



# CURRENT AFFAIRS FOR UPSC

23rd to 29th March 2025



## INTERNATIONAL

### LESSONS NOT LEARNT

A new broom sweeps clean, but reckless change serves little purpose. After targeting health care — pulling the United States out of the World Health Organization and paralysing USAID — U.S. President Donald Trump has turned to another cornerstone of the state: education, whose long-term significance to any nation is indisputable. Last week, he signed an executive order to “begin eliminating” the federal Department of Education (DoE), vowing to shut it down “as quickly as possible”. Established in 1979, the DoE administers federal student loans for college and university students, and provides targeted support for disadvantaged groups, including students from low-income families and those with disabilities. As in India, public K-12 schools in the U.S. are primarily managed at the State level, with only a fraction of their funding coming from the federal government. Yet the DoE plays a critical role in ensuring a baseline of equity. White House Press Secretary Karoline Leavitt defended the executive order by citing decades of “failing test scores” and low student performance, despite over \$3 trillion in federal spending. “What has been the return on that investment for the American taxpayer?” she asked. But demanding a measurable return on investment on public welfare is not just misguided — it borders on malevolence. It targets the most vulnerable students and risks stripping away their only path out of adversity.

The Department of Education has long been in the cross hairs of Conservatives; since the Reagan era, abolishing it has been a Republican aspiration. But no one has come closer to realising that goal than Mr. Trump. Even before signing this order, the department’s workforce had been nearly halved, with abrupt terminations issued under the Elon Musk-led Department of Government Efficiency — now a hallmark of the new administration’s approach. Critics have denounced the move, arguing that if student outcomes are truly the concern, efforts should first focus on reforming and strengthening the system, and not dismantling it. Crucially, the executive order cannot take full effect without Congressional approval — and it remains to be seen whether Mr. Trump’s political will can carry it through. Already, lawsuits are being filed in federal courts, challenging the order’s legality. The future of millions of disadvantaged students hangs in the balance. It is up to the rest of the U.S. to ensure that a lifeline is not pulled out.

### WHITTLED DOWN SOURCES OF U.S. SOFT POWER

Since assuming office for the second time in January 2025, U.S. President Donald Trump’s directives, especially on foreign policy, have been projected as power moves as part of the plan to put “America First” and to “Make America Great Again”. However, these actions are also cutting at the roots of U.S.’s influence in the world that make up its ‘soft power’.

Soft power is defined as “the use of positive attraction and persuasion to achieve foreign policy objectives” — an economic, cultural and values-based measure as opposed to the military or coercive nature of ‘hard power’.

A look at five major sources of the U.S.’s influence on the world or its ‘soft power’, and how they are impacted by the Trump administration’s recent moves:

**Alliances:** Since the Second World War, the formation of the “Five Eyes Alliance” for intelligence sharing in 1946, and the formation of the North Atlantic Treaty Organization (NATO) in 1949, the



U.S.'s hard power but also its soft power has multiplied. Yet, a number of Mr. Trump's statements appear to be weakening the U.S.'s image amongst its allies. From his territorial claims on Greenland, a semi-autonomous region that is part of Denmark, or his case for annexing Canada, to his unilateral actions in the Russia-Ukraine war — all have been at odds with the policies of the U.S.'s European allies, where U.S. soft power is the highest.

Additionally, Mr. Trump has criticised the U.S.'s alliance treaty with Japan as “unequal”, and his praise for North Korean leader Kim Jong Un, with whom he shares a “great relationship”, has led to misgivings in Tokyo and Seoul. Adverse comments by a Trump nominee on the AUKUS agreement (a trilateral security pact between Australia, the U.K. and the U.S.) have also raised questions in Australia. While all of these are just statements at present and not hard action, they are still straining ties between the U.S. and its closest friends, while empowering those U.S. had declared its “strategic rivals”. These moves bring into question just how committed the U.S. will be to groupings which aren't even alliances, like the Quad, which India will host this year. Meanwhile, the Trump administration's full-fledged backing to the Israeli bombardment of Gaza, as well as plans to redevelop it, is causing the U.S. to lose support in countries of the Global South.

**USAID:** The attack by the Trump-appointed Department of Government Efficiency (DOGE), led by Tesla and SpaceX CEO Elon Musk, on America's assistance programme — the United States Agency for International Development or USAID — has axed another source of U.S. influence in the world. In a matter of weeks, decade-old programmes of the USAID have been slashed down, with only about 17% of programmes being spared. With \$35 billion in appropriations, of which about a third was allocated to sub-Saharan Africa, USAID distributed more than \$24 billion to humanitarian, health, agriculture and education programmes, with the rest being used for governance and administration. While many dependent on USAID funds have decried the loss, others, including in countries like India, have hailed the curtailment of USAID programmes, as they were seen as political instruments to further U.S. interests.

Both would be in agreement, however, that USAID furthered American influence, and the Trump administration's actions against it won't just reduce that influence — it also means that all such U.S. programmes in the future would be eyed with suspicion in recipient countries.

In addition, moves to gut iconic U.S. agencies, including think tanks like the U.S. Institute of Peace, and the Wilson Center, as well as federally funded media like Voice of America, Radio Free Europe/Radio Liberty (RFE/RL) and Radio Free Asia (RFA) will constrain Washington's global messaging as well.

**Trade:** Mr. Trump's “reciprocal tariffs” planned for April 2 as part of his “war on tariffs” are a blow to the U.S.'s reputation as a champion of free trade and globalisation ever since 1945. At the time, the U.S. had come through a severe regime of protectionism and high taxes known as the Smoot-Hawley tariffs of 1930, which had hit the U.S. economy in the Great Depression years. Post-1945, U.S. grew its economic power by spreading U.S. goods around the world.

While it continued to push for lower tariffs worldwide, Washington supported the creation of the World Trade Organization (WTO) which incorporated the concerns of the developing world, through the Uruguay Rounds, by building a level-playing field through tariffs. In 2005, in the Doha round, the U.S. proposed a “tariff free world by 2015”. However, it has been growing more protectionist in the past decade. Mr. Trump's plan for reciprocal tariffs now would not only cause untold damage to trade levels with many countries, say experts, it will also test U.S.'s credibility as a trade partner.



As the U.S. pushes for a bilateral trade agreement with India, negotiators must watch closely how it treats pre-existing Free Trade Agreement partners like Canada, Mexico, and Australia.

**Immigration:** Given that native Americans make up less than 3% of the U.S.'s total population, the US is a nation of immigrants. It has served as a beacon for those from other countries seeking a better life for the last few centuries, symbolised by the inscription on the Statue of Liberty: "Give me your tired, your poor, your huddled masses yearning to breathe free".

U.S. immigrants are in every part of its corporate and government echelons, adding to America's reputation as a "melting pot" that welcomes diversity. The Trump administration's rejection of Diversity Equity Inclusion (DEI) policies in recent weeks will have repercussions on that image abroad, as will visuals of soldiers deporting thousands of illegal migrants, shackled and aboard military planes; new curbs on legal migration; heightened scrutiny at airports for H-1B and Green Card holders; as well as Mr. Trump's executive order on banning citizenship by birth, which is currently being heard by the Supreme Court.

**Education:** Finally, there is the most potent source of U.S. soft power — the American university, a place for a comprehensive education and a bastion of free thinking and speech that has attracted youth from around the world for decades. Admission into U.S. universities is an aspirational goal for most societies, including their influential and powerful elites. The U.S. ranks at the top of the Higher Education Policy Institute's "Soft Power Index", that looks at how many current leaders (defined as Monarchs, Presidents, Prime Ministers) have been educated in countries other than their own.

The Trump administration's crackdown on student protestors, arrests and forced deportations of foreign students believed to be involved in protests, and withdrawal of funding to universities unless they comply to a government-approved SOP for student activism, will impact foreign student footfalls. In Mr. Trump's first tenure, the U.S. had dropped in its rankings year-on-year in the Soft Power 30 ranking report and saw fewer foreign students arrive.

### **The decline in influence**

In his book *Bound to Lead*, which came out in the early 90s, Joseph Nye, the political scientist credited with the term "soft power", wrote that the events of preceding years, including the fall of the Soviet Union, the reunification of Germany, and the first Gulf war proved that the "United States remained the only country with significant hard power and soft power resources," theorising that these would ensure the U.S.'s place as the world's most influential power. In a more recent article in the Financial Times last week, however, Mr. Nye is pessimistic about the future of U.S. influence as a consequence of Mr. Trump's "truncated view of power, limited to coercion and transactions", concluding that U.S. soft power will suffer in the next few years. Some have drawn parallels to China's deployment of "wolf warrior" diplomacy in the 2010s, coupled with aggressions against neighbours, and the unilateral implementation of its Belt and Road Initiative, that eventually lost it more friends than it gained.

Mr. Nye concedes that Mr. Trump is not solely responsible for this turn in U.S. policies, which are widely popular at present, and warns that the administration will face "checks and balances" in the form of the judiciary, public opinion turning, and the Senate races of 2026.

New Delhi may be better advised to pace its negotiations with the U.S., rather than to give Washington concessions and make compromises now that may not be required if the Trump administration is tempered by those checks, and the fall in U.S. soft power.



## CAUGHT IN THE MIDDLE, THIS U.S. EXCLAVE BATTLES TRUMP'S TRADE WAR WITH CANADA

In the northwest corner of Washington State lies a quirky U.S. exclave so dependent on Canada's goodwill that the strain of President Donald Trump's tariff war is inescapable — in the sole grocery store, at any of the three eateries, and for the many residents who never voted for him.

Locals and visitors alike in Point Roberts, Washington, are worried about how this unusual waterfront border town that has embodied the two countries' interdependency can survive the hostility brewing on both sides.

"This was really devastating," said Tamra Hansen, a Point Roberts resident and business owner whose eyes welled with tears as she described her two restaurants on the brink. "If we don't get the support from the Canadians, this town will die."

Known as a geographic oddity since the boundary with Canada was drawn in 1846, this detached 5-square-mile community — called an exclave because it's completely separated from mainland America — is surrounded by water on three sides. Its only land connection is to Canada and it takes one border crossing and about 25 miles north by car to get to downtown Vancouver, B.C.; or two border crossings and about 25 miles through Canada to re-enter the United States along Boundary Bay.

### Natural gem of the U.S.

The beaches, marina, golf course and hiking trails have long made Point Roberts a cherished getaway destination, but today locals say business has never been worse.

Canadian visitors are staying away and some American residents say they have even been harassed over their nationality.

Point Roberts Fire Chief Christopher Carleton said Point Roberts is one the last remaining untouched natural gems of the U.S., but the tight-knit community with no stop lights is now under threat by politicians who know nothing about their way of life.

Tensions between the U.S. and Canada have spiked to a level not seen before in modern times thanks to Mr. Trump's on-again, off-again threat over the past two months to place taxes on a long list of goods going across the border. In response, Canada has promised retaliatory tariffs. For a country that has famously prided itself on being nice, polite and loyal allies, Canadians are not hiding their disgust for Mr. Trump's polarising rhetoric, especially taking offense with the U.S. President's claim that Canada could be the "51st State."

Many in Point Roberts don't blame the Canadians for their disdain over Mr. Trump's perceived sovereignty threat. Instead, there's a deep sadness for both sides.

## F-1 VISA DENIALS SURGE TO 10-YEAR HIGH, US REJECTS 41% OF FOREIGN STUDENT APPLICANTS

Student visa denials by the United States (US) soared to a decade-high last fiscal year (October 2023 to September 2024) with 41% of F-1 visa applications from across all countries turned down — almost double the rejection rate of the 2014 fiscal year — shows an analysis of State Department data by The Indian Express.





- In 2023-24, (the US government's fiscal year runs from October 1 to September 30), the US received a total of 6.79 lakh applications for F-1 visas, of which 2.79 lakh (41%) were denied. This is an increase from 2022-23, when 2.53 lakh applications (36%) of a total of 6.99 lakh were turned down.

- While the US State Department did not share data on the country-wise refusal rate for F-1 visas, The Indian Express had reported on December 9 last year that the number of student visas issued to Indians in the first nine months of 2024 had decreased by 38% as compared to the corresponding period in 2023.

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

- According to the data, the percentage of student visa denials increased even as the absolute number of applications from across all countries dipped over the last decade. During this period, the total number of applications peaked at 8.56 lakh in 2014-15, but saw a steady dip in the next few years, till it hit a low of 1.62 lakh in the Covid year of 2019-2020.

- Post-Covid, while the number of applications steadily increased, there was a 3% decrease in 2023-24 — from 6.99 lakh in 2022-23 to 6.79 lakh in 2023-24. As a result, the absolute number of visa denials in the last fiscal year (2.79 lakh) represents the highest percentage in at least a decade. A total of 4.01 lakh F-1 visas were issued in 2023-24, down from 4.45 lakh the previous year.

- The F-1 visa is a non-immigrant category for students attending academic institutions in the US, while the M-1 visa covers vocational and non-academic programmes. The Indian Express analysis focussed on F-1 visas, which account for over 90 per cent of US student visas annually.

- Indian students constitute a significant proportion of the international student cohort in the US. The Open Doors 2024 report showed that in 2023-24, the number of Indian students surpassed that of the Chinese, making Indians the largest international student cohort (29.4% of international students) in the US. There were 3.31 lakh Indian students in the US in 2023-24, the highest figure for the Indian cohort so far, according to the Open Doors data.

#### **ELIMINATING OPPONENTS**

State crackdowns on political opposition are hardly new in President Recep Tayyip Erdoğan's Türkiye. Since coming to power in 2003 as Prime Minister, and later assuming the presidency under a revised Constitution, Mr. Erdoğan and his ruling Justice and Development Party (AKP) have shown little tolerance for dissent. His government has systematically targeted political opponents, journalists, activists and critics. Yet, even by Türkiye's troubled democratic standards, the arrest of Istanbul Mayor Ekrem İmamoğlu marks a troubling escalation. He was detained on March 19 on charges of corruption and alleged ties to terrorism — accusations largely stemming from his association with pro-Kurdish political groups. His arrest came just days before he was expected to be officially named the presidential candidate of the main opposition Republican People's Party (CHP). On March 23, an Istanbul court ordered his formal arrest, and he was swiftly removed from office by the Interior Ministry. He is the fifth CHP mayor to be dismissed by the government in recent months.

The move has sparked massive protests. In a show of public defiance, the CHP held a primary open to the general electorate — not just party members — in which it claimed the participation of 15 million voters, choosing Mr. İmamoğlu as their presidential nominee. Mr. Erdoğan has dismissed



the protests, but the motive behind this orchestrated campaign is clear. With his presidential term set to end in 2028, he is constitutionally barred from running again — unless early elections are called, or the Constitution is amended. But Parliament may trigger snap elections, paving the way for his seeking another term, particularly as he lacks a clear successor within the AKP. Mr. İmamoğlu, meanwhile, has emerged as the most potent opposition figure in years. Since winning the Istanbul mayoralty in 2019, he has helped revive the CHP's national prospects. In last year's local elections, the party secured its strongest result since the 1970s, even outpolling the AKP nationwide. While Mr. Erdoğan's popularity has declined amid rampant inflation, economic stagnation, and a plunging lira — eroding the appeal of his once-successful blend of Islamic conservatism and pro-business policies — Mr. İmamoğlu, a self-proclaimed social democrat, has offered a progressive alternative that is focused on expanded social services and inclusive growth. The massive voter turnout in the CHP primary and the scale of the protests underscore his enduring appeal. If he is barred from contesting future elections, Mr. Erdoğan may eliminate his most formidable rival, but at the cost of deepening political divisions and further eroding public faith in democratic institutions. At 71, Mr. Erdoğan would do well to heed the voices in the streets, abandon the persecution of political challengers, and focus on addressing the economic crisis that his policies have helped create. Türkiye's future hinges not just on who governs, but on whether its democracy can still offer a fair and open contest for power.

#### THE COMPLEX STRUGGLE FOR 'KURDISTAN'

The story of the Kurdish people is as complex as their existence. A traditionally nomadic society spread across modern day Türkiye, Syria, Iran, Iraq, and Armenia, the Kurdish people have been moving around for more than a century in search for Kurdistan — a state which has been imagined by its people ever since the concept of a 'nation state' trickled down from the West to the Ottoman empire.

Kurdish societies were spread across the Ottoman empire, and never managed to unite under a single identity like the Armenians and the Turks. Therefore, they were unable to make a claim for a separate state, as European powers moved in to carve out the region after the First World War, rendering them stateless in modern geopolitics.

Modern-day nationalist sentiments, especially in Türkiye, tend to take away the authenticity of Kurdish people. Bulent Arinc, former Deputy Prime Minister of Türkiye, had reportedly said "Kurdish is a language without a civilisation" while he was speaker of the parliament in 2012. The underlying theme in Turkish resentment towards the Kurds is visible in this statement: Kurds are a people without a history.

#### **The struggle to become a people**

Even though fragmented by local struggles for power between different tribes, the Zagros range of mountains that form the heartland of a hypothetical Kurdistan, home to Kurds of different identities — majorly Sunni Muslims, few Shia Kurds, and some Alevi tribes (not to be confused with Alawites of Syria) — is rich with history. The Ottoman rule at its height saw the Kurds as a powerful ally against neighbouring Persia. They went from being nomads to soldiers to tribes and at one point even had their own emirates. But Ottoman efforts to modernise rule and centralise power saw the emirates go back to being divided small tribes.

However, the Treaty of Sevres, signed on August 2, 1920, did bring the Kurdish people closer to statehood than ever before and ever since. The Treaty, largely drafted by Britain, said that a



commission composed of Allied appointees would “Draft within six months....a scheme of local autonomy for the predominantly Kurdish areas lying east of the Euphrates”. “...No objection shall be raised by the Principal Allied Powers to the voluntary adhesion to such an independent Kurdish state of the Kurds inhabiting the part of Kurdistan which was hitherto been included in the Mosul Vilayet [parts of British occupied Mesopotamia]”, the treaty had said.

But the Kurds failed to capitalise on the treaty. They were unable to unite under a single identity due to their tribal composition. The tribal chiefs were faced with two options — to form a state that would probably come under British influence and risk detaching from Muslim Ottoman heartlands that they had occupied for a long time or remain stateless. Many tribal chiefs chose the latter.

The Turkish republic, born after the First World War, had its roots in the nationalist idea of a homogenous society and was driven by the fear of external threats affecting national unity. While the Ottoman government in Istanbul had signed the Treaty of Sevres, it had not ratified it. And it did not survive to implement it. The loss of Mesopotamia and Syria, the entry of the French and the invasion of Istanbul by the Greeks all led to the revolt in Anatolia led by Mustafa Kemal Ataturk which resulted in the Turkish state in 1923.

While the Kurds fought against Armenian and Greek threats alongside Kemal hoping for a Muslim state, the Ataturk (meaning father of the Turks) had clear intentions of establishing a nation-state. Kemal abolished the Sultanate in 1922 and the Caliphate in 1924, the two pillars of the Muslim state, rendering the spiritual base from which the Kurdish Aghas and Sheiks derived their authority, obsolete. A peace treaty finalised in July 1923, following a conference in Lusanne, rejected the British request to recognise Kurds as a national minority. Kurdish associations, publications, religious fraternities, and schools were all banned.

But this setback to the Kurdish identity only served to strengthen the people’s resolve to unite different Kurdish viewpoints. The threat to the Aghas (tribal chiefs) and Sheiks paved way for a loosely connected organisation called Azadi. But a brief mutiny of its troops led to the leadership being rounded up and brought its end in 1924. Another short-lived Kurdish revolt broke out in February 1925, in the Diyarbakir region led by Naqshbandi Sheikh Said. But this revolt was confined to Zaza-speaking Sunni Kurds. The remaining Sunni groups remained indifferent to the cause with some Alevi Kurds even assisting the authorities.

The revolt failed to seize Diyarbakir and collapsed due to the fragmented nature of the Kurds. It also had a disastrous aftermath. It led to widespread suppression of the Kurds and gave Kemal the pretext for a one-party state. Thousands were killed and countless Kurdish villages were razed to the ground.

Another revolt in 1928, this time in the Mount Ararat region lasted till 1930, and Turkiye had to insist that Iran cede territory on its side of the Ararat to encircle the region. This revolt was also pacified with great brutality, with security forces being given a free hand without consequences. The brutal repression silenced the Kurdish resistance for decades, and the region of Kurdistan remained a military zone closed to foreigners till 1966.

#### **A revival of the movement**

The authoritarian one-party system in Turkiye was relaxed in 1946, and opposition parties, like the Democrat party, saw opportunity in the Kurds and began trying to woo the Aghas, reviving Kurdish identity.





Conscription and mechanisation of agriculture led to the rise of a Kurdish proletariat. It was among this class that the Kurdish revival gained momentum. The young Kurds picked up by the state for assimilation began to propagate the problems of the 'East', a euphemism used for Kurdistan. The rise of the Kurdish proletariat saw demonstrations and expressions in the press to which the state replied by crackdowns and seizure of publications. But interconnected organisations carried the Kurdish movement forward, mixed with left politics.

This period is marked by several polarities. The political left against right, nationalist Kurds against Turks, religious Sunnis against Shias, Sunnis against Alavis and Sunnis against secularists. The growing polarity led to Kurds, despairing even the Turkish left, forming their own left-wing parties, among them the Partiya Karkari Kurdistan or the Kurdistan Workers Party (PKK) under Abdullah Ochalan, which would define the Kurdish struggle for decades.

### **The emergence of the PKK**

The PKK adopted a Marxist-Leninist doctrine and induced it with a guerrilla campaign. Their main targets were the fascist right, Turkish left, state agents, and, above all, Kurdish landlords who worked in tandem with the state to exploit the Kurdish masses. While the Kurdish masses were initially shocked by the PKK's violence, the increasingly degrading treatment they endured at the hands of the state, including military sweeps, arbitrary arrests, and widespread torture made them receptive to the PKK.

