric Boarding System will "have an ability to change the data purge settings based on security requirements on a need basis."

WHY IS AVIATION SAFETY UNDER SCRUTINY?

The story so far:

The issue of air safety has played out under intense media scrutiny following two aviation incidents. In the first instance, on January 2, a Japan Airlines (JAL) Airbus A350-900 collided with a Japan Coast Guard De Havilland Canada Dash 8 after its landing, with both aircraft catching fire. While all 367 passengers and 12 crew on the JAL aircraft escaped, there were five fatalities (of a total of six passengers) on the Coast Guard plane. In the second instance, on January 5, an Alaska Airlines Boeing 737 MAX 9 with 171 passengers and six crew, was departing from Portland, U.S., when a window panel 'door plug' blew out mid-air causing depressurisation. No major passenger injuries were reported.

What happened after the Boeing case?

The incident has renewed attention on the Boeing 737 MAX's troubled flight safety record. On January 12, the Federal Aviation Administration (FAA) in the U.S. announced more "oversight on Boeing" which will be in addition to its probe into the incident. In its investigation, the National Transportation Safety Board (NTSB), U.S., is also focusing on the cabin pressure control system. Boeing CEO Dave Calhoun had told Boeing employees earlier in a meeting at the company's factory in Renton, Washington, where the 737s are assembled, "We're going to approach this — number one — acknowledging our mistake."

The FAA has added that every Boeing 737 MAX 9 with a plug door would remain grounded till there was a thorough review. In the Alaska incident, parts of the seat next to the 'door plug' were damaged, while some other seat frames were twisted. The 'door plug' was found later in a neighbourhood in Portland. A few mobile phones of passengers were sucked out. Alaska Airlines, and later United Airlines, reported their aircraft technicians finding "loose hardware" on some MAX aircraft. India's Directorate General of Civil Aviation also reported an unidentified Indian operator of the Boeing 737 MAX 8 finding a missing washer during a maintenance inspection. This follows a Boeing directive in December 2023 asking 737 MAX operators to carry out checks after a loose bolt was found in the rudder control system of a 737 MAX (the airline has not been named).



What does the Airbus incident show?

The JAL Airbus was flying from Sapporo New Chitose to Tokyo Haneda, which is the world's third busiest domestic airline route (according to aviation data). This is also the first complete hull loss of an A350. However, it was the survival of all the passengers on a new technology aircraft that drew attention, highlighting the importance of crew training, the critical response time of fire and rescue teams and the advances in aircraft manufacturing technology. In the JAL incident, as the aircraft's public announcement system malfunctioned, the cabin crew had to conduct the evacuation using megaphones and voice commands. All passengers were evacuated through three emergency exits.

An official spokesperson for Japan Airlines told The Hindu that its crew emergency training (as in any airline) is stringent with written tests and regular exercises. There is also emergency evacuation training for flight deck crew (pilots).

A PASSENGER ATTACKED A PILOT. HOW ARE AIRLINES EXPECTED TO RESPOND?

IndiGo has initiated the process of putting on the no-fly list a passenger who assaulted a pilot after the flight was delayed for several hours amid heavy fog in Delhi on Sunday.

The airline declared the passenger "unruly", and further action will be guided by the Civil Aviation Requirements (CAR) on "Handling of unruly passengers" issued by the aviation watchdog Directorate General of Civil Aviation (DGCA).

The CAR lay down the procedure that airlines must follow with regard to unruly passenger behaviour of varying degrees at the time of the incident and subsequently.

Over the past few months, the DGCA has been prodding carriers to proactively report incidents of disruptive passenger behaviour on board aircraft, which the regulator feels could compromise operational safety.

How are airlines supposed to respond to incidents of unruly passenger behaviour?

The airline should first inform the passengers concerned that in case their behaviour is deemed unruly as per the guidelines, they could be arrested.

Unruly behaviour includes (but is not limited to): consuming liquor or drugs resulting in unruly behaviour; smoking; not obeying the pilot's instructions; using threatening or abusive language against crew or other passengers; physically threatening and abusive behaviour; intentionally interfering with discharge of duties by the crew; and endangering the safety of the aircraft and those on board.

In the incident that took place at Delhi's IGI Airport on Sunday, the aircraft was still on ground, so the passenger was handed over to airport security immediately. In cases of unruly behaviour in the air, the pilot is required to quickly assess if the cabin crew can control the unruly passenger, and accordingly inform the airline's central control on the ground.

If the pilots and the airline's central control believe that the unruly passenger cannot be brought under control by the cabin crew, they must land as soon as possible at the nearest available airport. "Upon landing..., airline representative shall lodge FIR (First Information Report) with the concerned security agency at aerodrome, to whom, the unruly passenger shall be handed over," the rules state.



What is the procedure to be followed after the incident is over?

When an airline receives a complaint of unruly passenger behaviour from the pilot-in-command, it must refer the complaint to an internal committee, which must include (i) a retired district and sessions judge as chairman, (ii) a representative of a different airline and, (iii) a representative of a passengers' association, or consumer association, or a retired officer of a consumer disputes redressal forum.

The internal committee is required to decide the matter within 30 days, along with the categorisation of the incident in one of three defined category levels. The committee shall also decide the duration for which the unruly passenger will be banned from flying. The committee's decision shall be binding on the airline.

And what are the category levels of disruptive passenger behaviour?

The levels define behaviour ranging from verbal harassment to murderous assault.

Level 1: Unruly behaviour, including physical gestures, verbal harassment, and unruly inebriation.

Level 2: Physically abusive behaviour, including pushing, kicking, hitting, and grabbing or inappropriate touching or sexual harassment.

Level 3: Life-threatening behaviour, including damage to aircraft operating systems, physical violence such as choking, eye gouging, murderous assault, and attempted or actual breach of flight crew compartment.

What penalties can unruly behaviour by a flight passenger attract?

The airline can ban the unruly passenger for up to 30 days immediately after the incident.