The PKK managed to grow beyond the borders of Turkiye with its allies, like the Democratic Union Party (PYD) in Syria, the Free Life of Kurdistan Party (PJAK) in Iran, and the Kurdistan Democratic Solution Party (PCDK) in Iraq. The Kurdistan Communities Union (KCK) serves as an umbrella organisation for all the groups and the People's Protection Units (YPG), formed in 2012 during the Syrian civil war, serves as the armed wing for the cause.

### **International dynamics**

While Turkiye, the U.S. and the European Union designates the PKK as a terrorist organisation, it has an ally in Russia. "Neither PKK nor the PYD are considered terrorist organisations by either Russia or the United Nations Security Council", then-Russian Ambassador to Turkiye, Andrey Karlov, had said in 2015. The PKK had received training and material support through Soviet proxies and even after the fall of the Soviet Union, the PKK had held a congress in Moscow in 1996.

While Kurdish identity was forever in conflict with the Turkish state, things were different in neighbouring nations. Iraq's new Constitution that came into effect in 2005, following the U.S. invasion and fall of Saddam Hussein, recognised the semi-autonomous region of Iraqi Kurdistan under a federal structure. Occupying northern Iraq, including the oil-rich Kirkuk, Iraqi Kurdistan prospered and held a referendum of independence in 2017 with overwhelming Kurdish support. However, the referendum triggered a military response from the Iraqi government which retook regions, including Kirkuk, in a significant blow to Kurdistan aspirations.

In Syria, the PYD and YPG utilised the Syrian civil war to carve out a de facto autonomous region for the Kurds, Rojava, run by the Democratic Autonomous Administration of North and East Syria. The U.S., in the fight against the ISIS, lent assistance to the YPG to form the Syrian Democratic Forces (SDF), which Turkiye sees as a threat due to its links with the PKK. Following the fall of the Assad regime in Syria, the interim government led by former militant Abu Muhammad al-Jolani managed to convince the SDF to lay down arms and integrate into the state, leaving questions over the future of Rojava. And recently, on March 1, the PKK declared a ceasefire with Turkiye. Since



this declaration, by Mr. Ocalan to the PKK to lay down its arms and dissolve the organisation, the future of Kurdistan is uncertain.

#### KHAMENEI AIDE: IRAN READY FOR INDIRECT US TALKS

Kamal Kharrazi, an adviser to Iran's supreme leader, said on Thursday Tehran has not closed all doors to resolve its disputes with the United States and is ready for indirect negotiations with Washington.

- Tehran has so far rebuffed U.S. President Donald Trump's warning it to make a deal or face military consequences.
- Supreme Leader Ayatollah Ali Khamenei called the message deceptive and Foreign Minister Abbas Araqchi said talks are impossible unless Washington changes its "maximum pressure" policy.
- "The Islamic Republic has not closed all doors. It is ready for indirect negotiations with the United States in order to evaluate the other party, state its own conditions and make the appropriate decision," Kharrazi said, according to the semi-official Iranian Students News Agency.
- Iran is meant to soon reply to Trump's letter, with Araqchi saying last week that Tehran would take into consideration both Trump's threat and opportunities in its response.

#### Do You Know:

- In his first 2017-21 term, Trump withdrew the U.S. from a 2015 deal between Iran and world powers that placed strict limits on Tehran's disputed nuclear activities in exchange for sanctions relief.
- After Trump pulled out in 2018 and reimposed sweeping U.S. sanctions, the Islamic Republic breached and has since far surpassed those limits in its escalating programme of uranium enrichment.
- Western powers accuse Iran of having an clandestine agenda to develop nuclear weapons capability by enriching uranium to a high level of fissile purity, above what they say is justifiable for a civilian atomic energy programme.
- In 2015, the five permanent members of the UN Security Council, Germany, the European Union, and Iran signed the 'Joint Comprehensive Plan of Action' (JCPOA), more commonly known as the Iran nuclear deal. The Obama-era deal provided Iran with sanctions relief in return for Tehran severely limiting the scope of its nuclear program — Iran agreed to not enrich its uranium beyond 3.67%, a level suitable for peaceful nuclear power applications but not for weapons production — and signing a roadmap agreement with the International Atomic Energy Agency (IAEA).
- Tehran says its nuclear programme is wholly for civilian energy purposes

**NATIONAL****US RELIGIOUS FREEDOM REPORT CALLS FOR SANCTIONS ON R&AW, INDIA SAYS BIASED & POLITICALLY MOTIVATED**

India has rejected a US panel's latest religious freedom report which says minorities in the country face deteriorating treatment and — for the first time — recommends targeted sanctions against the Research and Analysis Wing (R&AW) over its alleged involvement in assassination plots against Sikh separatists.

- The report by the US Commission on International Religious Freedom (USCIRF), released on March 25, recommended designating India as “country of particular concern” among 15 others including Afghanistan, Russia, China, Pakistan and Saudi Arabia.
- In a strongly worded response, the Ministry of External Affairs (MEA) called the report “biased and politically motivated”.
- Responding to questions, MEA spokesperson Randhir Jaiswal said: “The USCIRF's persistent attempts to misrepresent isolated incidents and cast aspersions on India's vibrant multicultural society reflect a deliberate agenda rather than a genuine concern for religious freedom.”
- “Such efforts to undermine India's standing as a beacon of democracy and tolerance will not succeed. In fact, it is the USCIRF that should be designated as an entity of concern,” he said.
- The latest report documents religious freedom conditions in 2024 and recommends action to the White House, Congress and State Department. These recommendations are not binding.
- The independent, bipartisan US federal government agency has flagged concerns over the state of minorities in India several times over the years. But this is the first time that it has also mentioned the Indian intelligence agency in connection with alleged repression of minorities and recommended targeted sanctions.

**Do You Know:**

- It said the US Congress should designate India as a “country of particular concern” for “engaging in and tolerating systematic, ongoing, and egregious religious freedom violations...” It recommended: “Impose targeted sanctions on individuals and entities, such as Vikash Yadav and RAW, for their culpability in severe violations of religious freedom by freezing their assets and/or barring their entry into the US.”
- The US has charged Yadav, a former Indian government official, in the alleged foiled plot to kill Khalistani separatist Gurpatwant Singh Pannun on American soil in 2023. India has said Yadav was “no longer an employee of the Government of India”.
- In the report, the agency also recommended that the US government conduct a “review assessing whether arms sales to India, such as MQ-9B drones under Section 36 of the Arms Export Control Act, may contribute to or exacerbate religious freedom violations”. In October last year, India sealed a deal with the US to procure 31 Predator drones at \$4 billion to shore up its defence along the Eastern borders.



## WHAT DOES A TERROR GROUP BRANDING ENTAIL?

### The story so far:

Amid the din around the Raisina Dialogue this week, the government put a spotlight on its demand for the banning of the separatist Khalistani group Sikhs for Justice (SFJ), with the U.S. and New Zealand. On Sunday, the SFJ will hold a “referendum” in Los Angeles among the diaspora Sikh population for its secessionist demands.

### What happened this week?

At a press meet after talks with New Zealand Prime Minister Christopher Luxon, Prime Minister Narendra Modi raised concerns about “illegal activities by anti-India elements”, referring to pro-Khalistan groups, in particular the SFJ that has, since 2021 been holding what it calls “referendums” for a separate Khalistan state carved out of India. In another conversation with U.S. Director of National Intelligence (DNI) Tulsi Gabbard, Defence Minister Rajnath Singh raised the same concerns and demand for the U.S. to designate the SFJ a terror organisation and ban it. The SFJ referendums are held almost always in cities of Western democracies, that have large Indian diaspora populations, as well as strong laws guarding “freedom of expression”. However, the number of votes, and the unverifiable identities of voters, raises questions over whether this is a serious process or one intended to irk India. On Sunday, the group plans to hold another such “vote” in Los Angeles. Thus far, however, none of the countries India has posed such requests to has complied. In an interview to The Hindu, Mr. Luxon stressed that New Zealand is a “liberal democracy” where lawful protests are part of protected speech.

Since 2023, when both the U.S. and Canada began trials that implicate Indian “government agents” for an assassination plot against Gurpatwant Singh Pannun, and the killing of Canadian Khalistan activist Hardeep Singh Nijjar respectively, the government has stepped up its campaign against the group. The view is that a ban on the SFJ would considerably mitigate the harshness with which such cases are being viewed, and would vindicate India’s concerns about the group.

### What would a ban mean?

While each of the countries that India has put in a request with has a different procedure to evaluate and ban groups, a ban by any of the powerful “Five Eyes” Intelligence network of the U.S., the U.K., Canada, Australia and New Zealand would likely be followed by all, as they share information regularly. The U.S., for example, has a set procedure for designating Foreign Terrorist Organisations (FTO). A ban determined by the U.S. Secretary of State would entail a funds and asset freeze, curtailing the movements of its key figures, including SFJ founder and immigration lawyer G.S. Pannun, as well as prosecute them. Under the Terrorism Act, the U.K. Home Secretary is similarly empowered to designate groups, and in Canada, the procedure involves a listing under its Anti-Terrorism Act. If India were successful in any of these countries, a ban request on SFJ could potentially be taken to the UN Security Council (UNSC) to be listed under its resolution 1373, which would make these countries liable to prosecute the group according to its Financial Action Task Force (FATF) obligations.

### Why haven’t other countries complied?

For India, the fact that SFJ activities are seen as “incendiary, but not illegal”, with the group operating freely in countries that are supposedly India’s closest strategic partners, is both insulting and worrying. Mr. Pannun is often regarded by other countries as a non-serious figure.





His videos cast India as a perpetrator of human rights atrocities, and he makes wild threats against Indian embassies and its diplomats, the Indian Parliament and Air India flights. New Delhi has maintained that these threats must be taken seriously and investigated, pointing to similar Canadian apathy in the 1980s, which allowed for the 1985 bombing of the Air India Kanishka flight, in which 329 people were killed. The SFJ has glorified the Kanishka bombing mastermind Talwinder Singh Parmar as well as other terrorists responsible for the assassination of former Prime Minister Indira Gandhi.

State police forces and the National Investigation Agency have registered at least 122 cases against SFJ since 2018 and 105 people have been arrested, while the government recently renewed a 2019 ban on its activities under the Unlawful Activities Prevention Act (UAPA). Indian authorities accuse SFJ and Mr. Pannun of instigating violence, sabotage of railway operations, gun-running in conspiracy with Pakistan's ISI, as well as trying to provoke Sikh soldiers in the Indian Army to desert it.

#### WHAT IS INDIA'S APPROACH TO CITIZENS ON DEATH ROW ABROAD?

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

On March 3, the Ministry of External Affairs (MEA) informed that the execution of Shahzadi Khan, an Indian national sentenced to death in the UAE for the alleged murder of an infant, was already carried out. The Ministry's confirmation came as a response to a petition filed by her father Shabbir Khan. In less than a week, the Ministry confirmed that two more Indian nationals, convicted in separate cases, were also executed in the UAE.

##### **How many are on death row abroad?**

As per the data disclosed by the MEA in Rajya Sabha on March 20, a total of 49 Indians are currently on death row. The number of Indians awarded death sentences by foreign courts is the highest in the UAE with 25 Indian nationals awaiting their sentences, followed by 11 in Saudi Arabia.

##### **What has been India's response?**

The MEA, in its reply to the Rajya Sabha, mentioned that Indian Missions abroad provide all possible assistance to Indian citizens sentenced by foreign courts.

Explaining the MEA's approach to such cases, Talmiz Ahmad, India's former Ambassador to Oman, the UAE, and Saudi Arabia, said, "There are three processes. First is the arrest and the indictment by the police authorities. Second is the prolonged judicial process. There is a third element — pardon by the ruler or the head of the state. When you say someone is on death row, it means the first and second processes have been completed. The judicial process has been completed and the judge has pronounced that sentence. After that, the only thing that is available to the embassy or the person concerned is to appeal to the ruler." The appeal for pardon is made by a family member of the accused and if the family is located in India, they are guided to submit the petition. The Indian embassy then forwards the petition to the foreign office requesting that it be brought to the ruler's attention.

In many Gulf countries, sentences can also be commuted in exchange for blood money. Blood money refers to the compensation paid to the victim's family as an alternative for retribution. But,





it has to be accepted by both the state and the aggrieved family. In some cases, the state may refuse to commute the sentence in exchange for blood money based on the nature of the crime.

#### **Can the embassy do more?**

Death sentences are given in very exceptional cases such as murder, rape and treason. In countries which have authoritarian systems with nearly non-transparent judicial processes such as Saudi Arabia, the Indian embassy is not informed about the arrest or judicial processes or the pronouncement of the death sentence. The Embassy receives a formal note about the details of the Indian national only after the execution. The embassy's role is further limited when the accused confesses to the crime — circumstances of which often remain unknown. On the other hand, in countries with relatively open judicial systems, the embassy can nominate a lawyer. Whenever required, it also uses welfare funds to provide legal services to those who need it.

#### **Has India intervened successfully in the past?**

The government has successfully intervened in several cases. In February last year, eight Indian navy veterans who were sentenced to death by the Qatari government were released following the Indian government's diplomatic efforts and appeals at a higher court. Gurdip Singh, an Indian national arrested on charges of drug trafficking in Indonesia, was sentenced to death in 2005 by the Tangerang court. Singh's appeal was turned down by the High Court of Banten and later the Supreme Court. However, he was spared due to the Indian government's intervention.

### **INDO-FRANCE NAVAL DRILL FOCUSES ON ANTI-SUBMARINE WARFARE**

India and France deployed aircraft carriers INS Vikrant and Charles de Gaulle for the bilateral exercise Varuna, with Indian getting a chance to closely observe and operate with the Rafale-M fighter jets that it is set to contract very soon and also focus on Anti-Submarine Warfare (ASW) operations.

The exercise was held from March 19 to 22 off the coast of Goa.

#### **Rigorous training**

The ASW exercises provide rigorous training in underwater domain awareness, while surface warfare operations demonstrate synchronised manoeuvres and engagements by the Indian and French fleets, the Navy stated.

Maritime patrol aircraft enhance situational awareness, and replenishment-at-sea exercises fortify logistical cooperation, it added, highlighting that this collaboration underscores the "shared vision of safeguarding a free, open, and secure maritime environment".

The French CSG has been on deployment in the Indian Ocean Region since November 2024 as part of the Clemenceau 25 mission, aiming to strengthen ties with its partners in the Indo-Pacific and engage in a series of exercises during the period.

### **INDIA NAVY ANNOUNCES MAIDEN INDIA-AFRICAN EXERCISE, IOS SAGAR**

Against the backdrop of massive inroads by China in Africa, the renewed threat of piracy and the continued threat from Houthi rebels to global shipping, the Indian Navy has announced initiatives for bolder cooperation with the continent and the Indian Ocean Region (IOR). This includes a



large-scale multinational exercise titled “Africa India Key Maritime Engagement”, or “AIKEYME”, scheduled to be held with 10 African countries.

Another cooperation initiative with Africa is the Indian Ocean Ship (IOS) Sagar under which the offshore patrol vessel INS Sunayna is set to be deployed to the Southwest IOR from April 5 to May 8 with a combined Indian crew and 44 personnel from 9 African countries.

“IOS Sagar is an initiative towards continued cooperation with IOR nations. INS Sunayna is being deployed to the Southwest IOR with a combined crew of India and nine Friendly Foreign Countries (FFC) - Comoros, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Sri Lanka, South Africa. The ship is planned to be deployed for over a month in April, and would be undertaking port calls at Dar-es-Salaam, Nacala, Port Louis, Port Victoria and Male and Joint surveillance of Exclusive Economic Zones (EEZs) of Tanzania, Mozambique, Mauritius and Seychelles,” Deputy Chief of Naval Staff Vice Admiral Tarun Sobti said, briefing the media.

With the announcement of Mutual and Holistic Advancement for Security Across the Regions (MAHASAGAR) by Prime Minister Narendra Modi during his recent visit to Mauritius, the maiden initiatives of IOS Sagar and AIKEYME are aimed at consolidating Indian Navy’s stature as the ‘Preferred Security Partner’ and ‘First Responder’ in Indian Ocean Region, he said.

The personnel from FFCs would undergo a training capsule of two weeks at various naval professional schools at Kochi, including training at sea, and would be engaged in wholship activities, watch keeping and other events related to their respective branches/trade, according to the Navy. The participants of IOS Sagar are also set to witness harbour phase activities of Exercise AIKEYME at Dar-es-Salaam, Tanzania.

Over the past decade, the Indian Navy has been extensively collaborating with Indian Ocean littoral states on various initiatives such as joint naval exercises, coordinated patrols, information sharing, Humanitarian Assistance and Disaster Relief (HADR) efforts, capacity building and other diplomatic engagements. The maiden edition of the India-Africa multilateral exercise ‘AIKEYME’ is being co-hosted by the Indian Navy and Tanzania Peoples’ Defence Force (TPDF) and will be conducted at/off Dar-es-Salaam, Tanzania.

#### CENTURIES AGO, WHEN THE INDIANS ARRIVED IN MAURITIUS

“On March 11, Prime Minister Narendra Modi became the first Indian to receive the highest civilian honour in Mauritius — the Grand Commander of the Order of the Star and Key of the Indian Ocean — from the island nation’s Prime Minister Navinchandra Ramgoolam.”

- “Long before Mahatma Gandhi made a pit stop in Mauritius in 1901, while on his way to India from South Africa, his countrymen had landed on the shores of the island nation in the 1700s itself. During his visit, from October 29, 1901, to November 15, 1901, the Mahatma had three messages for the Indian labourers, mostly from Bihar, residing in the island nation: the importance of education, political empowerment and staying connected with India.”
- “The first documented arrival of Indians in Mauritius dates back to 1729 — while it was under French occupation — when Indians artisans and masons were sent off to the nation from Puducherry, then a French colony in India.”
- “Between 1834 and the early 1900s, Mauritius was under British occupation. During that time, nearly half a million indentured Indians were shipped there. The first batch of 36 workers arrived



there on November 2, 1834, on a ship named Atlas. To this day, November 2 is observed as 'Aapravasi Diwas' in Mauritius. About two-thirds of these workers would settle in Mauritius permanently."

- "At present, Mauritius has 22,188 Indian nationals and 13,198 Overseas Citizenship of India (OCI) card holders. During President Droupadi Murmu's state visit to Mauritius in March 2024, in a special gesture, an OCI card for Mauritians with Indian lineage traceable up to the 7th generation was announced."

- "In 2024, Mauritius introduced a visa-free regime for Indian tourists visiting their country for up to a month. Before Covid, around 80,000 Indian tourists visited Mauritius annually. Mauritians are entitled to a gratis visa (issued without consular fees) during their India visit. Before the pandemic, 30,000 Mauritians visited India each year."

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

- Mauritius, a strategically located island nation in the western Indian Ocean, is an important neighbour for India. A key reason for the special ties is that people of Indian-origin comprise nearly 70% of the island's population of 1.2 million.

- In March 2015, when PM Modi visited Mauritius, India signed a Memorandum of Understanding to improve transport facilities at Agaléga island.

- This agreement said that infrastructure "for improving sea and air connectivity at the Outer Island of Mauritius will go a long way in ameliorating the condition of the inhabitants of this remote Island. These facilities will enhance the capabilities of the Mauritian Defence Forces in safeguarding their interests in the Outer Island."

- Agaléga island is located 1,100 km north of Mauritius and is closer to the Indian southern coast. It is spread over an area of 70 sq km. In February 2024, India and Mauritius jointly inaugurated the air strip and the jetty projects.

- The doctrine of MAHASAGAR (Mutual and Holistic Advancement for Security and Growth Across Regions) builds on SAGAR and indicates a broadened scope of India's maritime engagement. This perceptibly includes not only the immediate neighbourhood but also extends to the broader Indo-Pacific space and connects with India's strategic collaboration with QUAD members—the United States, Japan, and Australia.

#### **HOW IS AN IN-HOUSE INQUIRY CONDUCTED?**

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

The Chief Justice of India (CJI) has constituted an in-house committee to conduct an inquiry into allegations of misconduct against Justice Yashwant Varma. This follows recovery of huge piles of cash at his residence during a fire-control operation.

##### **What is the current issue?**

A fire broke out at the residence of Justice Yashwant Varma of the Delhi High Court on March 14. The fire-control personnel discovered huge piles of cash that was burnt in the fire inside the storeroom. The Chief Justice of Delhi High Court conducted the preliminary inquiry and reported to the CJI that his prima facie opinion is for a deeper probe into the entire matter. As per the



direction of the CJI, responses were sought from Justice Yashwant Varma on the preliminary inquiry findings. Justice Varma responded that no cash was ever placed by him or his family members in the storeroom, and that they were never shown the sacks of burnt currency notes during the fire-control operation. A three-member committee has been constituted as per the in-house procedure of the Supreme Court for conducting an inquiry into the allegations. Meanwhile, judicial work has been withdrawn from Justice Varma and he has been transferred to his parent Allahabad High Court by the collegium.

#### **What is an in-house procedure?**

In order to probe into complaints of alleged misbehaviour against judges of the higher judiciary, the Supreme Court has developed an in-house procedure of inquiry. The resolution for in-house procedures for action against judges was adopted in 1999 and made public in 2014.

When a complaint is received against a judge of a High Court, the CJI will decide whether the issue is frivolous or warrants an inquiry. If an inquiry is deemed necessary, the judge's initial response along with comments of the Chief Justice of the concerned High Court are taken on record. The CJI can then form a three-member committee consisting of two Chief Justices from other High Courts and one High Court judge. The committee after the inquiry can provide a recommendation that the misconduct is serious enough to warrant removal or not serious enough. If the recommendation is not for removal, the judge would be apprised accordingly. However, if the recommendation is for the judge's removal, he/she will be asked to resign. In the event of the judge unwilling to resign, the President and the Prime Minister will be informed of the findings for Parliament to initiate action for removal as per provisions of the Constitution. Any complaint against the Chief Justice of a High Court, would be inquired by a committee consisting of a Supreme Court judge and two Chief Justices of other High Courts. In case of a complaint against a Supreme Court judge, the committee would consist of three Supreme Court Judges. In the instant case, based on the preliminary opinion of the Chief Justice of Delhi High Court, the CJI has constituted a committee consisting of the Chief Justice of Punjab and Haryana Court, the Chief Justice of Himachal Pradesh High Court, and a judge of the Karnataka High Court to inquire into the allegations.

#### **What reforms are required?**

The details of in-house inquiries are kept confidential by the Supreme Court. This practice may be changed to disclose the key findings of the inquiry to instil transparency and confidence in the whole process. Furthermore, in the past, no judge has suffered criminal punishment even after having been found guilty of misbehaviour by the inquiry committee. This needs to be addressed and the guilty should be brought to book. In the U.K., there is an autonomous statutory office called the 'Judicial Conduct Investigations Office' that investigates allegations of judicial misconduct. A similar autonomous and permanent body may be established in India under the CJI.

One of the root causes for the problem probably lies in the opaqueness of the collegium process that is followed for the appointment of judges. There needs to be a renewed debate on operationalising the National Judicial Appointments Commission (NJAC), that was struck down by the Supreme Court in 2015 as unconstitutional for violating the basic structure of the independence of judiciary. The collegium process has no doubt ensured independence of the judiciary in appointments. However, it does suffer from lack of accountability and transparency. A broad-based NJAC headed by the CJI with representatives from various stakeholders including members of the legislature, lawyer associations and academia may be set up on the lines of the





Judicial Service Commission in South Africa. The CJI and other senior judges may be provided with a veto to have the final say in the appointment process. Such a set up would make the selection process more transparent and inclusive without compromising the independence of the judiciary.

## BACK DOOR CENSOR

By informing the Delhi High Court that it cannot be compelled to come on board the Union government's SAHYOG portal, the social media platform, X, has brought to light a mechanism that could potentially be misused by the government in its attempts to curb content on the Internet. The portal, which has been conceptualised by the government to be a platform that will facilitate coordination among law enforcement agencies, social media platforms and telecom service providers to help in quicker takedowns of unlawful content, seems to be a follow-up to an office memorandum by the Ministry of Electronics and Information Technology, in October 2023, authorising government agencies to block content, under Section 79 of the IT Act. The creation of SAHYOG was disclosed by the Union Ministry of Home Affairs (MHA) in the Delhi High Court last year, in *Shabana vs Govt Of NCT Of Delhi And Ors.*, where the court had emphasised the need for a mechanism to enable real-time interactions between Internet intermediaries and law enforcement authorities in order to address urgent cases. Section 79 of the IT Act provides safe harbour protection to intermediaries so that they are not liable for third-party content hosted or transmitted on or through their platforms provided they adhere to certain conditions. Section 79(3)(b) provides an exception to this protection — if an intermediary receives actual knowledge or is notified by the government agency that certain content is being used to commit an unlawful act, it must remove or disable access to that content quickly, failing which it will lose safe harbour protection.

By using Section 79(3)(b) to enable the creation of what is a content takedown portal, the government — as X rightly claims in its petition — bypasses the limited safeguards under Section 69A of the IT Act, which allows content blocking only on specific grounds such as national security and public order, and mandates procedural safeguards such as a designated officer's approval, written justification and independent review of any such blocking request. X's claim also justifiably raises the possibility of SAHYOG being used as a tool for unchecked censorship as it will allow for multiple government agencies including Ministries, State governments and local police to have blocking powers unlike the provisions in Section 69A. If SAHYOG is used as the medium to address blocking orders, there seem to be no opportunities for challenging the order, nor are there any procedural protections that are otherwise available through Section 69A. This suggests that the implementation of the portal could be ultra vires and violates the Supreme Court's judgment in *Shreya Singhal vs Union of India*. While the Delhi and Karnataka High Courts (X has also filed a petition challenging SAHYOG here) hear the cases, the MHA must provide the full details of the features of the SAHYOG portal for public perusal to ensure that it does not bypass the legal frameworks for online content regulation.

## NO COMIC RELIEF

The violent reaction to comedian Kunal Kamra's satirical remark about Maharashtra Deputy Chief Minister Eknath Shinde is not merely a sign of rising intolerance — it also highlights how such intolerance can escalate beyond police cases into acts of vandalism and open intimidation, aimed at asserting political dominance. Mr. Kamra's use of the word 'gaddar (traitor)' in a parody of a Hindi film song, seemingly targeting an unnamed politician's rise, has reportedly offended Mr. Shinde's supporters and other Shiv Sena members. In a bizarre act of misplaced retaliation, a





group attacked 'Habitat', the studio where Mr. Kamra had performed — an attempt to impose vicarious liability on the venue instead of the artist. The Mumbai police booked Mr. Kamra under provisions of the Bharatiya Nyaya Sanhita (BNS) related to promoting enmity and causing public mischief, as well as defamation. However, it is well-established that defamation charges can only be initiated by the aggrieved party, and not by the police. In a now-familiar display of power being weaponised, the Brihanmumbai Municipal Corporation (BMC) conveniently discovered unauthorised structures outside the venue and demolished them, continuing to probe for further "irregularities". The first information report against Mr. Kamra appears to be a clear misuse of laws meant to address divisive speech. It essentially criminalises satire directed at a public figure's political actions. Politicians being labelled as traitors or turncoats after switching parties is hardly new — ironically, Ajit Pawar of the Nationalist Congress Party, who once used the same term, now serves alongside Mr. Shinde as Deputy Chief Minister.

The Maharashtra government is now demanding a public apology from Mr. Kamra, which he has refused, though he has expressed his willingness to cooperate with any lawful investigation. It is incumbent upon the State government to ensure its actions remain within legal bounds and not appear as arbitrary retaliations. While it is commendable that a few Shiv Sena members have been booked for the vandalism, the case must be pursued to its logical end. The invocation of "hurt sentiments" to justify violent loyalty has gone too far. Increasingly, such claims are being used to legitimise mob attacks, undermining the free and open space essential for democratic discourse.

#### SC STAYS HC'S 'INHUMAN' REMARKS ON RAPE BID

The Supreme Court has decided to examine the March 17, 2025, order of the Allahabad High Court which said that grabbing breasts and breaking the strings of the girl's pyjamas while dragging her under a culvert were not sufficient to hold the charges of rape or attempt to rape.

- The top court registered a suo motu case in this regard on Tuesday on the basis of a letter by Senior Advocate Shobha Gupta.
- The High Court had ordered a POCSO court to alter the offence of rape in a case into that of "assaulting or abusing with an intent to disrobe or compel her to be naked".
- The single bench of the High Court directed the trial court in Kasganj district to issue fresh summons to the two accused, booked for rape, under the modified charges.
- The High Court was hearing a petition filed by the accused, challenging the summons issued to them by the Special Judge of the POCSO court in Kasganj to face trial in a rape case.

#### Do You Know:

- The Supreme Court on Wednesday (March 26) stayed a ruling of the Allahabad High Court that said grabbing the breasts of a minor child and breaking the string of her pyjama "hardly constitute[d] an offence of attempt to rape", and merely amount[ed] to "preparation".
- In his order passed on March 17, Justice Ram Manohar Narayan Mishra of the Allahabad High Court deleted the charges of attempted rape against three accused persons and directed that they should be tried for the "minor offence" of assaulting or using criminal force against a woman under Section 354B of the Indian Penal Code, 1860 (IPC), read with Sections 9/10 (aggravated sexual assault) of the Protection of Children from Sexual Offences Act, 2012 (POCSO Act).



- In *Abhayanand Mishra v. State of Bihar* (1961), the SC ruled that to prove an attempt to commit an offence, the prosecution must broadly show that:

- a) The accused had the “intention” to commit that offence.
- b) The accused made preparations to commit the offence.
- c) The accused then acted towards committing the offence — this need not be the “penultimate act”, that is, the final act before the offence is committed.
- d) The penultimate act took place “during the course of committing that offence”. (This is known as the requirement of “proximity”).

- Crucially, an attempt is said to be made only when this penultimate act takes place — an accused cannot be held guilty for merely making preparations without taking any action towards committing a crime.

- As the SC put it in *State of Maharashtra v Mohd. Yakub* (1980), “attempt begins where preparation ends”.

## WOMEN UNBOUND

Despite stringent laws, women remain far from feeling safe in most public spaces. A spate of incidents in just the first three months of 2025 highlights how vulnerable women are — especially in public transport. A 23-year-old woman sustained severe injuries after jumping off a train to escape an assaulter. In another shocking case, a pregnant woman who was allegedly pushed out of a train following an attempted rape suffered a miscarriage. Harassment is a regular ordeal for women in unreserved train compartments and on government buses. Who is accountable for this grim reality when society claims to champion women’s empowerment? In their seminal work, *Why Loiter?*, Shilpa Phadke, Sameera Khan, and Shilpa Ranade argue that when society says it wants to protect women, it does not strive to make public spaces safer. Instead, it seeks to confine women to homes, schools, or the care of others. Even today, women must constantly consider the time of day they travel, wary of venturing out after dark or before sunrise.

A necessary starting point is affirming that women have the right to live and move freely — without fear. While easier said than done, a recent Delhi High Court ruling has set an example. The court upheld the conviction of a man who sexually harassed a woman on a public bus in 2015, calling it a “deeply concerning reality” that harassment in public spaces persists despite decades of independence and tough laws. The court rightly pointed out that judgments in such cases serve as crucial signals to society. Until a harassment-free environment is created, conversations about women’s progress will remain hollow. Equally significant is the Supreme Court of India’s decision to stay an Allahabad High Court order that had outrageously ruled inappropriate touching of a minor did not amount to attempted rape. The top court’s response sends a clear and much-needed message: such “totally insensitive and inhuman” interpretations of the law are unacceptable. The responsibility does not lie with the judiciary alone. Administrative bodies must ensure that streets are well-lit, police are trained to handle cases of harassment effectively, and all vacancies in law enforcement are promptly filled. Without a coordinated, all-encompassing approach to safety, women will continue to live in fear, denied their rightful access to public life.



## FIVE CONTENTIOUS CHANGES PROPOSED BY THE WAQF BILL, 2024

The Waqf (Amendment) Bill, 2024 has elicited widespread criticism across India.

- The 2024 Bill proposed allowing a non-Muslim Chief Executive Officer, and at least two non-Muslim members to be appointed by state governments to their state's waqf board. The Joint Parliamentary Committee (JPC) allowed two amendments to this provision — that the appointee shall be an officer at the Joint Secretary-level or higher, and that she shall have knowledge of Muslim law and jurisprudence.
- The 2024 Bill gave the District Collector the power to determine if a disputed property is a waqf or belongs to the government. This determination is currently made by the Waqf Tribunal.
- The 2024 Bill does away with the concept of “waqf by user”, which is a part of the 1995 law. This refers to a property that is treated as waqf based on its long-term use for religious or charitable purposes, even without formal documentation. Several mosques and graveyards could fall in this category.
- The 2024 Bill required every waqf property to be registered on a central database within six months of the law's commencement. Any “government property” in this database would be flagged to the District Collector, who would then make an inquiry into the matter. The JPC accepted an amendment proposed by JD(U) MP Dileshwar Kamait, relaxing the timeline for registering a waqf property, in certain cases, provided the mutawalli provides “sufficient cause for not filing the details of the waqf on the portal”.
- The amended Bill thus gives the Waqf Tribunal the power to extend the timeline in select cases. However, given that the circumstances which can be considered “sufficient”, and the period of extension are not specified, the Tribunal will have to exercise its discretion.
- The Bill has also changed how the Waqf Tribunal will be formed. It states that it will comprise a District Judge, and a state government officer of Joint Secretary rank as its members. Another crucial change in the new Bill is that it has removed the provision that made the Tribunal's decision final. The Bill allows Tribunal decisions to be challenged in the High Court.

### Do You Know:

- The JPC also accepted another consequent amendment by BJP MP Dr Radha Mohan Das Agarwal. The 2024 Bill stated that six months after the proposed law's commencement, no suit, appeals or legal proceedings can be filed by waqfs if they are not registered under the central portal.
- The 2024 Bill gave the District Collector the powers that were previously with the Waqf Tribunal. The Bill stated that “any government property identified or declared as waqf property, before or after the commencement of the Act, shall not be deemed to be a waqf property.” This determination, however, was to be made by the collector, not the Waqf Tribunal.

## WHY IS UPLOADING VOTING DATA A CHALLENGE?

### The story so far:

In May 2024, in the middle of the Lok Sabha elections, the Supreme Court of India considered a petition by the Association for Democratic Reforms (ADR), seeking the publication of the first part



of Form 17C, which includes booth-wise voter turnout data, on the Election Commission of India's (EC) website, within 48 hours of polling.

#### **What was the EC's stand?**

The EC flatly refused, saying that it was only legally mandated to share this form with polling agents representing electoral candidates, and not with the general public or the media. A year later, after Opposition outrage at alleged discrepancies in voter turnout and vote counts in multiple Assembly elections, the EC has told the top court it is prepared to meet with the ADR and fellow petitioner, Trinamool Congress MP Mahua Moitra, signalling that the new Chief Election Commissioner Gyanesh Kumar is "ready and willing" to hear their demand.

#### **What is Form 17C?**

The Conduct of Election Rules, 1961 mandates that a two-part form, recording voter turnout and vote count, is filled for every polling station; in the 2024 parliamentary poll, there were more than 10.5 lakh polling stations across the country. Part 1 of Form 17C is the Account of Votes Recorded, and is filled in by the presiding officer of each polling station, with a true copy to be furnished to every polling agent present at the close of the poll. It includes the identification number of the Electronic Voting Machine (EVM) used in that polling station, the total number of electors assigned to that polling booth, the number of votes cast as per the EVM, as well as the numbers deciding not to record their votes or who were not allowed to vote, and whether there are any mismatches between these numbers. It also includes the number of tendered ballot papers and paper seals. The presiding officer, as well as every polling agent present are required to sign and validate this form, before it is placed in a sealed cover and transported to the returning officer, along with the EVM, to be held until the day of counting.

On counting day, Part 2 of Form 17C, titled the Result of Counting, is filled in by the returning officer. It includes the names of each candidate and the number of votes recorded in favour of each of them, as seen when the "result" button is pressed on the EVM. The returning officer must also state "whether the total number of votes shown above tallies with the total number of votes shown against item 5 of Part 1 [which is the number of votes cast as per the EVM on the day of polling] or any discrepancy noticed between the two totals." Part 2 is signed by the returning officer, the counting supervisor, and each candidate or their counting agents.

#### **Why do Opposition parties want this data to be published online immediately?**

In July 2024, after the conclusion of the Lok Sabha elections, ADR conducted an analysis of voter data issued by the EC and arrived at the shocking conclusion that the number of votes polled tallied exactly with the number of votes counted in only five parliamentary constituencies across the country. In the remaining 538 constituencies, there were discrepancies seen; in 362 seats, the number of votes counted was cumulatively 5.5 lakh fewer than votes polled, while in 176 seats, there was a total of 35,000 extra votes counted in comparison to the votes polled.

This is a miniscule fraction of the 64.64 crore votes polled across the country, and the EC dismissed them as occasional manual errors made by presiding officers or a failure to remove the votes cast when the mock poll was conducted. The majority of these discrepancies were lower than the winning margin in constituencies. "The margin of victory does not matter because winning or losing is not the important point. We believe that every vote matters, and should be accounted for," says ADR founder and trustee Jagdeep Chhokar. The booth-wise information available in Form 17C will allow discrepancies to be pinpointed and accountability to be fixed, so





that corrective action can be taken at the booth level, says Mr. Chhokar. Aggregating this data will show if there is any pattern of discrepancies in an election.

Opposition parties have raised a hue and cry about the significant differences in voter turnout as released provisionally through the EC's mobile app or its press statements on the day of polling, and the final turnout figures declared days later; in the first phase of the parliamentary election, the final voter turnout was published 11 days late, and was up to 5% higher than initially announced. The EC's published voter turnout data is also in percentage terms, not in absolute figures as recorded in Form 17C. The demand for Form 17C to be published immediately is meant to spotlight and prevent such discrepancies, though the EC says the issue of hard copies of Form 17C to polling agents on the day of the election ensures transparency. "In theory, Form 17C is supposed to be given to polling agents. In practice, every party and every candidate does not have the wherewithal to hire a polling agent for each polling station. What the EC's rule book says does not actually happen. Form 17C can be incorrect and there may be no polling agents, or only polling agents for the ruling party, or polling agents can be bought," says Mr. Chhokar. "It is not just political parties that have a right to this information, but also the voter."

#### **What difficulties does the EC face?**

The EC told the court that "indiscriminate disclosure" of the data could create chaos, warning that images of Form 17C published online could be morphed and lead to "widespread discomfort". It noted that postal ballots are not included in Form 17C. The poll body also argued that it was not obligated to hand over the form to anyone but polling agents.

Former election officials also point to practical difficulties on the ground, admitting that some errors are inevitable. "There are about one crore poll workers involved in conducting a national election in India. Many are not well educated, and they are under extreme stress with all kinds of pressure being put on them at the polling station so they may commit blunders," explained former Chief Election Commissioner O.P. Rawat. He said that the copies of Form 17C are sent overnight to the returning officer HQ and the next day, the election observer camps out and verifies the data recorded in Part 1 with the presiding officer's diary and other documents as well as video recordings at the polling station. He then "rectifies" the data on Form 17C with "corroborating evidence", a process that may take several days. It is not clear if polling agents are then asked to sign off on such "rectified" data. Mr. Rawat notes that political parties can collect Form 17Cs from their polling agents and publish them if they wish. "Mistakes will lead to disciplinary action against poll workers who are under stress and do not deserve it and [polling agents] will take flak from them next time. That's why they want to put the ball in the EC's court," he said.

#### **EC PROPOSAL: VOTERS WHO DECLINE TO GIVE AADHAAR NEED TO APPEAR, EXPLAIN WHY**

Going forward, a voter declining to share their Aadhaar number with the Election Commission (EC) may have to make a personal appearance before the Electoral Registration Officer (ERO) to show cause for not providing this information.

- An ERO, typically a civil service/revenue officer, is empowered by Section 13B of the R P Act 1950 to prepare, update and revise electoral rolls (more commonly known as the "voters' list") for Assembly constituencies. EROs are designated by the Election Commission in consultation with State Governments.





- Currently, the EC, up to 2023, had collected Aadhaar details of over 66 crore voters, who had “voluntarily” offered this information. But the two databases for these 66 crore voters haven’t been linked. In other words, so far, Aadhaar hasn’t been used to weed out duplicate entries or enable clean-up of electoral rolls.
- The proposal that every voter who doesn’t provide her 12-digit unique identity number needs to give an explanation in person before an ERO is understood to have been discussed at a high-level meeting last week between senior officers of the EC and representatives from the Home Ministry, Law Ministry, IT Ministry, and UIDAI, and is likely to be part of the amended Form 6B.
- With this change, the EC hopes that sharing Aadhaar number will be categorically clarified as a “voluntary” exercise and it will, consequently, fulfil its commitment before the Supreme Court (in G Niranjan Vs Election Commission of India) in September 2023.

**Do You Know:**

- Currently, Form 6B, which was introduced to collect Aadhaar numbers of voters, lacks options for electors to abstain from providing Aadhaar, offering only two choices: either provide Aadhaar or declare, “I am not able to furnish my Aadhaar because I don’t have Aadhaar number.”
- The latter, the petitioners in G Niranjan Vs Election Commission of India case had said, basically forced voters to give a false undertaking when they actually don’t wish to volunteer that information.
- According to the proposal discussed in the March 18 meeting, Form 6B will be tweaked to remove the latter declaration (“I am not able to furnish my Aadhaar because I don’t have Aadhaar number”). It will now have just one declaration that the voter is providing an alternative document (out of the predetermined list of documents mentioned in Form 6B) and will appear before ERO on a given date to explain why she is not sharing Aadhaar details.
- This change will have to be notified by the Law Ministry by way of the gazette notification only after EC sends a formal proposal to the Union government on the same. This amendment is likely to happen before the next set of Assembly elections in Bihar.

**PETTY POLITICS**

The impressive gathering in Chennai, on March 22, which brought together leaders from several States — including four Chief Ministers — for the inaugural meeting of the Joint Action Committee (JAC) on Fair Delimitation, sent a clear message: any delimitation exercise based solely on the current population figures is unacceptable. The meeting’s primary demand — to extend the freeze on the number of parliamentary constituencies based on the 1971 Census for another 25 years — echoes a similar resolution passed at a recent meeting of parties in Tamil Nadu, which proposed a 30-year extension. This concept of a freeze is not new; it was implemented through the 42nd Amendment (until 2000) and extended again via the 84th Amendment (until 2026). Rightly, the JAC emphasised that States which have successfully implemented family planning should not be penalised with reduced parliamentary representation. This concern, which is particularly prominent in the South, should not be dismissed as a regional issue, despite the strong southern presence at the meeting, which was hosted by Tamil Nadu Chief Minister M.K. Stalin and attended by Kerala Chief Minister Pinarayi Vijayan, Telangana Chief Minister Revanth Reddy, and Karnataka Deputy Chief Minister D.K. Shivakumar. The meeting also saw participation from outside the South, including Punjab Chief Minister Bhagwant Mann and Odisha’s former Chief

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



Minister Naveen Patnaik, who, in an online address, reinforced the message against punishing States for effective population control measures. It is after a long time that parties across regions and ideologies are uniting on a substantive issue — representative democracy — rather than forming opportunistic electoral coalitions that lack policy coherence.