"Pending decision of the Internal Committee, the concerned airline may ban such unruly passenger from flying, but such period may not exceed a period of 30 days... In case the Internal Committee fails to take a decision in 30 days, the passenger will be free to fly," the rules say.

Airlines are required to maintain a database of unruly passengers and share it with the DGCA and other airlines. The DGCA maintains a No-Fly List based on the data shared by carriers.

In addition to the airline on whose aircraft the incident occurred, other carriers also have the option of banning such passengers from flying for varying durations based on offence levels. For Level 1 and 2 offences, the ban on flying can extend to three months and six months respectively. For a Level 3 offence, the minimum ban should be for 2 years, with no upper limit.

An individual who is banned from flying can appeal within 60 days to an Appellate Committee constituted by the Ministry of Civil Aviation, and headed by a retired judge of a High Court. An appeal against the appellate panel's decision shall be made to a High Court.

What has been the DGCA's message to airlines?

In April, the DGCA said that it had noticed incidents of smoking in aircraft, consumption of liquor resulting in unruly passenger behaviour, altercations between passengers, and incidents of inappropriate touching or sexual harassment by passengers "wherein post holders, pilots and cabin crew members have failed to take appropriate actions".



The regulator underlined that norms must be followed, and advised the heads of operations of all airlines to sensitise pilots, cabin crew, and other concerned officials on handling unruly passengers. Training programmes should be held to ensure “effective monitoring, maintenance of good order and discipline on board the aircraft so that safety of aircraft operations is not jeopardised in any manner”, the DGCA said.

Airline personnel should also “carefully monitor” the behaviour of passengers who are “likely to be unruly” and, if deemed as posing a threat to flight safety or safety of crew and other passengers, they should not be taken on board.

“All airlines shall establish mechanism to detect and report unruly passenger behaviour at check-in, in the lounges, at the boarding gate or any other place in the terminal building in order to prevent such passengers from boarding,” the rules state.

The rules note that unruly passenger behaviour could stem from “an event of unsatisfactory service/ condition or effect of a series of such events that build up” (which appears to have happened in the recent case in Delhi), and state that in such cases, airline staff should watch out for early signs of “potential unruly behaviour”.

“Airlines shall focus and act on these early signs, rather than dealing exclusively with escalated events. At no stage, the airline staff/ crew member shall show discourteous behaviour during redressal of genuine passenger rights,” the rules say.



DreamIAS



LIFE & SCIENCE

SPACETIME: THE GEOMETRY OF OUR UNIVERSE

WHAT IS IT?

Spacetime is the name of a mathematical model that combines the three dimensions of space and the dimension of time into a single entity. By analysing spacetime using mathematical tools, we can understand different characteristics of our universe.

Until the 19th century, we assumed space and time operated separately. The laws of physics we had until then were fine with this arrangement. But in the mid-19th century, scientists performed some clever experiments and found the universe at the largest scales probably looked different from the universe at the scale of human experience.

This difference is related to the universe's geometry. At the human scale, spacetime appears to be flat: a beam of light from a laser will travel in a straight line. But at the largest scale, our spacetime may actually occupy a spherical space. If you shine a really powerful laser in front of you and wait for an incredibly long time, light from the laser could technically circle back to you.

Albert Einstein's special theory of relativity hammered in the importance of a spacetime view of our universe. It posited that if there are two observers A and B, each with a clock, such that A is moving (but not accelerating) faster than B, A's clock will measure less time as having passed than B's clock.

A spacetime model is a model of the universe that, when scientists analyse it, 'naturally' gives rise to these outcomes.

THE DEVICES THAT TRANSLATE QUANTUM EFFECTS TO COMPUTING AWESOMENESS

Information technology (IT) has become essential to communication, banking, business, health, education, entertainment, and many other walks of our lives. Its prevalence makes us wonder if society can survive without it. IT relies on gadgets that store and process vast amounts of information at humanly impossible speeds.

Gate in computing

A bit is the smallest piece of information storage (it is a portmanteau of binary digit). Often, a large number of bits is required to convey meaningful information. With the advent of modern semiconductor technology, we routinely speak of household computers having a few terabytes (8 trillion bits) of information storage. One terabyte can store 500 hours of high-definition video content.

In a computer, a bit is a physical system with two easily discernible configurations, or states – e.g. high and low voltage. These physical bits are useful to represent and process expressions that involve 0s and 1s: for instance, low voltage can represent 0 and high voltage can represent 1.

A gate is a circuit that changes the states of bits in a predictable way. The speed at which these gates work determines how fast a computer functions.



The quantum gate

Modern computers use semiconductor transistors to build circuits that function as bits. A semiconductor chip hosts more than 100 million transistors on 1 sq. mm. Imagine how small an individual transistor is and how close it is to adjacent transistors. As transistors become smaller, they become more susceptible to quantum effects. This is not desirable as the existing technology will then become unreliable for computational tasks. So there is a limit to how many transistors a computer can have.

Moore's law, announced in 1965, states that computing power increases tenfold every five years. This law no longer holds as we have already slowed to a two-fold increase every five years. But this doesn't have to mean we are nearing the end of computing development: the quantum revolution is coming.

The most basic unit of a quantum computer is a quantum bit, or qubit. Like in a conventional computer, it is a physical object that has two states. For example, the spin of a particle can point along two different directions, so the particle can function as a qubit. Or it can be a superconducting circuit that mimics an atom, and its two states can be a ground state, where it has lower energy, and a higher 'excited' state.

A quantum gate is a physical process or circuit that changes the state of a qubit or a collection of qubits.

In the quantum-computing context, if particles or superconducting qubits are the physical qubits, the gate is often an electromagnetic pulse.

Interlude: Superposition

A fundamental limitation of conventional computing architecture is that each bit can exist in only one of the two states, 0 or 1. But according to quantum physics, a qubit can also be in a superposition of its two states at the same time.

Imagine you're walking in the northeast direction. It is equivalent to moving partly along the north and the rest along the east. Your northeast movement is a superposition of walking along the north and along the east. So by combining different distances along the two directions, you can realise some movement in any direction between the two.