The Bharat Rashtra Samithi's working president, K.T. Rama Rao, proposed considering a State's fiscal contribution as a parameter in the delimitation process — an idea that may help address the concerns of the southern States. But it might not make sense to predicate decisions with long-term consequences such as delimitation on factors that change from one year to another. In any case, the Union government must act without delay to begin nationwide consultations involving a wide range of parties. Before initiating the Delimitation Commission, it should facilitate inclusive dialogue, regardless of when the next Census — an essential prerequisite — is conducted. So far, statements from Union Ministers have failed to provide clarity. The Centre must recognise the importance of transparency and consultation on this inexplicable delay. Inexplicable, unless petty political calculations are factored in.

## THE FLAWED PUSH FOR A THIRD LANGUAGE

Evidence-based policymaking relies on data, research, and statistical analysis — not ideology, untested assumptions or political convenience. It ensures that policies address real needs, maximise effectiveness, and avoid unnecessary burdens. By this standard, the National Education Policy (NEP) 2020's push for a third language in schools fails to meet the mark.

### What do surveys say?

Any discussion on teaching a third language must begin with an honest evaluation of India's school system and its capacity to teach subjects effectively. The Programme for International Student Assessment (PISA), a global test which evaluates reading, math, and science skills of 15-year-olds, conducted every three years by the Organisation for Economic Co-operation and Development, highlights India's struggle. In 2009, India ranked 73 out of the 74 participating countries, ahead of only Kyrgyzstan. Since then, India has withdrawn from PISA. In contrast, countries like Singapore, China, South Korea, Estonia and Finland have consistently ranked near the top, reflecting the strength of their school education systems.

Domestic surveys paint an equally dismal picture. The National Achievement Survey (NAS), conducted every three years since 2001, assesses learning outcomes in Classes 3, 5, 8, and 10. NAS 2017 found that only 48% of Class 8 students could read a simple paragraph in their regional language or Hindi; only 47% could write an essay or letter; and just 42% had a good grasp of grammar. NAS 2021 showed slight improvements of 56%, 49%, and 44%, respectively. NAS 2018 found that English proficiency, tested only at the Class 10 level, was equally poor. Notably, NAS does not assess third-language proficiency, raising concerns about policymakers' reluctance to scrutinise its effectiveness.

The Annual State of Education Report (ASER), conducted by the NGO Pratham, assesses school enrolment and learning outcomes in rural India. ASER 2018 found that 27% of Class 8 students couldn't read even a Class 2-level text properly in their regional language or Hindi. This worsened to 30.4% in 2022. In 2016, the percentage of Class 8 students who could not read even simple sentences in English was 73.8%; in 2022, it was still a staggering 53.3%. Like NAS, ASER does not evaluate third-language proficiency.



Many of India's school students are struggling with even their mother tongue and barely managing English, which raises the question: isn't it better to teach two languages well rather than three poorly? The absence of credible data on third-language proficiency shields the policy from scrutiny. Even NEP 2020 fails to address this data gap.

Therefore, wouldn't it be wiser to allocate scarce resources toward strengthening core subjects like math and science, and emerging technologies such as Artificial Intelligence (AI)? China is already piloting AI in 184 schools, including for six-year-olds. Estonia, Canada, South Korea, and the U.K. are integrating AI into secondary education.

#### **What does research say?**

NEP 2020's trilingual policy oversimplifies a complex issue, offering a single-sentence endorsement without references to global best practices.

The Cambridge Handbook of Third Language Acquisition highlights that cognitive benefits occur when learners are challenged but not overwhelmed. Learning a third language (L3) increases cognitive load. If students are still struggling with their first (L1) and second (L2) languages, learning L3 may exceed their cognitive capacity, causing mental fatigue and diminished learning efficiency. It also reduces practice time for L1 and L2, risking their attrition, with L2 being more vulnerable. Cross-linguistic interference can cause pronunciation, grammar, and vocabulary mix-ups. Achieving equal fluency in three languages is rare; one typically dominates while the others weaken. Research also shows that language similarity impacts learning ease. Speakers of Marathi, Punjabi, and Odia (Indo-Aryan languages family) experience facilitative transfer when learning Hindi as L3 due to shared grammar, vocabulary, and phonetics. In contrast, Tamil (Dravidian), Santali (Austro-Asiatic), and Mizo (Sino-Tibetan) speakers face non-facilitative transfer, making L3 acquisition much harder and creating an asymmetric learning burden.

NEP 2020's rigid trilingual mandate overlooks these complexities.

#### **Implementation challenges**

While students can study multiple languages privately, it's not cost-effective to fund the teaching of more than two languages in public schools. Adding a third language requires significant investments in teacher recruitment, training, textbooks, and technology — a major challenge for rural schools and budget-constrained States.

NEP 2020 claims that no language will be forced on States, and students are free to choose any three languages, provided that at least two are native to India. However, this "choice" is illusory. Imagine a school in Tamil Nadu where 30% of students want to learn Telugu, 20% Malayalam, 20% Kannada, 10% Hindi, and 10% Sanskrit as their third language. Such varied preferences make it impractical to hire enough qualified teachers for each language. There is a hidden push here for Hindi or Sanskrit in non-Hindi-speaking States because cost and supply constraints will compel schools to offer one or both as the third language.

NEP 2020's three-language policy ignores these real-world challenges.

#### **A policy stuck in the past**

NEP 2020 vaguely mentions using technology for language learning but overlooks the game-changing potential of AI-powered translation tools. They can instantly translate text, images, and



audio across languages, and also convert text in any language to audio in another language and vice versa, reducing the necessity for multilingual education in its current form.

While learning one's mother tongue or regional language and English are essential for foundational literacy and should be taught using traditional classroom methods enhanced by modern digital tools, the third language doesn't require the same proficiency or classroom instruction. Instead, why not leverage AI to let students learn additional languages independently, based on their needs and at their own pace? This approach would be cost-effective and flexible.

The NEP 2020's approach to language learning clashes with the aspirations of parents and students. It treats languages as cultural pursuits, ignoring their practical value in the job market. Additionally, the policy reveals its ideological bias by dedicating more discussion to Sanskrit — a language with little practical use and limited career opportunities — than English. At a time when nations across Europe, Asia and Latin America, including Russia, China, South Korea, Japan and Brazil, are actively promoting English education, the NEP 2020 fails to acknowledge its crucial role in higher education, science and technology, and global job markets.

### **Lessons from Singapore**

In *From Third World to First*, Lee Kuan Yew, himself of Chinese origin, recounts how he resisted intense pressure from Singapore's Chinese majority (74.3% of population) to declare Mandarin as the sole national language. Recognising that this would alienate Malays (13.5%), Tamils (9%) and other minorities, and to ensure fairness, Lee chose English — a colonial legacy but a neutral language — as Singapore's lingua franca.

Singapore adopted a bilingual education system, with students learning English as their first language and their mother tongue (Mandarin, Malay, or Tamil) as the second. Parents supported English-medium education for better career prospects, while the mother tongue reinforced cultural identity. This policy fostered social cohesion, prevented ethnic tensions, and ensured cultural preservation. English also drove Singapore's economic rise, transforming it into a global hub for multinational corporations, finance, and innovation. Singapore's school education system is among the best in the world — in PISA rankings, it was 1 in 2015, 2 in 2018, and 1 again in 2022.

### **Why Hindi won't work as a unifier**

The 2011 Census states that 43.63% of Indians speak Hindi. However, noted scholar G.N. Devy, in *India: A Linguistic Civilization*, reveals this figure is inflated by including 53 other languages as "dialects" of Hindi. Several of these languages like Awadhi, Bhojpuri, Brajbhasha, Magadhi, Chattisgarhi, and Rajasthani, are completely independent languages, much older than Hindi. Excluding these, true Hindi speakers account for just 25% of the population.

Moreover, the 2011 Census highlights that 63.46% of Indians have never left their birthplace, 85.27% remain within their native district, and 95.28% never migrated out of their home State. With job opportunities concentrated in non-Hindi speaking States in the south and west and New Delhi, inter-State migrations are mostly away from the Hindi heartland. When only 25% of Indians speak Hindi and 95% of Indians remain within their home States and use only their languages, the push for Hindi as a national lingua franca, whether direct or indirect, is completely misguided.

The idea that a single language is essential for national unity is a European import. In the 19th and 20th centuries, Germany, Italy, Poland, Hungary, Romania and several other European countries embraced linguistic nationalism. But applying this model to India — one of the world's most





linguistically diverse civilisations — is deeply flawed. It is like replacing a vibrant, biodiverse forest with a sterile monoculture. Historian John Keay, in *Midnight's Descendants*, credits India's linguistic flexibility for its unity, unlike Pakistan, which tried imposing Urdu as the sole national language, alienating Bengalis and leading to Bangladesh's creation. India recognised 22 languages in the Constitution's Eighth Schedule, reorganised States linguistically, and retained English as an official language — defusing tensions, preserving unity, and strengthening federalism.

### **Evidence over ideology**

The NEP 2020's mandatory three-language policy is a textbook example of ideology trumping evidence. When India's schools struggle with basic proficiency in two languages, enforcing a third without any clear benefits or consideration for cognitive strain, funding and implementation is deeply flawed.

One reason non-Hindi speaking southern States, particularly Tamil Nadu, outperform the Hindi heartland economically is because of their greater embrace of English. Tamil Nadu's successful two-language policy, in place since 1968, proves that linguistic pragmatism fuels progress. Yet, NEP 2020 disregards both internal successes and global best practices, pushing a rigid trilingual mandate.

India should learn from Singapore and adopt a pragmatic two-language policy, emphasising English for global competitiveness and regional languages for cultural preservation. Linguistic nationalism must give way to policies that empower students.

## **THE ISSUE IS ABOUT THE 'QUALITY' OF INDIA'S PUBLICATIONS**

At a public function, in February 2025, to commemorate National Science Day, the Union Minister for Science and Technology said that "India will overtake the U.S. in the number of scientific publications by 2029". He went on to say that China with 8,98,949 publications is in the lead followed by the United States with 4,57,335 publications, followed by India with 2,07,390 papers. The Chinese research output has both quantity and quality. China's figures are in parallel with the very heavy investments made in the spheres of education and science and technology, and are described in their impressive medium-to-long term plan (MLP) for the development of science and technology launched in several phases since 2006. Investments of a similar high order will be required in India for a significant breakthrough and difference.

### **An international comparison**

The comparison between scientifically advanced countries and India in the matter of money spent on civilian research as a percentage of GDP is shocking. Here are the data for six countries: Israel 6.30%; South Korea 4.9%; Japan, 3.3%; the U.S., 3.46%; Germany 3.13%; China 2.4%, and India 0.67%. Can we even talk about *Viksit Bharat 2047* with data like this? Releasing documents such as "India Rankings 2024" by the Department of Higher Education or "Expanding Quality Higher Education through States and State Public Universities" by NITI Aayog are just that — documents that are all sound and fury and signifying nothing.

The scholarly output of India's total publications in all disciplines including science and engineering for 2024 (Clarivate), on February 25, 2025, stands at 1,91,703; the corresponding number for the U.S. is 6,48,905. These numbers are slightly different from those given by the Minister, but the conclusion is the same. The fact is that India cannot overtake the U.S. by 2029. Clarivate further depicts the CNCI value (quality indicator of publications) and places India at just





0.879 as opposed to 1.12 and 1.25 for China and the U.S., respectively. Out of 30 ranked countries, India stands at a glorious 28.

The Minister's sense of delusionary self-comfort in having 5,351 Indian scientists figure in the list of the top 2% of scientists across the world in 2023 is downright bizarre. Rankings of India's 5,351 scientists range from 163 (highest) to 68,55,948 (lowest). In contrast, in Japan, 5,608 scientists figure in the top 2%, with their ranks ranging from 79 to 26,24,763.

Similarly, Germany has 10,420 scientists in the list of top 2%, ranging in ranks from 6 to 10,80,081. The numbers speak for themselves.

### **The real benchmarks**

Quantity is not quality. What is the quality of Indian publications when they are held up against harsh international benchmarks such as the Hirsch Index (H-Index) of our scientists and the Impact Factor (IF) of the journals where we publish? What is important is whether a paper is read widely, is useful to others, and, in the ultimate test, whether it is cited by one's peers. When judged by these benchmarks, the Minister's remarks smack of smug narcissism, nothing more.

There are journals and journals. Bradford's empirical law of concentration of journal articles in scientific periodicals (1934) is applicable to the research productivity of ranked Higher Education Institutions (HEI). It states that articles in a given subject concentrate heavily in a relatively small number of highly productive journals.

One of us has been a research chemist for 50 years and a representative analysis using the ISI Thomson Web of Science, of papers published in the three top chemistry journals between 2017 and 2024 (both years inclusive) is revealing. The figures for the U.S., China and India (in that order) are: Angewandte Chemie International Edition (IF 16.60; numbers of papers: 4554, 10305, 501), Journal of the American Chemical Society, JACS, (16.38; 8503, 5521, 305), and Chemical Communications (6.22; 2553, 9820, 1347). The relative Indian contribution goes up as the impact factor (IF) of the journal goes down. In any event, India compares poorly with China and the U.S.

A more detailed look at these statistics shows that the Indian position is fundamentally flawed. Considering only papers in JACS, it is seen that the Chinese Academy of Sciences, CAS, (444) has nearly 15 times the number of papers as all the Council of Scientific and Industrial Research (CSIR) laboratories in India put together (29). The great breadth of the Chinese output in these CAS papers is also noteworthy.

Continuing with JACS papers between 2017 and 2024 (both years inclusive), not only do the prestigious CAS and Peking University (359) have high outputs but also the next tier of universities such as Tsinghua (289), Fudan (214), Nanjing (284), Nankai (258), Jilin (145), Xiamen (241) and Sun Yat-sen (145). All the Indian Institutes of Technology taken together have only 68 papers in this journal in the above-mentioned time period. All the IITs put together are five times less than just one second-tier Chinese university. Nothing in India measures up to the Chinese yardstick. There will be a real pay-off only if India invests in training young people in the universities well. This is where China has correctly placed its money, and where India is off track.

Even as the scope and spread of the malaise in Indian science is justified through quantifiable metrics, a sense of false security has crept in, entrenched by self-deluding statements such as this one from one of the highest officials in Indian Science and Technology, the Principal Scientific



Adviser, that “India is rapidly becoming a global research powerhouse”. Such statements deliberately mislead and obfuscate.

#### **Questionable ethics and practices in India**

The perverse incentives which characterise Indian science and technology have resulted in the cancerous growth of downright fraud and unethical practices. The scale of the problem has become all-pervasive, and has brought international ignominy to India. By 2020, the science and technology complex of India had degraded so rapidly that a wave of retractions, paid publications, publications in fake journals, and downright piracy began to inundate India’s science and technology output. The existence of so many fraudulent papers is only possible when the entire system is clientelist and based on trading favours.

In 2019, the U.S. Ninth Circuit Court of Appeals affirmed a District Court decision against the Hyderabad-based Omics group arising from a suit instituted by the Federal Trade Commission (FTC). The FTC clinched a \$50 million fine against the group for, inter alia, misrepresenting its peer review practices, its editorial board members, its journals’ impact factors, and deceptive indexing claims. All in all, around 69,000 articles were published by the Omics group with little or no peer review, polluting the global scientific corpus for years to come.

India has perfected the art of spurious, low quality, and potentially outright fabricated scientific output being accommodated in questionable journals, mostly as a means for scientists to justify their mandated minimum number of published research pieces. A study in 2018 estimated that 62% of all standalone fake journals in the world are published in India, and around 10% of the entire country’s total research output may be fake to begin with.

It is better if the Minister asks the science departments to figure out why the quality of India’s publications is so bad instead of dwelling on the quantity. As Einstein said, “Not everything that can be counted counts. Not everything that counts can be counted.”

#### **OVER HALF OF IITS SAW 10 PERCENTAGE POINT DROP IN PLACEMENT SINCE '21-22: GOVT DATA**

In more than half of the country’s 23 Indian Institutes of Technology (IITs), placements for BTech students dropped by more than 10 percentage points in 2023-24 compared to 2021-22, according to the first such disclosure of data by the union government.

- Barring IIT (BHU) Varanasi, 22 of the 23 IITs have seen a drop in placements in 2023-24 compared to 2021-22, going by information provided by the union government to the Parliamentary Standing Committee on Education, Women, Children, Youth and Sports.
- In its report on the Department of Higher Education’s demand for grants 2025-26, the Parliamentary Standing Committee headed by Congress MP Digvijaya Singh noted that there is an “unusual decline” in placements in IITs and IIITs between the year 2021-22 and 2023-24.
- Among the IITs that saw a drop of more than 10 percentage points in BTech placements in 2023-24 compared to 2021-22, were the older IITs – Madras (drop of 12 percentage points, from 85.71% to 73.29%); Bombay (drop of around 13 percentage points, from 96.11% to 83.39%); Kanpur (drop of 11 percentage points, from 93.63% to 82.48%); Delhi (drop of around 15 percentage points, from 87.69% to 72.81%).



- In 2021-22, the percentage of students who secured jobs out of those who appeared for placements ranged from 83.15% at IIT Varanasi to 98.65% at IIT Goa, with 14 of the 23 IITs recording over 90% placements.
- In 2023-24, only three IITs – Jodhpur, Patna, and Goa – recorded over 90%, with the highest percentage of 92.98% at IIT Jodhpur and the lowest of 65.56% at IIT Dharwad.
- The sharpest drop was at IIT Dharwad where placements fell by around 25 percentage points in 2023-24 vs 2021-22 (90.20% to 65.56%), followed by IIT Jammu (92% to 70%).
- The country's oldest IIT, at Kharagpur, saw the smallest drop (of 2.88 percentage points) among the 22 institutes – from 86.79% to 83.91%).

#### Do You Know:

- While the committee's report pointed to a similar trend in NITs, and a decline in the average financial package secured by each student placed between 2022-23 and 2023-24, the corresponding data was not included.
- While the IITs refused to comment on the record, students and teachers associated with the campus hiring process attributed the drop to a combination of factors: the aftereffects of post-Covid mass hiring in 2022, a slowdown in key sectors like tech and software, and increasing batch sizes.
- "In 2022, there was a spike in placement percentages as the market recovered after Covid, with rates exceeding 85 per cent. This spike followed a two-year hiring freeze. Hiring in 2023 was more conservative, with fewer top MNCs coming in and a decline in software and tech recruitment. Placements this year might improve over last year, but are unlikely to match 2022 levels. The numbers may normalise by 2025," said a source from IIT Kanpur.
- Another person associated with placements at IIT Kharagpur pointed to growing batch sizes as a factor. At IIT Kharagpur, the number of students registering for placement has increased from 1,757 in 2018-19 to 2,668 in 2023-24, while those placed grew from 1,375 to 1,662 during the same period.
- Though the placement percentage at IIT Bombay dropped from 82.16 per cent in 2022-23 to 74.53 per cent in 2023-24, an official said it would be misleading to draw conclusions solely from this data as it only reflects on-campus placements and no other career paths. "Many students shown as 'not placed' take routes like higher education or off-campus placements or entrepreneurship. The dip does not offer a true reflection unless compared with the exit survey," the official said.
- A newly introduced exit survey revealed that from 2018 to 2022, 57.1 per cent of students were placed through campus placements, 10.3 per cent found jobs independently, 1.6 per cent initiated start-ups, 8.3 per cent entered public services, 6.1 per cent were still seeking jobs, and 12 per cent pursued higher education in India or abroad.

#### WHY KERALA HAS FINALLY OPENED THE DOOR FOR PRIVATE UNIVERSITIES IN THE STATE

The Kerala assembly Tuesday (March 25) passed a draft bill that will now allow entry to private universities in the state.



- The Kerala State Private Universities (Establishment and Regulation) Bill, 2025, was passed after two days of legislative deliberation. It was presented in the assembly earlier this month and referred to a subject committee for review.

- This marks a significant shift in the stance of the Left which has historically opposed private involvement in education in the state. Currently, Kerala is the only state without private universities.

**Do You Know:**

- The Kerala State Private Universities (Establishment and Regulation) Bill provides for government representatives or nominees in all three key decision-making bodies of private universities – the governing, executive and academic councils.

- The university's governing council will control its functioning and make its statutes. According to the bill, it will have three government representatives out of its 12 members – the Secretary of the Higher Education Department, another Secretary, and an eminent academician nominated by the government. Four of the remaining members will be nominated by the sponsoring body that sets up the university.

### TEST TO CHECK REGULAR INTAKE OF MEDICINES, AI TO READ SLIDES: TECH MAY JOIN TB FIGHT

A simple strip test can now track whether a patient has been taking their anti-tuberculosis (TB) medicines regularly. Another test can pick up the infection in blood, saliva and stool samples. Meanwhile, drones can deliver medicines to patients and even pick up their samples from hard-to-reach areas.

- These are among the handful of innovations selected by national experts that may become a part of the country's national programme on tuberculosis elimination. They would help in widespread screening as well as ensuring follow-ups for treatment.

- Earlier this week, the experts went through demonstrations and data for 228 such innovations from across the globe, scored them depending on how close they are to use in humans, whether they are cost-effective, and if they can be implemented in India.

**Do You Know:**

- This comes even as India is working towards its goal of eliminating TB by 2025, five years ahead of the global target. "The idea behind the conference was to look for what we can do better. At the conference held last year, around 30 to 40 innovations from within India were demonstrated. Experts selected technologies like hand-held X-ray, low cost nucleic-acid amplification test (a type of RT-PCR test), and AI for reading the X-rays. These innovations have been utilised under the national programme now during the 100-day campaign.

- While India saw a decline in the estimated number of cases and deaths in 2023 — and an increase in the number of patients diagnosed, a positive sign that patients are not being missed out — it still remains far from its goal of eliminating TB by the end of this year. With 28 lakh estimated cases, India still accounted for global TB cases in 2023. And, with 3.15 lakh deaths, the country accounted for 29% of the global burden, according to the Global TB report 2024.





- The use of artificial intelligence to read microscopy slides and X-rays for automated detection of tuberculosis is a huge relief in remote areas where there is a shortage of healthcare workers.

#### SARS-COV2 VIRUS STILL CIRCULATING, BUT VERY WEAK: EXPERTS

Five years after it precipitated the worst global healthcare crisis in over a century, the Covid-19 virus is still in circulation, infecting people, though its ability to cause a serious disease is severely weakened.

- This week, five years ago, India entered into a 21-day national lockdown, the strictest phase of restrictions. In May 2023, the WHO declared that Covid-19 was no longer a global health emergency. But the virus has not disappeared. It is still very much in circulation, in India as well.
- “This is how viruses evolve. It is not surprising that SARS-CoV2 has become very weak now. It would probably still not be considered as benign as the flu virus, which has been around for very long, but it is more or less in the same category,” said Shahid Jameel, a virologist and Fellow at Green Templeton College, University of Oxford in UK.
- The WHO, in its latest bulletin, has reported 1,47,000 new cases and 4,500 deaths across the world during the 28-day period between January 6 and February 2 this year. The cases were reported from 83 countries, while deaths happened in 23 countries.
- Rajesh Karyakarte, a member of Maharashtra Covid task force, said SARS-CoV-2 had transitioned into a more endemic state, similar to influenza, and was circulating regularly at lower and more predictable levels compared to the initial pandemic phase.

#### Do You Know:

- The novel coronavirus (SARS-CoV2) that causes the COVID-19 disease is surrounded by a fatty outer layer (“envelope”) and on the surface of this layer is the “corona” (crown) of spikes made of protein.
- On the surface of human cells is an enzyme called ACE2, which acts as the receptor that enables SARS-CoV2 to launch its attack. The virus’s spike protein binds to the receptor, then fuses with the cell surface, and releases its genetic material (RNA in the case of SARS-CoV2) into the cell. The coronavirus that causes SARS, called SARS-CoV, uses the same ACE2 receptor to invade a cell. Once inside, the virus replicates itself by using the cell’s molecular mechanism. All these stages involve various interactions between virus proteins and human proteins.

#### FOCUS ON CONTENT DISCLOSURE, LABELLING: GOVT REPORT TO DELHI HC ON ‘DEEPFAKES’

DEEPFAKES TARGETING women during state elections, a rise in scam content using AI, better enforcement rather than new laws, and lack of uniform definition for “deepfake” — these are some of the key concerns raised by stakeholders, according to a status report submitted by the Ministry of Electronics and Information Technology (MeitY) to the Delhi High Court on Monday.

- According to the report, a nine-member committee set up by MeitY in November 2024 met a month later. The committee then met technology and policy stakeholders on January 21 this year.



- The stakeholders pressed for mandatory regulation around AI content disclosure with a caveat that the emphasis should be on malicious actors rather than on creative uses of deepfake technology.
- The minutes of the meetings, made part of the status report, notes that various stakeholders in attendance emphasised that “...there should be regulation around mandatory AI content disclosure, labeling standards, and grievance redressal mechanisms, while giving emphasis on malicious actors rather than benign or creative uses of deepfake technology”.
- Prior to the stakeholders’ meeting, the MEITY’s panel looking at deepfake issues had opined there should be “mandatory intermediaries’ compliance”.
- Intermediary liability frameworks determine the extent to which intermediaries can be held liable for content on their platforms. The frameworks range from holding intermediaries entirely responsible for the content posted on their platform to complete immunity.
- Deepfakes Analysis Unit (DAU), an initiative of the Meta-supported Misinformation Combat Alliance (MCA), flagged to two specific election-related trends during the meeting: one, during state elections, DAU saw deepfakes targeted towards women, and two, scam content using AI is on the rise, a trend which has increased post elections. DAU supports media organisations in detecting deepfakes.

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

- Deepfake is a portmanteau of “deep learning” and “fake”. It is an Artificial Intelligence (AI) software that superimposes a digital composite on to an existing video (or audio). The origin of the word “deepfake” can be traced back to 2017 when a Reddit user, with the username “deepfakes”, posted explicit videos of celebrities.
- “The term first rose to prominence when Motherboard reported on a Reddit user who was using AI to superimpose the faces of film stars on to existing porn videos, creating (with varying degrees of realness) porn starring Emma Watson, Gal Gadot, Scarlett Johansson and an array of other female celebrities,” a report in The Guardian said. In June this year, a deepfake video surfaced that showed Mark Zuckerberg saying that he is in total control of the stolen data of billions of people.
- Deepfakes constitute fake content — often in the form of videos but also other media formats such as pictures or audio — created using powerful artificial intelligence tools. They are called deepfakes because they use deep learning technology, a branch of machine learning that applies neural net simulation to massive data sets, to create fake content.
- It employs a branch of artificial intelligence where if a computer is fed enough data, it can generate fakes which behave much like a real person. For instance, AI can learn what a source face looks like and then transpose it onto another target to perform a face swap.
- The application of a technology called Generative Adversarial Networks (GAN), which uses two AI algorithms — where one generates the fake content and the other grades its efforts, teaching the system to be better — has helped come up with more accurate deepfakes.
- GAN can also come up with computer-generated images of fake human beings, which has been used by a website called ‘This Person Does Not Exist’. This makes it virtually impossible to detect whether the videos or images we see on the Internet are real or fake.



- Deepfakes can be really difficult to detect. For instance, many people had fallen for Tiktok videos of Tom Cruise playing golf which were later revealed to be deepfakes.
- A paper presented at the Winter Conference on Applications of Computer Vision 2021 describes a new technique which renders deepfakes more foolproof, making it difficult for traditional tools to detect them.
- The study, led by Paarth Neekhara and Shehzeen Samarah Hussain, both PhD students at University of California San Diego, found that the detection tools can be deceived by inserting slightly manipulated inputs called adversarial examples into every video frame.

#### WHY ACTIVISTS ARE WORRIED ABOUT SECTION 44(3) OF NEW DATA PROTECTION LAW

The government wants to use the Digital Personal Data Protection Act, 2023 (DPDP Act) to curtail access to public information on the pretext of safeguarding privacy, Leader of Opposition in Lok Sabha Rahul Gandhi said on Tuesday (March 25).

- The DPDP Act received the President's assent on August 11, 2023, and will come into force after the Rules under the Act are notified. In January, Vaishnaw's ministry invited feedback and comments on the draft Digital Personal Data Protection Rules, 2025. The window for comments on the draft Rules closed on February 18.
  - The DPDP Act is intended to "provide for the processing of digital personal data in a manner that recognises both the right of individuals to protect their personal data and the need to process such personal data for lawful purposes and for matters connected therewith or incidental thereto".
  - Section 44(3) of the DPDP Act mentions a change that will be made in Section 8(1)(j) of the RTI Act. This change, RTI activists say, will greatly reduce the amount of information that government agencies are obligated to disclose under the 2005 Act.
  - Section 8(1)(j) of RTI Act states: "...There shall be no obligation to give any citizen...information which relates to personal information the disclosure of which has no relationship to any public activity or interest, or which would cause unwarranted invasion of the privacy of the individual unless the Central Public Information Officer or the State Public Information Officer or the appellate authority...is satisfied that the larger public interest justifies the disclosure of such information."
- Section 44(3) of the DPDP Act shortens this clause in the RTI Act to broaden the scope for denying information. It says: "In section 8 of the Right to Information Act, 2005, in sub-section (1), for clause (j), the following clause shall be substituted, namely: — "(j) information which relates to personal information".

#### Do You Know:

- The potential conflict between a citizen's right to information and the privacy of the subject of that information where the greater public interest is involved, has been discussed widely.
- During the discussions that preceded the passage of the RTI Bill by Parliament, the Bill was examined by a Group of Ministers headed by Pranab Mukherjee. Section 8(1) of the Bill was about "Exemption from disclosure of information", and sub-sections 8(1)(a) to 8(1)(j) spelt out those exemptions.



A general rider to the exemptions in Section 8(1) says that any information “which cannot be denied to the Parliament or a State Legislature shall not be denied to any person”.

- Activists point out that a lot of personal information about public servants such as their assets and liabilities are published because it is seen to serve a public purpose. The blanket exemption now granted to all “information which relates to personal information” could be used to deny the public their right to know, they say.

#### DIGITAL RECORD WILL HELP TRACK UNACCOUNTED MONEY: FM

The new Income Tax Bill will be taken up for discussion in the Monsoon Session of Parliament, Finance Minister Nirmala Sitharaman said on Tuesday.

- Replying to the discussions on the Finance Bill, 2025 in the Lok Sabha, Sitharaman said the new I-T Bill, which was introduced in the House on February 13, is currently being vetted by the Select Committee.
- The committee has been mandated to submit its report by the first day of the next session of Parliament, said the minister. “...we will take it (new Income Tax Bill) up in the monsoon session,” Sitharaman said. She said the digital record will also be taken into account for the assessment once the new I-T Bill is passed.
- On the Opposition’s concern that certain provisions in the new I-T Bill breach taxpayers’ privacy, the Finance Minister said scanning Google map history, WhatsApp chats and Instagram accounts has helped the government track unaccounted money.
- The new Bill gives tax officers powers to override the access code of computer systems and virtual digital space, including online trading and investment accounts as well as cloud servers, in search and seizure cases.
- Sitharaman said it was being specifically mentioned in the new Bill because the 1961 Income Tax Act permitted examination of books of account physically kept, and every manual record of the person’s income and expenditure.
- Since the 1961 Act does not mention the “digital”, most often it becomes contentious and people go to the court and seek protection from not sharing passcode, she said. “So, digital becomes an issue... That gap is getting filled up in the new Income Tax Bill which is before the select committee,” the minister said.

#### Do You Know:

- The Lok Sabha passed the Finance Bill 2025 on March 25, along with 35 government amendments, including one abolishing a six per cent digital tax on online advertisements. With the passage of the Finance Bill 2025, the Lok Sabha completed its part of the Budgetary approval process.
- In a general sense, any Bill that relates to revenue or expenditure is a Financial Bill. A Money Bill is a specific kind of Financial Bill, defined very precisely: a Bill is deemed to be a Money Bill if it deals only with matters specified in Article 110 (1) (a) to (g). A Money Bill is certified by the Speaker as such — in other words, only those Financial Bills that carry the Speaker’s certification are Money Bills.





- Financial Bills that are not certified by the Speaker are of two kinds: Bills that contain any of the matters specified in Article 110, but do not contain only those matters [Article 117 (1)]; and ordinary Bills that contain provisions involving expenditure from the Consolidated Fund [Article 117 (3)].
- A Bill of the first kind, like a Money Bill, can be introduced only in Lok Sabha, and only with the recommendation of the President. But other restrictions that apply to Money Bills do not apply to these Bills. Bills under Article 117 (3) can be introduced in either House, though the President's recommendation is essential for their consideration, and therefore, passage.
- Under Article 110(1) of the Constitution, a Bill is deemed to be a Money Bill if it contains only provisions dealing with all or any of the following matters:
  - a) the imposition, abolition, remission, alteration or regulation of any tax;
  - b) regulation of borrowing by the government;
  - c) custody of the Consolidated Fund or Contingency Fund of India, and payments into or withdrawals from these Funds;
  - d) appropriation of moneys out of the Consolidated Fund of India;
  - e) declaring of any expenditure to be expenditure charged on the Consolidated Fund of India or the increasing of the amount of any such expenditure;
  - f) receipt of money on account of the Consolidated Fund of India or the public account of India or the custody or issue of such money or the audit of the accounts of the Union or of a State; or
  - g) any matter incidental to any of the matters specified in sub-clauses (a) to (f).

#### INDIA'S DEEP-SEA CHALLENGE

Last month, India completed wet testing of its Matsya-6000 submersible, capable of diving up to 6 km below the surface to look for underwater minerals off the coast. The launch of the first deep-sea manned vehicle is planned for later this year — it will put India in a select group of nations with the capability to send humans to these depths.

- Last week, China unveiled a compact deep sea cable-cutting device that can be mounted on certain submersibles — and which is capable of severing the world's most fortified underwater communication or power lines. China reportedly operates the largest fleet of submersibles in the world.
- The intense oceanic activity around the world over the past two decades has focused on the Deep both for its economic resources and as the theatre of possible future conflicts.
- According to the United Nations Convention on the Law of the Seas (UNCLOS), the Exclusive Economic Zone (EEZ) of a country extends from the baseline of its coast to 200 nautical miles (about 370 km) into the sea. A nation has exclusive rights to living and non-living resources in the waters and on the seabed within its EEZ.
- Average depth in the Indian EEZ is 3,741 metres — this is more than four-and-a-half times the height of Burj Khalifa, the world's tallest building. But it is shallow compared to the deepest ocean



— the bottom of the Challenger Deep in the Mariana Trench in the western Pacific lies more than 10 km under the surface, more than the cruising altitude of most aircraft.

• Operating in the deep sea requires a distinct technology and extremely specific capabilities that are challenging and expensive to develop. Consider:

—While sound can travel long distances underwater, its propagation is seriously affected by hydrological conditions such as temperature, pressure, and salinity. Generally speaking, the lower the frequency of the sound wave, the better the propagation of sound underwater.

• Very low frequency (VLF) and extremely low frequency (ELF) sound technologies represent the cutting edge of science, and require deep research and enormous funding to develop. —Pressure underwater increases by approximately one atmosphere (atm) for every 10 metres of ocean depth. One atm is roughly equivalent to the mean sea-level atmospheric pressure on Earth, or 101,325 Pascals. The pressure at the ocean bed in the Indian EEZ is upwards of 380 atm, or 380 times that on the surface of the Earth.

—Vessels that descend to such depths need to be constructed using particular material and processes in order for them to operate safely.

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

— Matsya-6000, the submersible vehicle set to transport three Indians into the deep sea in 2026.

— It is developed under the Ministry of Earth Sciences' Deep Ocean Mission. It supports the Blue Economy Initiatives of the Government of India.

Also, the United Nations has declared the UN Decade of Ocean Science for Sustainable Development (2021-2030).

— Matsya-6000 offers an endurance of 12 hours under normal operations and up to 96 hours in case of emergency for human safety.

• To be able to ride on the blue economy in the future, India must have the technologies to harness the resources of the ocean and the seabed.

• The ocean is a storehouse of resources, from fish, minerals, gas hydrates, oil and gas, and nutraceuticals to oceanographic data that may help in combating climate change and contribute to meteorological research. It is essential to harness these resources to maximise India's economic potential.

• This will require the development of technologies for hydrographic research and exploration activity, as well as supporting capabilities such as diving, salvage, and submarine rescue.

• Then there is the development of underwater infrastructure. Undersea cables crisscrossing the oceans are the backbone of modern communications technology. They are responsible for transmitting more than 95% of the intercontinental Internet traffic, seamlessly enabling activities from digital communication and transmission of video to banking transactions worth billions of dollars.

• Developing the capability to lay and maintain these cables is critical to provide millions of Indians with digital connectivity, and to sustain an economy that increasingly relies on the same.

• As for every niche technology, the essential prerequisites for developing deep sea tech are



financial strength, academic and research capabilities, and highly qualified and skilled human capital.

- It is not surprising, therefore, that China, France, Japan, Norway, Russia, South Korea, and the US are far ahead of the rest of the world in this area. Chinese investments in deep sea science and engineering centres are paying rich dividends today.

In 2018, the Indian government launched the Deep Ocean Mission under the Ministry of Earth Sciences. The development of the Matsya-6000 submersible is a part of this mission. While this is welcome, the fact is India currently does not have even decent deep sea fishing capability — and needs to do much more.

#### WHY SOME IN MEGHALAYA OPPOSE RAIL CONNECTIVITY TO STATE

After years of opposition by Khasi pressure groups against rail connectivity to Byrnihat in the Khasi Hills – and subsequently, the state capital Shillong – the Indian Railways is ready to shelve pending railway line projects to these two key locations.

- With this, Shillong will become the only state capital in the country without railway connectivity or an active ongoing rail project underway. New protests have now cropped up in the state's Jaintia Hills against a recently sanctioned project to bring a railway line to Jowai, the biggest town in the Jaintia Hills.
- A long-standing demand has been the introduction of the Inner Line Permit (ILP) Regime in the state, already in place in neighbouring Arunachal Pradesh, Nagaland, Mizoram, and most recently, Manipur. The ILP is an official travel document issued by the respective state, authorising the travel of an Indian citizen into a “protected area” for a limited period. An Indian citizen who does not belong to these states cannot stay beyond the time period specified in the ILP.

#### Do You Know:

- Meghalaya has only one railway station, at Mendipathar in the North Garo Hills, which became operational in 2014. Passenger trains ply between Guwahati and Mendipathar daily, and the station received its first freight shipment last month.
- The first is a 21.5-kilometre line connecting Tetelia railway station in Assam to Byrnihat in Meghalaya's Ri Bhoi district. This had been sanctioned in 2010. The second project, sanctioned in 2011, is for a 108.76 km line from Byrnihat to Shillong with 10 stations.
- The second project, sanctioned in 2011, is for a 108.76 km line from Byrnihat to Shillong with 10 stations.
- In 2017, the Indian Railways granted Meghalaya Rs. 209.37 crore for land acquisition for these two projects. However, opposition from the Khasi Students' Union (KSU) has left the project in limbo indefinitely. Chief Minister Conrad Sangma told the state assembly earlier this month that the state has now been asked to return this amount to the Railways since it has been lying unutilised for over seven years.
- A third project, approved in 2023, would connect Chandranathpur station in Assam to Jowai in the East Khasi Hills. The project is at an initial survey stage, but is already facing opposition from Jaintia pressure groups.



## NOT THE ONLY PATH

In two operations in Bastar, Chhattisgarh on Thursday, 30 alleged “Maoists” were gunned down taking the number of Maoists killed in operations, according to security forces, to over 100 this year. In its 20-plus years of existence as a unified political force, the Communist Party of India (Maoist) finds itself in its most challenging period. The insurgency had peaked in the mid- to late-2000s, when the then government termed it as the “greatest security threat” to the nation, and has since then been restricted to the forested areas of southern Chhattisgarh and contiguous areas. This weakening was never in doubt — the Maoists profess an anachronistic political strategy of adopting violent means to achieve their goals, and in the long war of attrition against the Indian state, have subjugated their “mass” work to militarism. This has resulted in the erosion of support bases in places that were built where and when the agencies of the Indian state were weak. With successive central governments seeking to address the development lacunae in governance in such tribal areas and adopting a take-no-prisoners approach to tackle the Maoists’ guerilla warfare, their threat has been significantly whittled down. In the anti-insurgency strategy, however, the police and paramilitary agencies have made errors — the Salwa Judum campaign is one example and it is still not clear whether the anti-Maoist operations that have led to claims of many casualties among the insurgents include tribals caught in the crossfire.

If the Indian state — the Union and State governments — believes that the Maoist threat can be extinguished using a purely militaristic approach, then this is not borne out from experiences elsewhere against similar insurgencies. Ideologies such as Maoism, even if anachronistic and misplaced in the current socio-political milieu, tend to take deeper roots when repressions peak and a purely militaristic solution that envisages a violent end to the insurgency has the possibility of causing disenchantment among tribals. A better solution would be to involve civil society in working out a truce and sending a clear message for the Maoists to give up their violent path with incentives for rehabilitation. The Maoists have shown little inclination in doing so, being stubborn in upholding their flawed understanding of the Indian state and the people. The loss of lives, that includes tribals either coerced into the violence due to repression that they face or simply caught in the crossfire, should compel them to change tack, if they are truly concerned about the lot of the tribal people they claim to stand up for. The experience of the Revolutionary Armed Forces of Colombia (FARC) or that of the Nepali Maoists, who gave up their insurgent campaigns, suggests that such a pathway is possible.

## VALLEY AND HILLS

The separatist politics that dominated Kashmir for decades appears to be losing ground in the face of the assertive approach by the Bharatiya Janata Party-led central government. The Narendra Modi government has succeeded in altering the ground realities in Kashmir, advancing a new narrative of an aspirational region that seeks prosperity, peace, and integration. Reflecting this shift, members of several separatist outfits — J&K Peoples Movement, Democratic Political Movement, J&K Tahreeq Isteqlal, Tahreek-i-Istiqamat and J&K Salvation Movement — recently announced their formal dissociation from separatist ideology. Union Home Minister Amit Shah hailed the development as evidence of separatism becoming a thing of the past, crediting Mr. Modi’s vision of a “developed, peaceful, and unified Bharat”. That even second-rung separatist leaders or little-known separatist groups are publicly renouncing separatist politics and acknowledging its failure marks a significant departure from the past. It signals the emergence of a new paradigm for separatist leadership in the region. At the same time, it signals the end of an era where political engagement was viewed as a tool to manage separatist sentiment. Earlier





Prime Ministers — P.V. Narasimha Rao, Atal Bihari Vajpayee and Manmohan Singh — had engaged in dialogue with separatist groups, and on several occasions, Pakistan had also joined the table. This approach shifted dramatically with Mr. Modi's rise to power in 2014. In 2019, the government abrogated Jammu and Kashmir's special constitutional status. Over the last five years, the Ministry of Home Affairs has banned key separatist organisations which include the Jamaat-e-Islami, the Jammu and Kashmir Liberation Front led by Yasin Malik, Mirwaiz Umar Farooq's Awami Action Committee, Mohammad Abbas Ansari's Ittihadul Muslimeen, and Shabir Shah's Democratic Freedom Party. The Hurriyat Conference, once an influential coalition of over 20 organisations, including lawyers and traders' bodies, has been largely rendered inactive. With most of its top leaders jailed or sidelined, separatism now lingers on the margins, overshadowed by shifting political realities.