The basis states of the qubit are similar to the north and east directions. A qubit in a superposition has some contributions from each basis state. Different superpositions correspond to different amounts of contributions.

If a qubit is in a superposition, then measuring the qubit will cause it to collapse to one of the two states (i.e. either north or east). However, we can only predict the probability that it will collapse to one state. Quantum computers use this to their advantage.

For example, to perform one calculation that requires 16 different inputs, a classical computer requires a total of four bits and sixteen computations. But with four qubits in superposition, a quantum computer could generate answers corresponding to all 16 inputs in a single computation.

Superposition is one of the main factors responsible for speeding up a quantum computer.



But while superposition provides enormous advantages, it is a fragile effect. It deteriorates when qubits interact with their environment. Identifying ways to sidestep or overcome this fragility is an active area of research today.

What gates do

In quantum computers, quantum gates act on qubits to process information. For example, a quantum NOT gate changes the state of a qubit from 0 to 1 and vice versa. The effect of the NOT gate on a superposition is again a superposition, resulting from the action of the NOT gate on each basis state in the initial superposition.

Notably, this feature is common to all quantum gates: the effect of a quantum gate on a superposition is the superposition of the effects of the quantum gate on the basis states contributing to the initial superposition.

So as the quantum NOT gate inter-converts the states 0 and 1, its action is to swap the contributions of the basis states in the superposition.

The Hadamard gate is a type of gate that acts on a single qubit: it generates a superposition of the basis states.

The controlled-NOT, or CNOT, gate acts on two qubits: a control qubit and a target qubit. The control qubit is unaffected by the CNOT gate. The target qubit flips from 0 to 1 or 1 to 0 if the control qubit state is 1.

CNOT plus a few other gates (that act on single qubits) can perform all possible logical operations on binary information encoded on qubits. That is, they can be combined to form quantum circuits capable of processing information.

Research on reliable quantum computers and suitable quantum algorithms is happening in many institutes, universities, and research labs worldwide. Large-scale, reliable quantum computers will benefit industries ranging from drug design to safe communications.

WHAT ARE LIGHT-EMITTING DIODES AND WHY ARE THEY PRIZED AS LIGHT SOURCES?

In October 2014, the Royal Swedish Academy of Sciences issued a statement in which it said, "Incandescent light bulbs ... lit the 20th century; the 21st century will be lit by LED lamps." The occasion was the awarding of the Nobel Prize for physics for that year, for an achievement that paved the way for light-emitting diodes (LEDs), to succeed incandescent bulbs and fluorescent lamps, as the world's light-source of choice.

A diode is an electronic component with two terminals, an anode and a cathode, designed to allow the flow of electric current in only one direction. It is based on a p-n junction, where a p-type material with positively charged holes and an n-type material with negatively charged electrons meet. The asymmetry of this junction enables current to flow from the n-type material to the p-type material but not the other way around.

An LED, or Light Emitting Diode, is a specific type of diode that emits light when an electric current is applied. Inside the LED's p-n junction, electrons have more energy than holes. When an electron combines with a hole, energy is released in the form of light, a phenomenon known as electroluminescence. The band gap, which is the energy gap between the lower and higher energy levels in a material, plays a crucial role in determining the colour of the emitted light.



The band gap prevents electrons from conducting an electric current unless they receive a minimum amount of energy to jump across the gap. In LEDs, researchers carefully choose materials for the p-type and n-type layers to engineer a specific band gap that corresponds to visible light. By passing an electric current through the diode, the electric field created 'kicks' the electrons, leading to electron-hole recombination and the emission of light.

What colours can an LED produce?

Since LEDs can produce all three primary colours — red, green, and blue — different LEDs can be combined on a display board to produce a large variety of colours. (There are other ways as well.)

This said, scientists were able to create red and green LEDs more than 40 years before they created blue LEDs. The reason: scientists had identified a compound, gallium nitride, that was electroluminescent and whose band gap could yield blue light, but they didn't know how to create crystals of this compound with the precise physical, electronic, and optical properties. Gallium nitride was also fragile, quickly becoming a powder in the process used to create crystals. Inventing the blue LED eventually required a series of breakthroughs in epitaxy, the process by which p-type and n-type materials are built layer by layer. In the late 1980s, three Japanese researchers, Isamu Akasaki, Hiroshi Amano, and Shuji Nakamura, led teams that produced a bright blue LED with gallium nitride. For this feat they received the physics Nobel Prize in 2014.

What are the advantages of LEDs?

According to Moore's law, specified by American engineer Gordon Moore in the 1970s, the number of transistors on a chip would double every two years. Similarly, improvements to LEDs since 1970 have followed Haitz's law. Named for scientist Roland Haitz, it states that for a given frequency of light, the cost per unit of light of an LED will drop 10x and the amount of light it produces will increase 20x every decade.

But even before Haitz's law, researchers prized LEDs because they were more efficient than incandescent bulbs and fluorescent lamps. Per watt of power consumed, LEDs can produce up to 300 lumen (amount of visible light emitted per second) versus incandescent bulbs' 16 lumen and fluorescent lamps' 70 lumen. Together with their greater durability and light contrast, LEDs' advantages translated to higher cost savings and less material waste.

LEDs have several applications in industry, consumer electronics, and household appliances: from smartphones to TV screens, signboards to 'feeding' plants light in greenhouses, barcode scanners to monitoring air quality.

Today, LEDs can also produce a variety of colours or emit energy at higher and lower frequencies; LEDs can be 'embedded' in skin; and organic LEDs emit more light (albeit by a different mechanism). Researchers are also exploring more efficient LEDs made of materials called perovskites.