Still, whether the people and political class of J&K have organically embraced the realities, post-2019, remains an open question. The heavy deployment of security forces across urban centres is a reminder that New Delhi is yet to achieve complete control over the region. Meanwhile, militancy has morphed from an urban threat into guerrilla-style forest warfare, aided by advanced communication technologies and terrain-mapping tools. While Pakistan is entangled in internal crises, it is unlikely to relinquish its interests in Kashmir any time soon. New Delhi must now build upon its gains with deliberate, inclusive, and people-centric policies. Stability in Kashmir cannot be sustained by force alone — it requires trust, participation, and long-term vision. As a first step, J&K must be restored as a full-fledged State of the Indian Union in keeping with the Centre's commitment to the Supreme Court of India.

#### 'A STORYTELLER OF HOPE & LIGHT': VINOD KUMAR SHUKLA WINS JNANPITH AWARD

The eminent Hindi writer Vinod Kumar Shukla was on Saturday named the recipient of the 59th Jnanpith Award, India's highest literary honour. According to a statement from Bharatiya Jnanpith committee, Shukla has won the award for his "simplicity" and "sensitivity".

- The 88-year-old author of novels such as *Naukar ki Kameez*, about a clerk forced to submit to professional hierarchies, and *Khilega Toh Dekhenge*, about a teacher who arrives in a village with eccentric residents, is the 12th Hindi writer to win the award and the first from Chhattisgarh.
- He said in a statement after the announcement, "I've seen a lot (in life), heard a lot and felt a lot but I could write only a little. When I think of how much I needed to write... It feels like a lot remains. Till I remain (alive), I want to complete my remaining writings but I may not be able to finish my work... Due to this, I'm in a great dilemma. I want to pursue my life through my writing, but my life is rapidly approaching its end and I don't know how to write that fast, so I feel a bit regretful."
- Away from literary centres, Shukla spent much of his life in Chhattisgarh, trying to observe people, their ordinary lives, their unremarkable existence, and their search for hope. His path to literature was paved by a failure in Hindi exam when he was a 12th-grade student. "If I had not failed in Hindi, I would be a doctor or engineer," he said in the 2020 interview.
- Shukla was born in 1937 to a mother who read aloud Bengali literature at home. In Shukla's early 20s, when Hindi writer Gajanan Madhav Muktibodh came to his village, Rajnandgaon, he showed him some of his poems. Soon he started publishing in reputed magazines like *Pustak Kriti* and moved to Jabalpur for a master's degree in agriculture.

**Do You Know:**

- The Jnanpith Award, instituted in 1961 by the Bharatiya Jnanpith, is the oldest and most prestigious literary accolade in India. It honors authors for their exceptional contributions to literature in Indian languages listed in the Eighth Schedule of the Constitution, with English being included from the 49th award onwards.
- The award is not given posthumously, ensuring that it recognizes living writers for their literary excellence.
- The Jnanpith award carries with it a cash of Rs 11 lakh, a bronze statue of the Hindu Goddess Vagdevi and a citation.

**AFTER NALANDA, ANOTHER BIHAR UNIVERSITY NOW SET TO RISE FROM THE RUINS**

A decade after Nalanda University came up in the foothills of Rajgir, work is on to revive another ancient centre of learning in Bihar — Vikramshila.

- While the Archaeological Survey of India (ASI) has, since December last year, been developing the site of the ancient Vikramshila university to attract more tourists, the Bihar government recently identified 202.14 acres at Antichak village in Bhagalpur district for the Central university.
- Though the Centre had approved the project in 2015 and sanctioned Rs 500 crore, with the state government unable to identify a suitable land for the project, there had been little progress until now.
- Speaking in Bhagalpur on February 24, Prime Minister Narendra Modi said, “At its peak, Vikramshila University was a centre of knowledge for the world. We have already fused ancient Nalanda university’s glory with the new Nalanda University. After Nalanda, it is the turn of Vikramshila as we are opening a Central university.”

**Do You Know:**

- Founded by Pala king Dharmapala of the Pala dynasty in the late 8th to early 9 Century AD, Vikramshila Mahavihar existed and flourished at the time of Nalanda.
- “While Nalanda university flourished from the Gupta Period (320-550 AD) to the 12th Century, Vikramshila thrived during the Pala Period (8th to 12th century). While Nalanda got more international fame for teaching varied disciplines, Vikramshila was the only university that specialised in tantric and occult studies. In fact, during Dharmapala’s reign, Vikramshila reigned supreme and is known to have controlled Nalanda’s affairs as well,” said ASI Superintending Archaeologist (Patna Circle) Sujit Nayan.
- While Nalanda is the older of the two universities, at one point, the two centres of learning, who had a common patron in King Dharmapala, exchanged knowledge and even teachers, who were called Acharyas.
- At its peak, subjects such as theology, philosophy, grammar, metaphysics and logic were taught at Vikramshila. But the most important branch of learning were the tantras because Vikramshila flourished in the days of tantricism, when occult sciences and magic were subjects of study both in Buddhism as well as Hinduism.



- The university produced several eminent scholars, among them, Atisa Dipankara, who played a key role in the establishment of Buddhism in Tibet.
- The institution prospered for about four centuries before fading out along with Nalanda around the 13th century — a decline that experts attribute to a combination of factors, from the rising of Hinduism and the decline of Buddhism to the invasion of Bakhtiyar Khalji.
- The ruins — from the stupa to the remains of the cells and a vast library — bear witness to this rise and fall of Vikramshila. It was in the library, the ruins of which are at the south-west of the site, that teachers and students are known to have engaged in copying and translating manuscripts.

## SHORT NEWS

### ISRAEL ATTACKS LEBANON IN RESPONSE TO ROCKET STRIKE, ENDANGERS SHAKY TRUCE

Israeli artillery and airstrikes hit south Lebanon on Saturday after Israel said it had intercepted rockets fired from across the border, killing at least eight people and endangering a shaky truce that ended a year-long war between Israel and Lebanese armed group Hezbollah. That conflict marked the deadliest spillover of the Gaza war, and a blistering Israeli offensive after months of cross-border exchanges of fire wiped out Hezbollah's top commanders, many of its fighters and much of its arsenal.

### DGGI BLOCKS 357 ILLEGAL ONLINE GAMING WEBSITES

GST intelligence officers have blocked 357 websites of illegal offshore online gaming firms and attached about 2,400 bank accounts, the Finance Ministry said on Saturday. The ministry also cautioned the public against engaging with offshore gaming platforms, even though many Bollywood celebrities and cricketers, besides social media influencers, are found to be endorsing these platforms. About 700 offshore e-gaming companies are under the Directorate General of Goods and Services Tax Intelligence (DGGI) scanner, as these entities are evading GST by failing to register, concealing taxable pay-ins, and bypassing tax obligations.

### SAHKAR TAXI

- Union Minister for Cooperation Amit Shah had told Lok Sabha that a 'Sahkar Taxi' on the lines of Ola and Uber will be rolled out in the near future.
- Two-wheelers, taxis, rickshaws and four-wheelers can register and the profit will go directly to the driver.
- The objective of this initiative is to ensure democratic management by active participation of all members and to ensure that maximum profit earned by such cooperative taxi society is distributed equitably among the taxi drivers who will be members of that society.

### OPERATION BRAHMA

- A powerful earthquake of magnitude 7.7 and at least six aftershocks struck central Myanmar, leading to the death of at least 1,400 people and leaving many injured.



— Earthquakes are relatively common in Myanmar due to the Sagaing Fault, which runs north to south through the centre of Myanmar and has a history of significant seismic activity.

— India acted quickly by being the “first responder” and launched Operation Brahma to aid rescue and relief work, pitching in with tonnes of rations, tents, medicines, sleeping bags, rescue teams and equipment, a canine squad and a fully functional field hospital.

#### 10CFR810

— The US Department of Energy (DoE) approved Holtec International’s application for specific authorisation with respect to the restrictive regulation that is referred to as “10CFR810”. (Part 810 of Title 10, Code of Federal Regulations of the US Atomic Energy Act of 1954).

— It permits Holtec to transfer “unclassified small modular reactor (SMR) technology” to three firms in India: its regional subsidiary Holtec Asia; Tata Consulting Engineers Ltd; and Larsen & Toubro Ltd.

— This comes weeks after an announcement on renewed nuclear cooperation between the two countries to “fully realise” the US-India 123 Civil Nuclear Agreement.

— SMRs are essentially advanced small nuclear reactors that have a power capacity of 30MWe to 300 MWe (megawatt electrical) per unit. The relatively simpler and modular design of SMRs— enabling their components to be assembled in a factory instead of being constructed on-site— lowers costs and allows flexible deployment, making them a much more attractive proposition in recent years.

#### EUCLID

— European Space Agency (ESA)’s telescope, Euclid, captured high-resolution images of 26 million galaxies, opening up a huge treasure trove towards studying the dark universe.

— Euclid is a 1.2-metre telescope designed to map large spatial structures, like galaxies, in our universe and help reconstruct how the universe expanded and how galaxy structures are shaped the way they appear today.

— It was launched in July 2023. It has two scientific payloads: Near-Infrared Spectrometer and Photometer (NISIP) and Visible Imager (VIS).

#### ASBESTOS

— The Ministry of Education has banned the use of asbestos in the construction or refurbishment of Kendriya Vidyalayas (KVs) and Jawahar Navodaya Vidyalayas (JNVs).

— Asbestos, which was once common in home insulation and other products, is banned in more than 50 countries. It is used by the chlor-alkali industry, which produces bleach, caustic soda and other products.

— Asbestos exposure is known to cause lung cancer, mesothelioma and other cancers. It is classified as a Group 1 carcinogen.





## OPIOID FENTANYL

- The United States has named India, along with China, a “state actor” in enabling direct and indirect supply of precursor chemicals and equipment used by drug traffickers, particularly in the production of illicit fentanyl.
- Fentanyl is a potent, fast-acting synthetic opioid, meaning it can be chemically manufactured in a laboratory. Unlike opioids, such as morphine and codeine, which are derived from the opium poppy plants, fentanyl is entirely synthetic.

## MARTIAN DUST

- According to the study, ‘Potential Health Impacts, Treatments, and Countermeasures of Martian Dust on Future Human Space Exploration,’ Martian dust of Mars is likely to cause respiratory issues and an elevated risk of disease among astronauts.
- Researchers found that the size of a Martian dust particle is quite small (it is about 4% the width of a human hair), which makes it more hazardous for humans.
- The findings are significant as NASA and the Chinese Manned Space Agency (CMS) plan to send their astronauts to Mars in the following decade. Their missions involve astronauts staying on Mars for months, and eventually lead to the creation of long-duration habitats on the surface.

## MASAKI KASHIWARA

- Japanese mathematician Masaki Kashiwara was awarded this year’s Abel Prize. He was awarded “for his fundamental contributions to algebraic analysis and representation theory, in particular the development of the theory of D-modules and the discovery of crystal bases,” according to the Abel citation.
- The Abel prize is often considered to be an equivalent of the Nobel prize, which does not have a category for mathematics.
- The prize includes a monetary award of 7.5 million kroner (roughly \$720,000) and a glass plaque designed by Norwegian artist Henrik Haugan.
- The Abel Prize “recognises pioneering scientific achievements in mathematics”. It is named after Norwegian mathematician Niels Henrik Abel (1802-29), who in his short life made pioneering contributions to multiple fields.



## BUSINESS AND ECONOMICS

### CROPS US HOPES TO SELL TO INDIA

The US has three major crops of interest —soyabean, corn (maize) and cotton — when it comes to securing greater market access in India.

- The demand for “opening up” could be all the more with US President Donald Trump threatening to impose so-called reciprocal tariffs on Indian exports from April 2: “We will be charging them the same tariffs they charge us”.
- The US is a huge exporter of all the three commodities, whose combined shipment value peaked at almost \$62 billion in 2022.
- It’s against this context that a new report from the US Department of Agriculture’s (USDA) economic research service — titled “The Growing Demand for Animal Products and Feed in India” — makes for interesting reading.
- The report projects India’s consumption of animal products — milk, eggs, fish and meat — to increase with rising population and per capita GDP. That would, in turn, drive demand for feed and ultimately the need for substantial imports of ingredients such as corn and soyabean “by the early 2030s”.
- India’s domestic corn consumption is expected to climb from 34.7 million tonnes (mt) in 2022-23 to 98 mt in 2040 and 200.2 mt in 2050 under a scenario of “rapid” income growth (6.6% per year). It would go up less — to 62.8 mt in 2040 and 93 mt in 2050 — if income growth is “moderate” at 4.6% per year. Consumption of soyabean meal is likely to similarly go up from 6.2 mt in 2022-23 to 30.9 mt and 68.3 mt for these years under the “rapid” and to 17.7 mt and 28.3 mt under the “moderate” income growth scenarios.
- The third crop of interest is cotton, where the US was the world’s No. 1 exporter before Brazil overtook it in 2023-24.

#### Do You Know:

- India’s cotton imports for 2024-25 (October-September) are projected at 3 million bales, surpassing its exports of 1.7 million bales that are a far cry from the all-time-high of 13 million bales achieved in 2011-12.
- The chances of India becoming the biggest market for the US are, perhaps, higher in cotton than in soyabean or corn. And it may be argued that duty-free imports of raw cotton can boost India’s textile and apparel exports to the US itself, which stood at \$10.8 billion in 2024.

### US TARIFFS LOOMING, INDIA LOOKS AT EASING NON-TRADE BARRIERS, RELAXING CHINESE FDI

WITH SOME dialling down of tensions between India and China along the border, policy makers are more open to upgrading bilateral economic relationships now.



- It is being viewed as an opportune time, particularly when US President Donald Trump is pushing India to the corner on reducing tariffs and forcing it to agree to terms set by Washington, especially on tariffs.
- According to sources aware of developments, discussions are on between departments to dilute or neutralise some of the restrictions on trade and investments that were put in place five years ago after clashes between Chinese and Indian soldiers in Galwan in 2020.
- Some of these proposals have gained traction following industry demands, and include low hanging economic outcomes such as easing of visa restrictions for Chinese personnel and lifting some tariff and non-tariff barriers on imports of consignments.
- Some Chinese apps may be allowed again too, they said. Resumption of flights and issuance of visas to Chinese scholars are proposals already on the cards, the sources said.
- On the investment front, there are indications the Indian side is now open to allowing inflows from Beijing as a countermeasure to the widening trade deficit between the two countries.

**Do You Know:**

- According to IBEF Website, Bilateral trade between India and China in FY24 stood at US\$ 118.40 billion against US\$ 113.83 billion in FY23 with a growth of 4%.
- Bilateral trade between India and China in FY24 stood at \$118.40 billion. According to the latest data from the Global Trade Research Initiative (GTRI), China has once again become India's top trading partner in FY24, surpassing the United States after a two-year gap. In FY24, China had a 15 per cent share in India's total imports. India imported goods worth \$675.42 billion from the world, including goods worth \$101.74 billion from China.
- In FY24, China had a 15.06% share in India's total imports. India imported goods worth US\$ 675.42 billion from the world, including goods worth US\$ 101.74 billion from China.
- THERE IS a growing view in India that entering into a visibly closer dialogue with China on normalising business ties could send out a signal to the US and likely act as a potential hedge. Talks are on to consider diluting some of the restrictions on trade and investments put in place after the Galwan clashes in 2020.
- On the other hand, China occupied only the 22nd position in FDI equity inflows into India, with a cumulative FDI of \$2.5 billion from April 2000-September 2024. Growth in bilateral investment has not kept pace with the expansion in trading volumes between the two countries, and there is appetite in Beijing to step up investment flows, sources said. There could be some accommodation on the Indian side, going forward.
- Though trade volumes have grown sharply since 2020, they have also led to the biggest single trade deficit India is running with any country. India's trade deficit concerns are two pronged: the actual size of the deficit and that the imbalance has continuously been widening year after year to cross \$83 billion in 2023. The widening trade deficit with China could be attributed to two major reasons — the narrow basket of commodities, mostly primary, that India exports to China and a number of market access impediments for most of India's agricultural products and sectors where India has export competitiveness, including pharmaceuticals, IT/ITeS, etc.



- The Economic Survey 2023-24 had also called for India to encourage investments from China, while discouraging imports of finished goods, where the scope of local value addition is very little.

#### GOVT PROPOSES TO ABOLISH 6% 'GOOGLE TAX' AMID US TARIFF PRESSURE

The government has proposed to abolish the equalisation levy on online advertisements, a part of amendments to the Finance Bill, 2025, in a move, which experts deemed as a signal from India to remove some taxes on businesses, particularly, under pressure from the new United States administration over tariffs.

- The government has proposed to abolish the equalisation levy on online advertisements, a part of amendments to the Finance Bill, 2025, in a move, which experts deemed as a signal from India to remove some taxes on businesses, particularly, under pressure from the new United States administration over tariffs.
- As part of the 35 amendments to the Finance Bill, 2025, the Centre wants to remove the 6 per cent equalisation levy (EL) it charges on digital ads from April 1, 2025. This has been in force since 2016, on payment exceeding Rs 1 lakh a year to a non-resident service provider for online advertisements.
- Last year, the country had removed a 2 per cent levy on digital services rendered to Indian businesses by offshore technology firms like Google, Meta and Amazon, after it led to a tiff between New Delhi and Washington. However, the 6 per cent levy had continued.
- Also, section 143(1) has been amended to insert a new subclause (ia) which gives power to the tax department to reconcile the income tax return with the return of the previous year to flag any inconsistency in information furnished by the taxpayer.

Do You Know:

- According to Investopedia, A Google tax, also known as a diverted profits tax, refers to anti-tax-avoidance provisions that have been introduced in some countries. Several jurisdictions implemented the provision to stop companies from diverting profits or royalties to other jurisdictions that have lower or even zero tax rates. For example, internet giant Alphabet Inc.'s (GOOGL) Google paid a negligible amount in taxes in the United Kingdom by completing its transactions in the low-tax city of Dublin, Ireland, even though it earned \$6.5 billion in revenue in the U.K.

#### EQUITABLE DISTRIBUTION

The 19th report of Parliament's Public Accounts Committee (PAC) is appropriately scathing in its criticism of the Goods and Services Tax (GST) regime, introduced in July 2017 to simplify, unify and improve indirect tax compliance in India. At the outset, the PAC highlights a nearly 2% drop in indirect tax revenue between FY18 and FY20 — the first two years of GST prior to the COVID-19 pandemic. Among the several discrepancies flagged, it is the non-auditing and non-finalisation of the States' Compensation Fund for over six years that stands out as particularly troubling. This has strained the functioning of what was meant to be a unified yet federal tax structure. The PAC notes the Centre's failure to furnish the Compensation Fund Account to the Comptroller and Auditor General (CAG), a necessary step to certify and release timely compensation to States for revenue losses since the rollout of GST. The centralising tendencies of the GST regime have long been a point of contention for major revenue-generating States, many of which have raised

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





concerns over diminished fiscal autonomy and sharp declines in indirect tax collections. As a destination-based tax, GST is levied at the point of consumption, adversely affecting manufacturing-heavy States.

To address these concerns, the GST (Compensation to States) Act, 2017, mandated a Compensation Fund and promised States a 14% annual revenue growth for five years (2017–22), using FY16 as the base year. However, many States have reported either non-receipt of funds or serious delays, which they say have negatively impacted governance. The PAC attributes this to the Centre's indifferent approach. In one striking example, the PAC cites 2,447 inconsistencies — amounting to ₹32,577.73 crore — out of a sample of 10,667 cases — and criticises the Finance Ministry's audit approach as “lackadaisical”. The PAC has recommended establishing a formal mechanism with the CAG to ensure timely audits and updates on pending cases. It also calls for a comprehensive review to develop a “GST 2.0” — a recommendation that is likely to resonate with States demanding a greater share of GST revenues, closer to 70%–80%, up from the current 50%.

#### **‘NEARLY 74% FUND SPENT BUT PHYSICAL PROGRESS IS JUST 39%?’**

The Parliamentary Standing Committee on Railways has flagged the disparity over the total expenditure and physical progress of the works being done under the doubling of railway lines, one of the key projects of the railways to increase the capacity and remove traffic bottlenecks.

- The committee said that while the financial utilisation or the total amount spent on the doubling of railway lines up to December 2024 (for financial year 2024-25) was 74 per cent of the budget, the physical achievement was merely 39 per cent of the target.
- The panel said that the railways should exercise due diligence in identifying and addressing obstacles to ensure seamless project execution.
- “This includes streamlining land acquisition, expediting clearances, and leveraging modern construction technologies to facilitate the timely completion of doubling projects, thereby effectively reducing traffic congestion. The committee also expects the Railways to ensure full utilisation of the budget sanctioned and achievement of the physical targets set for doubling of lines in 2024-25,” the report stated.
- Apart from railway line doubling, new lines, gauge conversion and track renewals are among the key projects being undertaken by the Indian Railways to remove the traffic congestion and ensure timely movement of trains with high carrying capacity.

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

- The Parliamentary Standing Committee on Railways has recommended that a special focus should be given on improving the crowd management under the government's Amrit Bharat Station Scheme.
- The Committee's observation came at a time when, on February 15, 18 people were killed at New Delhi Railway Station in a stampede. The passengers were trying to board Prayagraj-bound trains for the Maha Kumbh.
- The House panel also took note of the slow progress of works under the Amrit Bharat Station Scheme and said that a dedicated task force should be established to oversee project timelines.



- The Committee also directed the Railways to ensure sufficient deployment of personnel to maintain smooth and efficient passenger movement, so that both safety and convenience can be enhanced.
- Launched on December 23, 2022, the Amrit Bharat Station Scheme envisages to develop a station as a “city centre”, which will have modern facade, regulated traffic movement, well-lit, aesthetically pleasing grand porches, landscaping, and representation of local art and culture, signages and roof plazas.