SAMSUNG'S NEW FLAGSHIPS TALK AI LANGUAGE, TAKE CHALLENGE TO APPLE, GOOGLE

Giving a glimpse of a world where smartphones too will depend heavily on AI for regular daily features, Samsung Thursday launched its new flagship Galaxy S24 series at a global event in San Jose, California. The choice of location seems intentional as this is Apple country and AI is one aspect the bosses at Apple Park nearby have not signed off on yet for iPhones. iPhones are known to be fashionably late with some features, but after the S24 launch, Apple might feel the pressure



though the immediate impact could be more on sales of Google's Pixel phones which tout their AI layer as the USP.

At the launch event, TM Roh, President & Head of Mobile Business, Samsung Electronics, said the company was focusing on "human centric experiences that make everyday life easier and empower people to unlock their potential". He added: "We start a chain reaction that lights up new opportunities to bring your potential and inspire societies... your imagination becomes real."

Interestingly, Samsung is banking heavily on the recently released Gemini Nano LLM model for its on-device AI features.

Yes, the cutting-edge features like live audio translation on the native calls and live text-to-text translation, both in 13 languages including Hindi, work on device without any need to be connected to the web. There is also Circle to Search which Samsung has co-developed with Google and uses the functionality of Google Lens to search anything that is highlighted on screen or seen by the camera.

As expected the camera app will benefit immensely from AI and now comes with immediate editing suggestions to erase unwanted elements in photos like shadows and reflections. While the Pixel first offered an AI-led magic eraser a couple of years back, Samsung's iteration is more evolved and cleans up even elements that are not isolated. While these features are offered on device, it also brings in a Generative AI feature that uses the web and lets users alter a photo significantly by moving around a selected subject and even extending the frame while correcting the angles.

Later, Wonjun Choi, Executive Vice President at Mobile eXperience Business in Samsung Electronics, head of Flagship Product R&D Team and the head of Technology Strategy Team, told IndianExpress.com that Samsung has a hybrid approach towards AI today, both cloud AI and on-device. "We also believe on-device AI is going to grow in importance. In such a case, higher performance AI features would have to be accommodated and that means the functionality or the performance of the device itself would also have to keep improving."

The Samsung Galaxy S24, S24+ and S24 Ultra will all come with the same AI-led features with mostly the size and the camera differentiating the devices along with their pricing. It is not surprising that the phones look very similar to last year's version and have also started resembling iPhones with their new titanium bodies. The S24 Ultra now has a rich finish that makes it stand out from the regular models. It also ushers in a change in the camera with a new 5X optical zoom lens paired with a 50MP sensor replacing the 10X optical zoom of last year which has a 10MP lens. Samsung will be using AI to stabilise shots across the zoom range, going all the way up to 100X digital zoom.

The 6.8-inch S24 Ultra is powered by Snapdragon 8 Gen 3 and will be available in a best configuration of 12GB+1TB. It is not clear which processor will power the 6.2-inch S24 and 6.7-inch S24+. The former will have the best configuration of 8GB-512GB, while the S24+ will have 12GB+512GB.

CHANGING ENVIRONMENT CAUSED THE DEMISE OF LARGEST PRIMATE

Gigantopithecus blacki was a species of great ape found in China between 2 million and 330 thousand years ago, after which the species became extinct. With an estimated height of 3 m and weight of 200–300 kg, it is thought to be the largest primate to ever exist on Earth. The distribution

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



of the most recent fossils suggests that the geographical range of *G. blacki* markedly reduced before their extinction. An exact timeline and reason for this decline has yet to be established.

Determining changes

The researchers collected and dated fossil samples from 22 caves in southern China. Analyses of the teeth of *G. Blacki* and *Pongo weidenreichi* (their closest primate relative) were used to determine changes in diet or behaviour of the species within the extinction window, in conjunction with pollen and stable isotope analysis to reconstruct the environment.

Pollen analysis indicates that 2.3 million years ago, the environment was composed of dense forests with heavy cover — conditions to which *G. blacki* was well-suited.

Before and during the extinction window (295–215,000 years ago), changes in forest plant communities led to a transition in the environment with open forests dominating the landscape.

The transition to open forest is reflected in the dental analyses, which suggest that the diet of *G. Blacki* became less diverse and with less regular water consumption; accompanied by indications of increased chronic stress among *G. blacki* over this period. This is in contrast to *P. weidenreichi*, which shows much less stress and better adaption of its dietary preferences to changing conditions over this same period.

The fossil numbers support these hypotheses, showing a decline in the number and geographical spread of *G. blacki* fossils in the record relative to *P. weidenreichi* by 300 thousand years ago.

The authors present a precise timeline for the demise of *G. blacki* that suggests it struggled to adapt to a changing environment compared to its primate peers.

SEALING THE WARMTH

How do seals stay warm and hydrated in the Arctic?

Arctic seals have evolved many adaptations to cope with their frosty environment. Researchers report that these structures help the seals retain heat and moisture as they breathe in and out. The researchers used computer tomography to make 3D models of the nasal cavities/maxilloturbinates of an Arctic species of seal, the bearded seal, and a subtropical species, the Mediterranean monk seal. Then, they used energy dissipation models to compare the seals' ability to warm and moisten air during inhalation and to reduce heat and moisture loss during exhalation. In cold, dry environments, animals lose heat and moisture just by breathing. Most mammals and birds have complex bones called maxillaturbinates inside their nasal cavities that help to minimise this risk. These porous, bony shelves are covered with a vascularised layer of mucosal tissues that humidify inhaled air, which is important for lung function and reduces the amount of heat and moisture lost during exhalation.

ANCIENT DNA REVEALS ORIGINS OF MULTIPLE SCLEROSIS

DNA obtained from the bones and teeth of ancient Europeans who lived up to 34,000 years ago is providing insight into the origin of the often-disabling neurological disease called multiple sclerosis (MS) — finding that genetic variants that now increase its risk once served to protect people from animal-borne diseases.



The findings stemmed from research involving ancient DNA sequenced from 1,664 people from various sites across Western Europe and Asia. These ancient genomes were then compared with modern DNA from the U.K. Biobank, comprising about 410,000 self-identified “white-British” people, and more than 24,000 others born outside the U.K., to discern changes over time.