#### STATUS OF INDIA’S BIOECONOMY, HOW TO SUSTAIN FURTHER GROWTH

A new government report has pegged the value of India’s bioeconomy in 2024 at more than \$165 billion, accounting for over 4.2% of the country’s GDP.

- The India BioEconomy Report, released by the Department of Biotechnology, says there is ample opportunity for this sector to grow to about \$300 billion by 2030, and to \$1 trillion by 2047.
- Realising the potential for greater use of biotechnology in economic processes, the government in 2024 unveiled the BioE3 policy (Biotechnology for Economy, Environment and Employment).
- Its main objective is to establish India as a global hub for bio-manufacturing, and a major centre for research and development in biotechnology. The policy is an attempt to prepare India for a future in which the control over, and capabilities in, cutting-edge technologies would be the main drivers of economic growth. The idea is to incentivise and promote the setting-up of a network of universities, research institutions, start-ups and industries to facilitate bio-manufacturing in key areas such as bio-based chemicals and enzymes, functional foods, precision biotherapeutics, marine and space biotechnology, and climate-resilient agriculture.
- India already has fairly well-developed capabilities in some of these areas, which would be relatively easy to build upon in order to deliver commercially successful products.

#### Do You Know:

- Bioeconomy refers to the industrial use of biological resources (plants, animals, and microorganisms), and the replication of natural biological processes in the production of goods and services.
- Biological resources and natural processes have been integral to the healthcare, pharmaceutical, and agriculture sectors for a long time. But their use is now expanding to many other areas. Bioresources like plants or microorganisms are renewable, relatively cheap, and locally available, while natural processes are more sustainable and eco-friendly.
- The report shows that the value of India’s bioeconomy nearly doubled in the last five years, from around \$86 billion in 2020 to \$165 billion in 2024.
- The number of companies operating in the bioeconomy has gone up by almost 90% in the last three years, from 5,365 in 2021 to 10,075 in 2024. This number is projected to double again by 2030, by which time such companies would employ close to 35 million people, according to the report.
- Nearly half the value of the bioeconomy (roughly \$78 billion) was generated in the industrial sector, for the development and use of biofuels and bioplastics, among other things. The pharma



sector accounted for another 35% of the total value, with vaccines the major contributor. The report showed that only five states — Maharashtra, Karnataka, Telangana, Gujarat and Andhra Pradesh — accounted for more than two-thirds of the value generated in the bioeconomy. The entire eastern and northeastern region generated less than 6% of the total value.

#### TRIBHUVANDAS LAID FOUNDATION OF AMUL, SAYS SHAH; KURIEN SHAPED IT, SAYS OPP

A “new age” cooperative culture will emerge from Tribhuvan Sahkari University, Union Home and Cooperation Minister Amit Shah said Wednesday as LS passed a Bill to set up the university.

- The Tribhuvan Sahkari University Bill, 2025, named after one of the pioneers of the cooperative movement in India Tribhuvandas Kishibhai Patel, seeks to establish the university on the campus of the Institute of Rural Management Anand (IRMA) in Gujarat to impart training in the cooperative sector.

- Shah said the Bill will strengthen the rural economy and provide the country with new leadership in the cooperative sector. “There is a need for trained human resources everywhere, and this university can give us this. Cooperatives became weak because those who were involved gave work to their own people. There were no degrees in cooperative sector, so how were standards to be set? Once this university comes up, only those with these diplomas and degrees will get these jobs,” said Shah. He said there are no common courses now for the cooperative sector in institutions across the country and the University will offer degree, diploma, and certificate courses besides enhancing research in the sector.

#### Do You Know:

- Tribhuvandas Kishibhai Patel was an Indian independence activist, lawyer, and politician. A follower of Mahatma Gandhi, he is regarded as the father of the cooperative movement in India, most notably in the Kaira District Co-operative Milk Producers’ Union in 1946, and the Anand Co-operative movement.

- Born in Kozhikode, Kerala on November 26, 1921, Dr Verghese Kurien obtained degrees in physics in 1940 and mechanical engineering in 1943, intending to join the Indian Army as an engineer.

- In May 1949, Kurien began his government-mandated assignment at an experimental government creamery in Anand, Gujarat, hoping to leave after his bond period ended. While there, he developed a friendship with Tribhuvandas Patel, then the Chairman of the Kaira District Cooperative Milk Producers Union. From 1945-46, Patel led the effort for dairy farmers in the region to unionise and combat the exploitation by Polson, a dairy company that monopolised milk collection.

- At Patel’s insistence, Kurien took charge as an engineer to look after the cooperative’s machines. With time, he took an active interest in the daily operations of the union and the farmers, eventually becoming its general manager. Under Kurien’s leadership, the cooperative expanded its capacity and acquired equipment to process and store dairy products. Thus, it was able to expand its milk supply to previously underserved areas of the country, which relied on imported milk powder. More importantly, the collective established a direct link between the producers and consumers.



- The cooperative would be renamed the Anand Milk Union Limited or Amul, and began marketing its products under the Amul brand. This model of dairy milk cooperatives proved to be wildly successful and others soon followed suit. Kurien and Patel, along with Dara Khurody – who had established the Aarey Milk Colony in Bombay, which provided pasteurising and distribution facilities for the milk from Anand – were awarded the Ramon Magsaysay Award for Community Leadership in 1963.

#### CENTRE INCREASES NREGS WAGES BY 2-7% FOR FY26

The Centre has hiked the wages under the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) in the range of 2-7% for the financial year 2025-26.

- The Ministry of Rural Development (MoRD), which is the nodal ministry to run the rural job guarantee programmes, on Thursday issued a notification revising the NREGS wages for the FY 2025-26.
- In absolute terms, the NREGS wages have seen a hike in the range of Rs 7 to Rs 26. The NREGS wages have been hiked by ₹7 in five states, Andhra Pradesh, Arunachal Pradesh, Assam, Nagaland, and Telangana. The highest increase of Rs 26 has been recorded in Haryana, where NREGS wages will touch the Rs 400-mark during 2025-26 from its current rate of Rs 374 per day. This will be first time the NREGS wages will touch Rs 400 per day in any state.
- The government notifies the NREGS wage rates under sub-section (1) of Section 6 of the Mahatma Gandhi National Rural Employment Guarantee Act, 2005. The new rates become effective from the 1st day (April 1) of the financial year.
- The NREGS wage rates are fixed according to changes in the CPI-AL (Consumer Price Index for Agricultural Labourers), which reflects the increase in inflation in rural areas.
- In the current financial year (2024-25), Goa had seen the maximum hike of 10.56% over its previous year (2022-23) wage rate; Uttar Pradesh and Uttarakhand recorded the lowest 3.04%.

#### Do You Know:

- Under MGNREGA, every rural household, whose adult members volunteer to do unskilled manual work, is entitled to get at least 100 days of wage employment in a financial year.
- While Section 3 (1) of MGNREGA provides for “not less than 100 days” work per rural household in a financial year, it has become de facto upper limit as the NREGA software does not allow data entries for employment above 100 days to a household unless specifically requested by the State/UT.
- In some cases the government allows additional 50 days of wage employment (beyond the stipulated 100 days). For instance, every Scheduled Tribe household in a forest area is entitled to get 150 days of work under NREGS, provided that such families have no other private property except for the land rights granted under the Forest Right Act, 2016.
- Besides, the government, under Section 3(4) of MGNREGA, can also provide an additional 50 days of unskilled manual work in a financial year in such rural areas where drought or any natural calamity (as per Ministry of Home Affairs) has been notified.





## GOING ELECTRIC

India's decision to exempt import duties on 35 capital goods used in the manufacture of electric vehicle (EV) batteries and 28 items used in the making of mobile phone batteries is a welcome step toward boosting domestic manufacturing and clean technology adoption. Proposed by Finance Minister Nirmala Sitharaman in the Union Budget 2025-26 and formalised through the Finance Bill 2025 passed in Parliament on Tuesday, this signals a strategic policy shift. Earlier in March, Chinese EV giant BYD unveiled its "Super E-platform", capable of giving a vehicle a 500-kilometre range with just five minutes of charging — a major leap toward alleviating range anxiety, which is a key barrier to EV adoption. This innovation directly challenges the convenience of conventional vehicles and could accelerate the global EV transition if scaled and deployed with the same ubiquity as traditional fuel stations. Batteries remain the most expensive component in an EV, comprising roughly 40% of the vehicle's cost. This cost burden has slowed EV adoption in lower-income countries, despite the long-term advantage of reducing oil import dependence, which is especially relevant for India. Another critical barrier is the lack of indigenous technological capability in battery manufacturing. China currently dominates this sector, producing over 70% of all EV batteries globally, according to the International Energy Agency. The lithium-iron-phosphate (LFP) battery has emerged as the industry standard over the past five years due to its lower cost, higher energy density, and better thermal management.

While EVs made up 45% of all car registrations in China in 2024, they accounted for just 2% of India's passenger car market. However, electric two-wheelers (e2w) have seen notable momentum in India, with 1.14 million units sold in 2024, making up about 60% of total EV sales. Though India's duty exemptions are partially aimed at strengthening bilateral trade ties with the United States and avoiding reciprocal tariffs, the broader strategic objective should be to decarbonise its transport sector. To achieve this, India must integrate into both the upstream (mining and refining) and downstream (manufacturing and assembly) segments of the global EV battery value chain. This would not only help lower battery costs through technology transfer but also position India as a reliable alternative to China in the eyes of developed nations seeking supply chain diversification. India's long-term success in the EV space will depend on its ability to leverage favourable trade policies, invest in research and development, and secure a strong foothold in the global battery ecosystem.

## WHY ARE TESLA OWNERS BEING DOXXED IN AN ONLINE CAMPAIGN AGAINST ELON MUSK?

A website known as 'Dogequest' has sparked outrage and concerns about privacy and security by allegedly publishing personal information of Tesla owners across the U.S. The website, which surfaced amid a growing wave of anti-Elon Musk sentiment, features an interactive map that displays Tesla owners' names, addresses, and phone numbers. Per a report by media outlet 404 Media, the site's use of a Molotov cocktail as its cursor has only added to the controversy, with critics calling it an incitement to violence. At the time of filing this story, the Dogequest website was down.

The operators of the website claim they will only remove the information of Tesla owners from their platform if the owners can provide proof that they have sold their vehicles, the media outlet noted. This stark demand has raised serious questions about the safety of individuals targeted by the site, especially as it comes at a time when Tesla properties have increasingly become the focus of attacks.



### What is Dogequest?

Dogequest describes itself as an anonymous platform designed to empower Tesla protesters. The site includes a searchable database of Tesla owners across the U.S., alongside the locations of the EV maker's dealerships and charging stations. In a highly disturbing twist, it also lists the addresses of employees from the Department of Government Efficiency (DOGE), an agency associated with Tesla CEO Elon Musk.

The website's data accuracy has been questioned. Some of the individuals listed on the platform are confirmed to be Tesla owners, but many locations plotted on the interactive map do not seem to correspond to real-world addresses, calling into question the veracity of the information provided, the outlet noted. Some critics have suggested that the website might not have access to accurate data, further complicating the situation.

One section of Dogequest openly encourages vandalism, saying: "If you're on the hunt for a Tesla to unleash your artistic flair with a spray can, just step outside — no map needed!" It goes on to state: "At DOGEQUEST, we believe in empowering creative expressions of protest that you can execute from the comfort of your own home." Such language has many concerned about the potential for violence, especially given the platform's connection to the rising tide of anti-Tesla activism.

### How has Mr. Musk responded?

Mr. Musk wasted no time in responding to the site. In a post on X, he condemned the actions of Dogequest, calling it "extreme domestic terrorism." Mr. Musk's words reflect the growing tension surrounding both his company and his personal political affiliations. "Encouraging destruction of Teslas throughout the country is extreme domestic terrorism," he said, adding that the website was just one part of an alarming trend of hostility toward his company.

Dogequest gained significant attention in the wake of a series of violent attacks targeting Tesla properties across the U.S. According to a report by Newsweek, five Tesla vehicles were set on fire at a service centre in Las Vegas by an individual wielding Molotov cocktails. The word "RESIST" was spray-painted on the front door of the facility, suggesting that the attack was part of a larger political statement against Mr. Musk and his company. Further incidents followed. In Kansas City, two Tesla Cybertrucks were set ablaze, while in South Carolina, an arsonist attempting to torch a Tesla charging station ended up accidentally setting himself on fire. The FBI is now investigating these incidents, and federal officials have classified these attacks as acts of domestic terrorism.

The attacks on Tesla properties appear to be part of a larger wave of protest against Mr. Musk's ties with U.S. President Donald Trump. Mr. Musk's outspoken political stances, particularly his support for government spending cuts, have inflamed tensions, especially with activists and federal employees. These political controversies have only deepened the backlash against both Mr. Musk and his company, culminating in protests outside Tesla showrooms and the emergence of websites like Dogequest.

In New York City, for instance, around 250 protesters gathered outside a Tesla showroom, chanting slogans like "Musk Must Go" and "Block Fascism Now." While most of the protestors engaged in peaceful demonstrations, five were arrested for disorderly conduct, and one faces charges of resisting arrest.



Tesla has not only been targeted by activists but also by some of its own investors. Ross Gerber, an early investor in Tesla, publicly criticised Mr. Musk's involvement in politics, arguing that his actions have hurt the company's reputation. "It's time for somebody to run Tesla," Mr. Gerber said in a recent interview with Sky News. "The business has been neglected for too long. There are too many important things Tesla is doing, so either Elon should come back to Tesla and be the CEO of Tesla and give up his other jobs or he should focus on the government and keep doing what he is doing but find a suitable CEO of Tesla."

This growing hostility has also had a tangible impact on Tesla's stock market performance. Reports indicate that Tesla's shares have dropped more than 50% since the fall election, reflecting the broader backlash against Musk's leadership and the mounting political controversy surrounding the company.

#### **What's next for Tesla and Dogequest?**

As Dogequest gains more attention, concerns about the safety of Tesla owners and the potential legal consequences for those behind the site continue to mount. The FBI and cybersecurity experts are now working to investigate the origins of the website and the accuracy of the information it has published. Law enforcement agencies are also looking into the possibility of legal action against the site's operators for their role in potentially inciting violence.

For Tesla owners whose information has been exposed, the situation is tense. They are being urged to monitor their personal data closely and report any suspicious activity to authorities. Meanwhile, Tesla has ramped up efforts to secure its properties and protect its employees from further attacks, even as the company faces growing public scrutiny.

Whether or not the site's operators will face legal consequences remains unclear. However, Dogequest has undeniably added a new and troubling layer to the already complex controversy surrounding Tesla, its CEO, and the political divisions surrounding the company. As the situation continues to unfold, it remains to be seen whether Tesla will be able to regain its footing or if the mounting protests and cyber harassment will mark the beginning of a new chapter in the company's turbulent history.

# DreamIAS



## LIFE AND SCIENCE

### GAIA, EUROPEAN SPACECRAFT THAT MAPPED THE MILKY WAY FOR A DECADE, SHUTS DOWN

The European Space Agency (ESA) shut down its space observatory mission, Gaia on Thursday (March 27). Launched into space over a decade ago, Gaia has been instrumental in charting the Milky Way galaxy, revealing its past and estimating its future.

- Gaia was launched in December 2013 aiming to create the most precise, three-dimensional map of the galaxy. It began taking observations on July 24, 2014, finally shutting its eyes on January 15, 2025. Over the last decade, Gaia has taken 3 trillion observations of 2 billion stars and objects and helped inform at least 13,000 scientific publications.
- Gaia was positioned in the Lagrange point 2 (L2), around 1.5 million kilometres 'behind' the Earth, when viewed from the Sun. This effectively allows the spacecraft to view the larger cosmos unhindered by the planet, the Sun and the Moon.
- As it twirls in space, twin telescopes, placed in different directions, direct light onto a single digital camera with nearly a billion pixels, making it the largest flown in space. The spacecraft is fitted with three instruments – an astrometer, a photometer and a spectrometer – that help interpret the location and motion of stars and other objects.
- Gaia has transformed the way the Milky Way galaxy is viewed. Its data allowed scientists to recreate not just a 3-D map of the galaxy, but also how it will change over time.

#### Do You Know:

- After the mission shuts its space eyes, scientists have been conducting tests to assess the behaviour of technologies after spending 10 years in space, and help build future missions.
- A bulk of Gaia's data is yet to be processed. Scientists at the ESA have been actively downlinking all the data collected by the spacecraft over the years, which will be released in the coming years, leading to more discoveries.
- The ESA has said that a part of the remaining data will be released next year, which will cover the mission's first five-and-a-half years. Another set of data will be released at the end of this decade.
- Despite its scope and magnitude, Gaia would have mapped just about 2% of the 100 billion stars in the galaxy, leaving much to be explored.

### HOW DO ASTRONAUTS RECOUP AFTER SPACE STAY?

#### The story so far:

Early on March 19 (IST), a SpaceX capsule bearing astronauts Sunita Williams, Barry Wilmore, Aleksandr Gorbunov, and Nick Hague splashed down in the Gulf of Mexico. The four were returning from the International Space Station (ISS). Of them, Ms. Williams and Mr. Wilmore were wrapping up a nine-month stay on the ISS, which they reached in June last year onboard Boeing's Starliner capsule. NASA — which employs Mr. Hague, Ms. Williams, and Mr.





Wilmore — has a regimen in place for the trio to help re-adapt to gravity (Mr. Gorbunov is from Russia's Roscosmos).

#### **How does extended spaceflight affect humans?**

Microgravity affects the body in many ways, including allowing fluids to flow more easily towards the brain, reducing muscle tension, and lowering bone density. Astronauts thus maintain a strict routine of exercises and dieting onboard the ISS, tailored among other things to help work the body and engage the brain. NASA and other space agencies have also crafted programmes to make sure astronauts don't become stressed by their workload or by the confined space they're forced to occupy for months at a time.

While more and more people have gone to space with each new decade, the data about the effects of spaceflight on their bodies and minds is insufficient to make proper conclusions. This is because the number of spacefaring individuals is still relatively small; human bodies differ on a variety of parameters; and missions have different spaceflight profiles. There are also indications that extended spaceflight can affect parts of male and female bodies differently, but researchers have said they don't yet have enough data to confirm.

#### **How are astronauts monitored in space?**

In 2024, NASA's Office of the Chief Health and Medical Officer released revised standards specifying the medical tests and checkups astronauts must undergo before, during, and after spaceflight. The standards also say how astronauts should be treated once they return to earth after short (less than 30 days) and long (more than 30 days) missions. In long-duration missions, astronauts are required to evaluate themselves two weeks, three months, six months, and nine months after launch and submit their reports to the crew medical officer. There are private medical conferences every day for the first week, then once a week, and before and after spacewalks. There are also hearing and ocular assessments every three months. Body mass is measured a week after launch, then monthly. Each astronaut's blood and urine is tested six months after launch and as and when clinically indicated, and they are screened for deep-vein thrombosis and blood-flow anomalies one and two months after launch as well as 42 days before the return flight.

The astronauts are monitored for their strength and exposure to radiation as well.

#### **How are astronauts rehabilitated post-flight?**

Once the four splashed down on March 19 and were retrieved, they would have started their post-flight rehabilitation guided by medical tests and physical activity. According to NASA, "Post-flight reconditioning is unique for each astronaut and varies by individual. While most crew members reach their pre-flight fitness baseline within the first 45 days of returning to earth, it is not uncommon for NASA to extend reconditioning programmes to meet an astronaut's specific needs and the pace of recovery."

The 2020 book *Principles of Clinical Medicine for Space Flight* said astronauts who had been in space for 20 days were able to regain their pre-flight fitness levels in a week. On the day they return, crew members undergo a physical exam, a neurological assessment, resting and ambulatory ECG, eye tests, checks of their skin, blood, urine, and for symptoms that appear when standing straight but not reclining (orthostatic tolerance). They will have further physical exams three days, one or two weeks, and two months after the descent, and follow-up tests on many of



the other counts plus tests conducted according to clinical indications. They are conducted by the crew surgeon, the deputy crew surgeon or the partner flight surgeon. A mission psychologist may also perform psychological checks.

#### **What does physical rehabilitation entail?**

Physical therapy ensures crew members' bodies are able to readjust to the earth's gravity without injury. A 2024 paper in the Indian Journal of Aerospace Medicine by Indian Air Force experts detailed the post-flight rehabilitation of an astronaut after six months onboard the ISS.

The crew surgeon, the flight surgeon, and a physiotherapist may assess the need for massage therapy for crew members from the day of their return, they wrote. In the subsequent week, crew members undergo "physical reconditioning" exercises for two hours every day: warm-up exercises on elliptical, rowing, and bicycle trainers; tasks to exercise the back and lower limbs and to improve gait; and stretching. In the week after, the exercises expand to include jogging and playing ball-games in water. According to a 2011 technical report published by NASA, "The post-flight reconditioning program is designed to stress the body systems that affect ... aerobic capacity, muscular strength, power, endurance, stamina, bone, balance, agility, coordination, orthostatic tolerances, proprioception, neurovestibular function and flexibility." Every day, the medical and physiotherapeutic personnel together assess each crew member's progress. Once a crew member has returned to their pre-flight fitness levels, the medical team discharges them to return to normal duties.

### **SIMULATING GRAVITY FOR SPACE WORKOUTS**

#### **Q. Does walking in space lead to weight loss?**

Are you trying to lose weight? Because in space you are already weightless. However, it is interesting to think about how astronauts can exercise in space, which they need to do to keep from losing muscle mass.

Work is defined by a force displacing an object by some distance. When you lift a 5-kg dumbbell on the earth, you work to move it through the air. The amount of work depends on the amount of force exerted in this activity.

On the ground, you work to overcome the downward force the dumbbell exerts on your hand, called its weight, and to move the dumbbell up. If you're onboard the International Space Station (ISS) in low-earth orbit, both components almost completely vanish, and you do very little work to move the dumbbell up and down.