One striking discovery related to MS, a chronic disease of the brain and spinal cord that is considered an autoimmune disorder in which the body mistakenly attacks itself.

The researchers identified a migration event about 5,000 years ago, at the start of the Bronze Age, when livestock herders called the Yamnaya people moved into Western Europe from an area that includes modern Ukraine and southern Russia.

They carried genetic traits that at the time were beneficial, protecting against infections that could arise from their sheep and cattle. As sanitary conditions improved over centuries, these same variants increased MS risk.

This helps explain, the researchers said, why Northern Europeans have the world’s highest MS prevalence, double that of Southern Europeans.

THE TUBELESS CONUNDRUM

Q: Why are tubeless tyres not popular in India?

A: Tubeless tyres are not popular in India for two reasons. First, rusting of rims, which leads to air leaks, is a perennial problem in a tropical climate. Second, fitment of such tyres needs special tools and presses and so they cannot be repaired in roadside shops.

In conventional tubed tyres, the load is carried by a volume of air held inside a tube, which is closeted to the inside of the rim at the bottom and to a tyre over the remaining area. In tubeless tyres, the tyre itself holds the air.

Outwardly, a tubeless tyre resembles a tubed tyre. The inside of a tubeless tyre has an airtight lining extending beneath the bead – the part of the tyre that anchors it to the rim – when inflated. In order to provide perfect sealing, a special coat of rubber is provided to the inside wall of the tyre which is fitted to the rim using rubber seals. The special bead seating (on the rim) also prevents air leak. There is no need for a flap and so a valve is fitted to the rim itself for inflating or deflating the tyre.

Tubeless tyres have distinct advantages over conventional tubed tyres. For example, downtime is reduced due to the elimination of tube and flap troubles, and fitting is easier. It runs cooler, which is important in high ambient temperatures and on long hauls.

Unnoticed accidental damage can lead to a burst with tubed tyres. That is, the air escapes through the tube-tyre interspace. Such damage shows up as a slow leak in tubeless tyres. There is no run-flat situation and so the user can safely travel up to 10-15 km before setting it right.

These obvious advantages of tubeless tyres have led to its adoption in many other countries.

STUDY REVEALS THE OLDEST EVIDENCE OF PHOTOSYNTHESIS

Oxygenic photosynthesis, in which sunlight catalyses the conversion of water and carbon dioxide into glucose and oxygen, is unique to cyanobacteria and related organelles within eukaryotes.



Cyanobacteria had an important role in the evolution of early life and were active during the Great Oxidation Event around 2.4 billion years ago, but the timings of the origins of oxygenic photosynthesis are debated owing to limited evidence.

Catherine Demoulin from the University of Liège, Liège, Belgium and others present direct evidence of fossilised photosynthetic structures from *Navifusa majensis*. The microstructures are thylakoids; membrane-bound structures found inside the chloroplasts of plants and some modern cyanobacteria. The authors identified them in fossils from two different locations, but the oldest, which come from the McDermott Formation in Australia, are 1.75 billion years old.

N. majensis is presumed to be a cyanobacterium. The discovery of thylakoids in a specimen of this age suggests that photosynthesis may have evolved at some point before 1.75 billion years ago. It does not, however, solve the mystery of whether photosynthesis evolved before or after the Great Oxidation Event. Similar ultrastructural analyses of older microfossils could help to answer this question, the authors say, and help to determine whether the evolution of thylakoids contributed to the rise in oxygen levels at the time of the Great Oxidation Event.

Thylakoids represent direct ultrastructural evidence for oxygenic photosynthesis metabolism. Thylakoid membranes are dense, mostly galactolipid, protein-containing bilayers in which photosynthesis occurs in photosynthetic organisms. “The discovery of preserved thylakoids in *N. majensis* from both the Shaler Supergroup and Tawallah Group provides direct evidence for oxygenic photosynthesis, for a cyanobacterial affinity and for metabolically active vegetative cell rather than a cyst (akinet) stage for these specimens,” they note.

“We predict that similar ultrastructural analyses of well-preserved microfossils might expand the geological record of oxygenic photosynthesisers, and of early, weakly oxygenated ecosystems in which complex cells developed,” they write.

COULD SISAL LEAVES MAKE SANITARY NAPKINS MORE SUSTAINABLE IN INDIA?

The ancient Aztec and Mayan civilisations were perhaps the first to begin making paper out of sisal leaves. Since then, the stiff, green sword-like leaves have been used to make twine, cloth, and carpets. The plant itself is also used to make mezcal, a distilled alcoholic beverage.

Now, in a move to make menstrual hygiene products more environmentally sustainable, scientists at Stanford University have reported a method to produce from sisal leaves a “highly absorbent and retentive material”.

As a result, the researchers posit in their *Nature Communications Engineering* paper, the material can potentially replace cotton, wood pulp, and chemical absorbents in sanitary napkins.

The absorption capacity of the material is higher than those found in commercial menstrual pads, they add.

The study’s authors also claim that their method uses no polluting or toxic chemicals, can be carried out locally at a small scale, and is environmentally sustainable.

Led by associate professor of bioengineering Manu Prakash, the team is currently working with a Nepal-based non-governmental organisation to test whether their method can be scaled up to mass produce sanitary napkins and meet the growing demand for low-cost and ‘green’ menstrual hygiene products.



Access to hygienic menstruation

In 2022, the Centre for Economic Data and Analysis at Ashoka University reported that there has been a significant rise in the number of people using hygienic methods — i.e. sanitary napkins, tampons, and menstrual cups — to manage their menstruation in India.

Despite this promising growth, access to menstrual hygiene products remains limited for around 500 million people worldwide. In rural India, for example, only 42% of adolescent women use exclusively hygienic methods to manage their periods.

One key barrier in making menstrual hygiene products, like sanitary napkins, accessible is the rising cost of raw materials and distribution.

The absorbent material in sanitary napkins is often a combination of wood pulp and synthetic superabsorbent polymers (SAPs). The latter are materials that can absorb a large amount of fluid relative to their own mass.

Even as State and Central governments in India are working to make sanitary napkins available widely at lower prices, experts say that their widespread use is environmentally unsustainable.

According to gynaecologist Shehla Jamal, founder and president of the Society for Menstrual Disorders and Hygiene Management, “Menstrual sanitation waste is adding non-biodegradable waste in the environment [in bulk],” and in turn, constituting an environmental hazard.

For example, according to estimates from a 2022 United Nations Population Fund report, Patna alone discards 9.8 billion sanitary napkins every year. Another estimate from a 2022 study placed the monthly quantity of discarded sanitary napkins in Chennai at 27 million a month.

Dr. Jamal also said that single-use sanitary napkins contain dioxin, which is a persistent environmental pollutant as well as a carcinogen that puts users of sanitary napkins at risk of cancer. The International Agency for Research on Cancer (IARC) classifies dioxin as a “known human carcinogen”.

A sturdy succulent

Owing to the growing environmental concerns around menstrual sanitation waste, scientists have in the past pondered over ways to make sanitary napkins more environmentally sustainable. Chandra Shekhar Sharma, a professor of chemical engineering at the Indian Institute of Technology, Hyderabad, told this reporter that other plant fibres – like those obtained from banana plants – have been used to synthesise absorbent material for sanitary napkins.

Prof. Sharma’s group in the past has also attempted to reduce the use of SAPs in sanitary napkins by replacing them with cellulose-based nanofibers.

However, there is one problem with relying only on banana plants for plant-based absorbent materials. Access to hygienic menstruation is most limited in low- and middle-income countries, many of which are located in the tropics and are prone to drought. Banana plants are particularly sensitive to drought and therefore not sustainable choices with which to produce sanitary napkins in areas that are arid or semi-arid and drought-prone.

Enter sisal. Like all succulents, which are plants with thickened parts to store more water, sisal has an uncanny ability to store water and thrive in drought-prone areas. Its leaves grow up to 2 m



long. The lifespan of a sisal plant is about 7-10 years, during which it produces 200-250 usable leaves. Each leaf has about a thousand fibres that can be used to make ropes, paper, and cloth. Now, it could be used to make a highly absorbent material as well.

Dr. Prakash first heard of sisal from his friend Alex Odundo, a Kenyan engineer. Mr. Odundo, also a co-author of the paper, has been helping sisal farmers in Kenya grow the crop more efficiently.

“Before sisal, we tested whatever fibrous plant we could lay our hands on,” Dr. Prakash said. Being based in California, the team began with bamboo. The journey to find sustainable absorbent material then took them to Nigeria, Kenya, Nepal, and India, where they tested fibres from banana, rice, and water hyacinth as well.

But according to their tests, “nothing beats sisal,” Dr. Prakash said.

Inspired by termite guts

The process that Dr. Prakash’s team has developed begins by feeding sisal leaves into a machine. This machine is a decorticator: it mechanically separates the fibres. In the next step, called delignification, a polymer called lignin, found in plant cell walls that repels water, is dissolved away. What remains is highly absorbent cellulose fibre.

Traditionally, the delignification process for converting wood to absorbent wood pulp involves treating wood chips with a harsh chemical mixture containing water, sodium hydroxide (a strong alkali), and sodium sulphide. This process, called the Kraft process, is effective but also produces volatile and toxic by-products that can cause both air and water pollution.

For a more environmentally sustainable way to delignify sisal leaves, Dr. Prakash and his team turned to the environment — where they found two organisms particularly adept at converting wood to wood pulp: termites and wood-rot fungi.

“Termite guts have an incredible consortium of organisms,” said Dr. Prakash. This consortium, comprising microbes of many shapes and sizes, delignifies wood in a process that scientists don’t completely understand.

They do know, however, that one important compound in this process is peroxyformic acid.

Treatment with peroxyformic acid “selectively removes lignin while preserving the structure of the cellulose microfibrils”, the authors write in their paper. The compound can also be reused over several cycles and it decomposes into water and carbon dioxide at the end of the process. This decomposition requires no neutralising chemicals, which minimises environmental damage.

“The amount of CO₂ released in breakdown of peroxyformic acid is minuscule compared to the total CO₂ in the overall analysis (say, compared to transportation related CO₂) or total carbon even in the materials being used itself,” Prof. Prakash said.

Sisal’s fluff pulp

After treating the sisal fibres with peroxyformic acid, the process proceeds by washing them first with a solution of dilute sodium hydroxide and then water. The result is a wet pulp that is then dried and mechanically blended to obtain a dry mass called a fluff pulp.



When the researchers compared the absorption capacity of this fluff pulp to cotton obtained from commercially manufactured sanitary napkins, or Cotton-CMP, they found that the fluff had the upper hand in standard absorption tests.

The researchers also conducted a “cradle-to-gate” carbon footprint analysis by estimating the environmental footprint of a product from the extraction of raw materials to the time when it leaves the factory gate.

In what they call an “aspirational case” — when the raw materials, including those required to produce the peroxyformic acid, can be produced on-site using solar energy — the environmental footprint of their process was “comparable” to that of commercial processes that extracted fibre from timber and cotton. The water consumption was also found to be comparable to that of commercial processes to produce absorbent materials from timber, cotton, and papyrus.

Given the cultivation of sisal requires less water and is less environmentally damaging than cotton industries, Dr. Prakash believes replacing cotton-CMP with sisal fluff pulp could make sanitary napkin production more environmentally sustainable in the long run.

According to him, there is a “25-fold difference” in water use “for cultivation and harvesting” “between cotton and sisal”.

He also acknowledged timber could be an alternative to cotton, but only in parts of the world that have an “endless supply of sustainably harvested forests”.

“That’s not an option for places like India or Africa.”

HEALTH MINISTRY ASKS DOCTORS TO LIST REASONS FOR PRESCRIBING ANTIBIOTICS: WHAT DOES IT MEAN FOR YOU AS A PATIENT?

With antimicrobial resistance on the rise, the Union Health Ministry has now urged doctors to mention the reason for prescribing antibiotics to limit their broad spectrum usage. At the same time, pharmacists have been urged not to dispense these medicines without a valid prescription. It is estimated that globally 4.95 million deaths in 2019 were caused by drug-resistant pathogens.

Dr Sangeeta Sharma, professor of neuropharmacology at the Institute of Human Behaviour & Allied Sciences and president of Delhi Society for Promotion of Rational Use of Drugs, says this move will compel doctors to review their decision while advising antimicrobials.

How will writing the indication for prescribing antimicrobials help?

The small step of writing down the indication for which the medicine is being prepared helps the doctors review their decision on whether the antimicrobials are necessary. It forces doctors to narrow down their suspicion — either through clinical observations or tests — on which pathogen is causing an infection. This, in turn, helps them prescribe narrow-spectrum antibiotics. These antibiotics are targeted towards treating certain types of infection instead of affecting every microbe in the body.

The understanding is if you can work with a needle, why take out the sword? Broad-spectrum antibiotics are known to drive up more resistance than targeted drugs. Writing down the indication also helps in settings such as large, tertiary care hospitals with heavy patient load, where sometimes there is a practice of just repeating the previous prescription, leading to long-duration use of antibiotics.



I get a fever and a cold every change of season, what should I do?

People have come to think of antibiotics as just any other over-the-counter medicine. They do not know the harms of consuming antibiotics without prescriptions — nobody wants to go to the doctor, get tested, take a few sick days, when they can get a quick fix from their local pharmacy. However, it is our job to make people understand that the indiscriminate use of antibiotics not only harms them but the community at large.

The use of antibiotics without prescription or incomplete duration of treatment leads to resistant bugs circulating in the community, making the same medicine useless for others.

What are the scenarios in which antimicrobials are most commonly misused?

There are two common scenarios in which antimicrobials are misused or overused even by doctors. One, when they cannot make a diagnosis on whether an infection is caused by a bacteria or virus and prescribe antibiotics to err on the side of caution. Two, when they know it is a bacterial infection but want to avoid secondary infection. This is where antibiotics can be conserved because very few people get such secondary bacterial infection.

In the case of a serious patient, who is admitted to the hospital, broad-spectrum antibiotics may be prescribed for 48 hours, during which they can be tested for which pathogen is causing the infection. The antibiotics needed to be switched after that.

Prescription for antimicrobials before and after a procedure or surgery is another way that antibiotics are commonly overused. Just a single dose of antibiotic 60 to 120 minutes before a surgery is enough to prevent surgical site infections. However, doctors end up prescribing antibiotics for seven to 14 days. If proper sterilisation of equipment, preparation of surgical site is done, infections cannot happen. Shaving the surgical site before a surgery should be avoided because it can lead to abrasions that can get infected.

What has been the result of antimicrobial overuse and misuse?

The impact is clearly visible now — common infections are not curable anymore. Tuberculosis and urinary tract infections have become multi-drug resistant. In hospitals, infections are resulting in longer treatment times with use of costlier and more toxic antibiotics. Despite all efforts and successful surgeries, people are dying.

What about new antibiotics?

For a long time, we did not worry about antibiotic-resistance because newer therapies kept coming in. There has been no new class of antibiotics in the last couple of decades. This is because companies do not want to spend on discovery of drugs that soon become obsolete due to resistance. The need, therefore, is to conserve the existing antibiotics.

RESEARCHERS ENGINEER PLANT CELLS TO PRODUCE DRUG FOR CANCER

Researchers at the Indian Institutes of Technology Madras and Mandi have metabolically engineered plant cells to increase production of anti-cancer drug camptothecin (CPT).

The allopathic medicine is produced using *Nathapodytes nimmoniana*, a native, endangered plant. It requires nearly 1,000 tonnes of plant material to extract 1 tonne of CPT. The International Union



for Conservation of Nature has red-listed the plant as in the past decade alone there has been a 20% decline in the plant's population.

In 2021, IIT Madras researchers published a research paper in which they identified a microbe as a sustainable and high-yielding alternative source for CPT. Researchers from Plant Cell Technology Lab of IIT Madras developed genome-scale metabolic model for *N. nimmoniana* plant cells using computational tools.

The researchers say the study could pave the way for effective and efficient commercial production of the drug and other medicinally important alkaloids and reduce the need to cut down endangered plants.

LISTEN TO YOUR GUT — IT MAY BE TELLING YOU SOMETHING ABOUT YOUR HEART

The human microbiome is a community of trillions of microorganisms that reside in our body, especially in the digestive tract. It is a dynamic community that plays a pivotal role in regulating our health and diseases.

These microbes influence various aspects of our well-being, including the way we digest food, absorb nutrients, metabolise key metabolites, develop immunity, and keep good mental health. This is why scientists have been immensely interested in understanding the intricate relationship between the human genome and the body's microbial inhabitants.

Genomic technologies have been central to our knowledge of the human microbiome. Many microorganisms of the microbiome aren't amenable to being studied in a scientist's traditional way: by culturing them in a lab.

In 2012, an international consortium of scientists launched the Human Microbiome Project that provided the first glimpses into the human body's complex microbial makeup using genome sequencing.

The microbiome and health

Today, scientists widely accept that a healthy human microbiome is essential for healthy living. For example, we know that the human gut microbiome contributes to essential physiological functions like digesting food and absorbing essential nutrients. The microbes involved in these activities also produce some enzymes the human body requires to function normally.

Conversely, if the population of one microbe becomes excessive or the composition of a community of microbes changes, the body can develop a variety of health conditions.

The human microbial communities also change over time. When sick people take antibiotics to treat an infection, their gut microbial compositions change significantly — and return to their 'original' state after some time.

Some medical researchers also artificially change the human microbiome composition in order to achieve some clinical outcomes. For example, researchers have used a treatment called faecal, or intestinal, microbiota transplant — i.e. transplanted microbiota from a healthy to a sick individual — to control infections of a bacterium called *Clostridium difficile*. Researchers have also used faecal microbial transplants from donors to people with extreme obesity to improve their sensitivity to insulin and 'resolve' other metabolic syndromes.



In sum, we have lots to gain from knowing the optimal composition of the human microbiome and the ways in which it influences our health.

MENSTRUAL CRAMPS: WHY AREN'T THERE BETTER OPTIONS THAN JUST POPPING PAINKILLERS?

Many women, experience paralyzing menstrual cramps month after month for varying reasons. They could be cysts, fibroids, endometriosis, adenomyosis (where the wall tissue overgrows inside and covers muscles) or simply the restrictive shape of the cervix or the mouth of the uterus that differs from woman to woman, sometimes firm and narrow. Yet, all of them are prescribed the same routine of non-steroidal anti-inflammatory drugs (NSAIDs) for pain, hormonal birth control pills and tranexamic acid tablets to regulate and control blood flow and severity of cramps. At the extreme end are surgical interventions.

And this has pretty much been static over decades. But as prolonged use of painkillers and birth control pills have side effects on kidneys and can become a trigger for certain cancers, the question is why research hasn't been able to crack the code of a convenient medication or therapy for menstrual pain?

Why is it so hard to find a magic pill for menstrual pain?

"That's because the uterus is hardly looked at as an important organ that needs looking after just like other major organs of the body. We look at it as just a reproductive vehicle rather than a pivot that's crucial for balancing women's hormones, which govern all aspects of their overall health. That's why menstrual issues are shoved under the carpet and we get to hear old wives' tales of how we must just go through them. Women themselves have normalised and patronised pain," says Dr Anshumala Shukla Kulkarni, the Head of Minimally Invasive Gynaecology, Laparoscopic and Robotic Surgery at Kokilaben Ambani Hospital in Mumbai.

Casually dismissed as a "routine problem", menstrual cramping has been put on the backburner. "We have not yet understood the complexity of the female reproductive system or its exact science. That's because the manifestation of menstrual complications is different for each woman. So are their responses to therapy. Pain cannot be quantified and is multifactorial. Every therapy has to be customised," says Dr Shishta Nadda Basu, senior director and Head of Department of Obstetrics and Gynaecology at Max Super Speciality Hospital in New Delhi's Shalimar Bagh.

"Also, most women take their pain casually, eager to pop a pill than do a clinical investigation and find out if they have an enlarged uterus, thickened walls, or fibroids, polyps and cysts. Nobody thinks about rooting out the problem at source and prefers persistent pain. Yet, pills and dilatory medicines are just temporary relief," she says.

At the beginning of menstruation, levels of the hormones progesterone and oestradiol drop, leading to an increased production of compounds called prostaglandins. In the absence of a fertilised egg, its job is to contract the uterus and help it expel tissue. This may cause painful cramps.

"Sometimes abdominal muscle soreness, inflamed tissue, pelvic floor muscle fatigue and bowel irritability could also cause the pain. It is confounding. Women should know that any pain that's uncharacteristic and debilitating, and lasts longer than half a day, is problematic and consult a doctor," adds Dr Basu.



Dr Kulkarni, who runs the endometriosis clinic at Kokilaben, says that anecdotally, one out of 10 Indian women or roughly 10 per cent of the productive workforce unknowingly suffer from this condition, where tissue overgrowth forms degenerative clusters all around the uterus and spreads elsewhere due to delayed diagnosis. “It takes years, sometimes eight years, to show up properly. Even ultrasound fails and you need a specialised MRI to detect it early. Sometimes, you need to insert a laparoscope to locate the growths. And women, given their conditioning, myths and inadequacy of medical professionals to guide and alert them in tier-II or III cities, end up ignoring it. By then, surgery is the only way to give relief,” she adds.

The diagnosis of endometriosis for most of her patients was incidental. “They came to me as they had trouble conceiving and an investigation confirmed endometriosis. I had a young husband abandon a wife during surgery, saying she had misinformed him about her condition before marriage and was not ready to pick up either the financial or emotional tab of something he had not caused,” says Dr Kulkarni.

Besides, it can even cause problems during and after menopause.

How good are existing therapies?

Most therapy for menstrual pain revolves around suppressive medication, medicated copper Ts or surgical intervention. As the rise and fall of hormones during the menstrual cycle causes uterine tissue to thicken, break down and bleed, lab-made versions of hormones slow down the growth of this tissue and prevent new tissue from forming. Hormonal contraceptives regulate the blood flow by the same logic.

“Of course, these days there are a new class of drugs like gonadotropin-releasing hormone (Gn-RH) agonists and antagonists. These medicines block the menstrual cycle and lower oestrogen levels, shrinking tissue growth,” says Dr Asha Dalal, the Director of Obstetrics & Gynaecology of the Well Women Centre at Sir H N Reliance Hospital in Mumbai.

And as with diabetes and cardiovascular health, lifestyle correction is a must. “Take time out for pelvic floor exercises, lose body fat, avoid inflammatory foods, sleep on time and, as latest research has shown, have a diet rich in vitamins and minerals,” says Dr Basu.

Why research is inconclusive. Is funding the problem?

But latest research in the West is veering around Sildenafil citrate, which is the generic version of Viagra and increases blood flow by dilating blood vessels, thereby flushing away pain triggers. It is also believed the drug could oxygenate the uterus more as low oxygen levels can change the local pH and stimulate nerve endings, resulting in pain. But till large-scale clinical trials prove its worth, options are limited at this point. Viagra for male virility assures returns, its experiments with female hormones don't.

“In India, research on menstrual pain is difficult given its subjective nature. But the Indian Council of Medical Research (ICMR) and the Endometriosis Society of India have found an mRNA which can help in detecting endometriosis. Another study has found a link between autoimmune disorders and endometriosis,” says Dr Kulkarni.

However, for women, the time for patience is over and absenteeism just cannot replace drugs.