Similarly, unlike walking on the earth, where you work to overcome your own weight and friction against the air and the ground, in space the former is very small, and the latter is zero. (In low-earth orbit, astronauts experience microgravity, not zero gravity.)

To exercise onboard the ISS, astronauts use a special weight-lifting machine called the Advanced Resistive Exercise Device. An astronaut uses their hands and shoulders to push against resistance provided by air-filled pistons, which can simulate a weight of up to 270 kg.

Similarly, the ISS has a treadmill where astronauts can strap themselves down using a harness: the tighter it is, the closer the force it exerts will be to gravity.



## HOW SECURE IS SIGNAL, APP TRUMP TEAM USED TO SHARE WAR PLANS?

Top Trump administration officials used the messaging app Signal to share war plans and accidentally included The Atlantic magazine's Editor-in-Chief Jeffrey Goldberg in the encrypted group chat. Goldberg published a first-hand account on Monday detailing a discussion that happened over the app, hours before strikes on Iran-backed Houthi rebels in Yemen ordered by President Donald Trump.

- Signal is an app that can be used for direct messaging, group chats, and phone and video calls. As the app uses end-to-end encryption for its messaging and calling services, a third party cannot view conversation content or listen in on calls. "In other words, messages and calls sent on Signal are scrambled and only the sender and recipient at each end will have the key to decipher them," according to an explainer by The Associated Press.
- Signal also does minimal data collection and includes a feature that allows for automated message deletion within a certain time frame, adding another layer of data protection. Moreover, Signal's encryption protocol is open source, meaning experts can verify how it works and ensure it remains safe.
- According to experts, Signal is much more secure than conventional texting. However, the app can still be hacked. For instance, in February, Mandiant, a Google-owned security firm, reported that Russian-linked spies tried to hack into the Signal accounts of Ukrainian military officials by posing as trusted Signal contacts.
- Jacob Williams, a former hacker at the US National Security Agency (NSA), told Politico that one of the biggest risks of using Signal is where the data can be stored.

### Do You Know:

- Signal has gained popularity in recent months in Washington, particularly after it was revealed last December that Chinese state-sponsored hackers had infiltrated US telecommunications networks and stolen a large cache of Americans' cell phone records. The hackers had also allegedly spied on the conversations of senior US political leaders, including Trump and Vice President J D Vance.
- According to a recent review by The AP, state, local and federal officials in nearly every US state have accounts on encrypted messaging apps such as Signal. The review also found that "many of those accounts were registered to government cell phone numbers. Some were also registered to personal numbers."

## HISTORY MAKER

Kirsty Coventry stood on top of the podium in Athens on August 20, 2004, creating history both for herself and Zimbabwe as the first ever Olympic champion from her country.

On March 20, 2025, again on Greek land but 275 km away in Costa Navarino, the former international swimmer won a bigger, tougher and more important contest to become the first woman and African president of the International Olympic Committee in its 130-year old history.



Back then, she stood for all things hopeful for a country in turmoil and civil strife. Taking over at a time when not just the Olympic movement but world sports is in a state of flux, Kirsty will be expected to navigate the fragile balance between continuity and change.

Her medal cabinet is scintillating: seven medals across two Olympics, including consecutive gold in 2004 and 2008 in 200m backstroke — the only other medal for Zimbabwe was a gold in 1980 through its women's hockey team — multiple titles at the World Championships and an incredible 14 golds at the African Games from 2007 to 2015, making her one of the most, if not the most, decorated woman African Olympians of all times.

The 41-year-old, the 10th president of the IOC, is also the second youngest (after founder Pierre de Coubertin) and only the second Olympic champion (after the outgoing chief, Thomas Bach) to be elected to what is unarguably the most powerful position in the sporting world.

She has also been the Zimbabwe Sports Minister since 2018, and for the next eight years, she will have to bring all her political acumen, sporting strength and diplomatic skills together to take on the myriad challenges.

The major challenges she faces include deciding on the return of banned Russia and Belarus to the Olympic fold in the midst of the Ukraine war, working on a tense relationship with U.S. President Donald Trump before Los Angeles 2028 (the next Summer Olympics), ensuring the smooth conduct of the 2026 Winter Olympics in Italy and selecting the host for the 2036 Games.

On the field, she will have to face long-term, complex issues, including those of gender eligibility, growing opposition to transgender athletes in women sports, climate change, the scourge of doping and, most importantly, keeping the Olympic relevant for the wider audience. "The future of the Olympic movement is bright," Kirsty said in her speech when the result was announced.

#### **Not without criticism**

Kirsty will have to wait, however, till June, when she will officially take over from the outgoing all-powerful and now honorary president Thomas Bach after a three-month transition period to ensure smooth handover. For her critics, however, it's just a formality, claiming as they do that Kirsty has not just been Bach's hand-picked choice for a successor but was actively supported and canvassed for by the outgoing German in the last few months.

Kirsty's election surprised many of the close watchers of the IOC powerplay. Her overwhelming victory came despite being among the least high-profile and publicly visible candidates, a list that also featured England's Sebastian Coe. As the only white member of the national Cabinet and a possible symbol of unity in a fractured country, she has also faced criticism in Zimbabwe for her handling of sporting issues, including the suspension of the National Football Association.

All that criticism, ironically, may well come in handy when Kirsty begins navigating the global sporting terrain. "When it comes to the U.S. and Los Angeles (2028 Olympics), I have been dealing with, let's say, difficult men in high positions since I was 20 years old. What I have learnt is that communication will be key," she said on dealing with Mr. Trump.

"My stance is that we will protect the female category and female athletes. We will look at the transgender issue and the protection of the female category... As an Olympian and a former athlete, anti-doping is incredibly important."





From India's point of view, the hosting rights for the 2036 Olympics will be of paramount importance. While Kirsty's election has triggered hopes of the quadrennial event finally coming to Africa, it will be tough. Egypt and South Africa have been mentioned as expressing interest but nothing has been confirmed. "At the end of the day, there is a process in place, and that will remain," she has said.

## LAPIS LAZULI: EARTH'S BEST BLUES

### WHAT IS IT?

Lapis lazuli is a vividly blue rock, sometimes with streaks of gold, that has been known for millennia for its eye-popping colour and use as a semi-precious gemstone.

It gets its colour from the presence of an unusual mineral called lazurite (25-40%). Its blueness depends on the amount and structure of sulphur in this mineral. The presence of calcite can reduce the blueness while the golden sparkle comes from the presence of pyrites. Some other minerals, like diopside and sodalite, are present in smaller quantities.

Lapis lazuli has been found in many countries so far, including Chile, Russia, and the US, but the highest quality rock comes from Afghanistan's Badakhshan province, where people have been mining it for more than 6,000 years.

In ancient times, traders in India imported lapis lazuli from Badakhshan, perhaps as long ago as 1000 BC. Archaeologists have also found ornamental lapis lazuli ornaments in the remains of Indus Civilisation sites including Mohenjo-daro and Harappa. The ancient Egyptians were also known to use it to make jewellery and to powder it to use as eye shadow.

In the Renaissance period, artistes in Europe ground lapis lazuli down into ultramarine, an expensive pigment they used in their paintings.

The rock gets its name from two languages: lapis is the Latin for 'stone' whereas 'lazuli' comes from the Persian word lazward, meaning 'blue.'

## BASKING UNDER THE SPRING SUN

The ancient tradition of Nowruz, meaning "new day" in Persian, which can be traced back over 3,000 years to the period of Zoroastrianism, is far more than just the start of a New Year. A celebration of life, rebirth, and the triumph of light over darkness, Nowruz unites diverse cultures across Central Asia, the Caucasus, the Balkans, and beyond, offering a rich tapestry of customs, traditions, and shared values. For many, the celebrations also symbolise the aspirations of Kurdish people in Syria, Turkiye, Iran, and Iraq.

Celebrated on the day of the vernal equinox, Nowruz heralds the arrival of spring, considered by many cultures as the rebirth of nature. The popular feature of the festival, especially in Iran, is the Haft Sin table. People aesthetically arrange a table with seven items symbolising different attributes of life: sabzeh (sprouted grains) symbolises rebirth and renewal; saman (sweet pudding) for affluence and fertility; senjed (dried fruit) for love; seer (garlic) for health; seeb (apple) for beauty; somāq (sumac berries) denotes triumph of good over evil, and finally, serkeh (vinegar) represents age and wisdom.



Apart from food, fire forms another key feature of the festival. Regional variations of rituals involving bonfires can be found associated with Nowruz, like the Chaharshanbe Suri in Iran where people jump over bonfires to purify and energise themselves, casting away the cold of winter and bringing in the warmth of spring.

The UN has recognised March 21 as the International Day of Nowruz while UNESCO has inscribed Nowruz on its Representative List of the Intangible Cultural Heritage of Humanity to acknowledge the cultural significance of the tradition.

This year's Nowruz, which coincides with the Muslim holy month of Ramzan, comes with a backdrop of uncertainty. The decades-long struggle of Kurdish people for a state is left in limbo after Abdullah Ocalan, imprisoned leader of the Kurdistan Workers' Party, made a call for the group to lay down arms and dissolve itself in hope for establishing peace with Turkiye. In Syria, the interim government headed by Abu Mohammed al-Jolani has managed to convince Kurdish-led, U.S.-backed Syrian Democratic Forces in Rojava to integrate with government forces, leaving doubts on the future of the autonomous Kurdish region carved out during the Syrian civil war.

While the aspirations of the largest ethnic group without a state in the world remain unfulfilled, Nowruz brings them together in joy and restores their hopes as they feast in the freshness of spring.

**THERE IS SOMETHING POSITIVE FOR EVERY TYPE OF ENERGY IN THE INTERNATIONAL ENERGY AGENCY'S LATEST GLOBAL REVIEW, BUT THE LOUDEST CHEERS WILL BE FROM RENEWABLES AND NATURAL GAS.**

The world's energy demand grew at 2.2% in 2024, a pace described as "faster than average" by the IEA in its Global Energy Review, released on Monday. The acceleration was led by emerging economies, which accounted for over 80% of the growth, while the leading sector was electricity, which grew by 4.3% in 2024, or nearly double the annual average of the past decade.

The IEA report showed renewable power capacity rose by about 700 gigawatts (GW) in 2024, setting an annual record for the 22nd consecutive year. Along with an increase in nuclear energy it resulted in 80% of the rise in global electricity coming from low-emission sources.

Two broad themes emerge from the IEA's review. The first is that renewable energy is the driving force in new electricity capacity. The second is that emerging economies, and especially those in Asia, will determine what energy sources see the most growth, and the most decline, in coming years.

Global electricity generation rose by 1,200 terawatt hours (TWh) in 2024, an increase of 4%, with solar climbing by about 480 TWh and wind up by 180 TWh, the IEA said.

Hydropower also rose by 190 TWh, but the IEA said this was largely due to wet weather in several major markets.

China, the world's second-largest economy, again dominated renewable capacity additions, accounting for two-thirds of the global total of renewables connected to the grid, with 340 GW of solar and 80 GW of wind.

It's perhaps ironic that China and India are also the lynchpins of global coal demand, with China getting about 60% of its electricity from the fuel and India nearly three-quarters.



Coal demand increased by a modest 1% in 2024 to a record high, with China consuming 40% more coal than the rest of the world.

Coal's share of the global electricity mix dropped to 35% in 2024, the lowest figure since the IEA was founded in 1974.

While coal remains a significant source of energy, its use is increasingly limited to China, India, some Southeast Asia countries and to some nations in Africa, such as South Africa. This concentration doesn't bode well for the global seaborne market, as the main coal consumers are also now the major producers of the fuel, and all favour domestic sources.

#### **Gas lessons**

In addition to renewables, the other big winner in 2024 was natural gas, with the IEA saying demand reached an all-time high, rising 2.7% in 2024 to reach 115 billion cubic metres, rebounding from the 1% growth rate between 2019 and 2023.

Once again, the main driver was Asia, with demand in China from heatwaves and the switch to liquefied natural gas (LNG) trucks fuelling growth.

But within the positive story, there is a note of caution, with the IEA noting that China's growth rate of more than 7% in 2024 was built around the first part of the year, and demand turned negative in the last two months of the year.

This was largely due to higher spot LNG prices toward the end of the year that curbed China's appetite for the fuel.

The lesson here is that countries in Asia are keen to use more LNG but they will only do so if the price is competitive, meaning LNG producers must choose between volume growth or strong prices.

Proponents of fossil fuels will point out that the IEA report shows that their demand is still growing. But that ignores the main trend, which is renewables are expanding far quicker and also increasing penetration in the world's fast-growing regions.

### **HOW GLOBAL WARMING IS AFFECTING MOUNTAIN REGIONS ACROSS THE WORLD**

Soaring temperatures are leading to rapid and largely irreversible changes in the mountain ranges of the world, according to a new UNESCO report. In several regions, higher elevations seem to be warming faster than lower ones; glaciers are melting at an accelerated rate; permafrost is thawing at an increased rate; snow cover has declined; and snowfall patterns have become more erratic.

- Glaciers are disappearing faster than ever, with the last three-year period seeing the largest glacial mass loss on record. Scientists measure the state of a glacier by measuring how much snow falls on it and how much melt occurs every year, according to the World Glacier Monitoring Service (WGMS).
- Since 1975, glaciers, which do not include the Greenland and Antarctica ice sheets, have lost more than 9,000 billion tonnes of mass. "This is equivalent to a huge ice block of the size of Germany with a thickness of 25 metres," Michael Zemp, director of the Switzerland-based World Glacier Monitoring Service, said during a press conference on Friday.



- He also noted that five of the last six years registered the largest losses, with glaciers losing 450 gigatons of mass in 2024 alone. Last year, glaciers in Scandinavia, the Norwegian archipelago of Svalbard and North Asia witnessed the largest annual loss of overall mass on record.
- Warmer temperatures are not the only reason behind accelerating glacier melting. More frequent and intense wildfires and dust storms are leading to more deposition of black carbon and other particulate matter on glacier surfaces and perennial snowpacks.
- “The impurities darken snow and ice surfaces, thus causing greater absorption of solar radiation... This can significantly influence the surface energy balance, thereby increasing melt rates, especially during periods and at locations of high incoming solar radiation,” according to the UNESCO report.

#### Do You Know:

- Permafrost is any ground that stays frozen — 0 degrees Celsius or lower — for at least two years straight. In high-altitude regions, permafrost can underlie much of the landscape. However, rising temperatures are melting permafrost in these regions rapidly. This is an issue as permafrost contains a vast amount of organic carbon and other nutrients. Mountain soils with permafrost contain approximately 4.5% of the global soil organic carbon, according to the UNESCO report. As the permafrost thaws, this organic carbon is released into the atmosphere, exacerbating climate change.
- According to the UNESCO report, snow cover in nearly all mountain regions has reduced, especially in spring and summer, with an expected further decrease in the coming decades. Snow cover is the total of all the snow and ice on the ground. It includes new snow and previous snow and ice that have not melted.
- A study, ‘Uneven global retreat of persistent mountain snow cover alongside mountain warming from ERA5-land, published in the journal Nature in November 2024 revealed that there had been a significant global mean decline of 7.79% in persistent snow cover between 1979 and 2022.
- In some regions, the elevation at which rainfall transitions to snowfall is shifting upwards due to atmospheric warming, the UNESCO report says. “Lower elevations and warmer climates are therefore undergoing greater decreases in snow cover depth and duration,” the report added.
- Mountains, which cover 33 million sq km of the Earth’s surface, are crucial for sustaining life on the planet. For instance, around 2 billion people downstream depend on mountains for freshwater resources from melting glaciers. If climate change-induced glacier melting continues at the current rate, it can have catastrophic impacts on these people.
- Glacier melting and permafrost thaw also increase the risk of glacial lake outburst floods (GLOFs). GLOFs are sudden and catastrophic floods caused by the failure of natural dams, usually formed by glacial moraines or ice, which contain glacial lakes. The report noted that these floods “alone have resulted in more than 12,000 deaths in the past 200 years, and have caused severe damage to farmland, homes, bridges, roads, hydropower plants... often prompting further internal displacement”.
- According to WGMS, melted ice of glaciers accounts for 25 to 30% of the currently observed increase in global sea levels. Between 2006 and 2016, the global mass loss of glacier ice amounted to 335 billion tonnes of lost ice per year, which corresponded to an increase in sea levels of almost 1 mm per year. Every millimetre can expose up to 300,000 people to annual flooding, WGMS said.





## NEW BEDMAP OF ANTARCTICA PEELS BACK ICE TO REVEAL BEDROCK IN STUNNING DETAIL

In a new attempt to understand the geography of icy Antarctica, scientists have prepared the most comprehensive map yet of the landscape below the continent's ice sheet. Called Bedmap3, the dataset is an extension of the previous Bedmap2, and includes data from 84 new aero-geophysical surveys from 15 data sources, 52 million more data points, and 1.9 million line-km of measurement.

Bedmap3 covers major gaps in how scientists previously understood the Antarctic ground, including information on major mountain ranges and the deep interior of East Antarctica, along West Antarctic coastlines and the Antarctic Peninsula.

It gives us a picture of what the icy continent is like without the 27 million cubic km of ice that covers it.

"Combined with updated maps of surface topography, ice shelf thickness, rock outcrops and bathymetry, Bedmap3 reveals in much greater detail the subglacial landscape and distribution of Antarctica's ice, providing new opportunities to interpret continental-scale landscape evolution and to model the past and future evolution of the Antarctic ice sheets," according to a statement accompanying the data release.

Among some of the more important discoveries made using Bedmap3 is the thickest ice on the continent.

Scientists previously believed that this was at a location in the Astrolabe Basin, in Adélie Land. But according to Bedmap3, the ice in an uninhabited canyon at 76.052° S and 118.378° E in Wilkes Land is the thickest, at 4.7 km.

This is more than half the height of Mount Everest, the tallest mountain on the surface of the earth. The average thickness of Antarctic ice, including ice shelves, is 1.9 km.

## HEALTH BENEFITS OF JACKFRUIT

If the mango is described as the king of fruits, then the jackfruit will be the doctor of all fruits. Jackfruit (*Artocarpus heterophyllus*) is a plant known in India and the Middle East for a long time and has been used in Ayurveda and Unani systems of medicine as a health aid. Known as 'kathal' in Hindi, 'palaas' in Tamil, 'kanthal' in Bengali, and 'chakka' in Malayalam, the plant and its parts are used in cooking in Southern and Northeastern States of India, while it is eaten more as a fruit elsewhere. It is abundant in Southeast Asian countries such as Malaysia, from where it is exported to the Middle East.

The jackfruit tree is large, and the fruit does not hang down from branches but grows directly from the trunk and limbs. This helps it to grow to enormous sizes, the record being a 42 kg specimen from Kerala. The ripe fruit is sweet and tasty. Unripe jackfruit has many culinary uses. It is even used as a substitute for meat, since it has lower fat and cholesterol levels, and tastes just as good as meat! Jackfruit biryani is a tasty vegetarian alternative, as is jackfruit curry.

The tree has many other uses. Southeast Asian monks wear robes dyed with jackfruit bark for a radiant, sunlit yellow that is reminiscent of honey. This colour also imbues a pleasing texture to furniture made from jackfruit wood, which is hardy and termite resistant.



### A superfood

But it is as a superfood that the jackfruit has been gaining global popularity. A comprehensive review from Cleveland University, U.S. points out that jackfruit is rich in proteins, vitamins, minerals and plant-based chemicals, and elements such as potassium, magnesium, and phosphorus. In Duke University's site, scientist Brianna Elliott highlights the nutritional benefits of jackfruit. She points out that sliced jackfruit is nutritionally superior to apples and mangoes. Quoting several references, she points out that the fruit controls blood sugar levels, reduces the fat deposited from the liver to other organs, and the carotenoids in it reduce the risk of type 2 diabetes and heart diseases. Vitamins A and C in it lower the risk of viral infections.

Jackfruit is thus a desirable addition to our daily food, both for diabetics and otherwise healthy individuals, either as the fruit or its powder. Let us have it either way and keep well!

### STUDY PROVIDES CLUES TO WHY WE FAIL TO REMEMBER BEING A BABY

Challenging assumptions about infant memory, a novel functional magnetic resonance imaging (fMRI) study shows that babies as young as 12 months old can encode memories, researchers report in a study published in *Science*. The findings suggest that infantile amnesia—the inability to remember our first few years of life—is more likely caused by memory retrieval failures rather than an inability to form memories in the first place.

Despite infancy being a period of rapid learning, memories from this time do not persist into later childhood or adulthood. In general, humans cannot recall events from the first three years of life. Why grown humans have a years-long blind spot in their episodic memory for the period of infancy remains a puzzle. One theory suggests this occurs because the hippocampus, a brain region crucial for episodic memory, is not fully developed during infancy.

#### 'Remains unclear'

In humans, infants demonstrate memory through behaviours such as conditioned responses, imitation, and recognition of familiar stimuli. However, whether these abilities rely on the hippocampus or other brain structures remains unclear. In a study using fMRI to scan the brains of infants aged about four to 25 months while performing a memory task, Tristan Yates from Columbia University, New York, and colleagues aimed to determine whether the hippocampus in infants can encode individual memories.

The memory task, adapted from a well-established method for adults, involved showing images to infants—faces, scenes, and objects—followed by a memory test based on preferential looking, all while undergoing neuroimaging. As per a release, the researchers show that the infant hippocampus has the capacity to encode memories of individual experiences beginning around one year of age, providing evidence that the capacity to form individual memories develops during infancy.

According to the authors, the presence of encoding mechanisms for episodic memory during infancy—despite their ephemeral nature – suggests that infantile amnesia is more likely due to failures in memory retrieval mechanisms.



## WHY DO PEOPLE GET TATTOOS? STUDY OF TWINS SAYS IT'S NURTURE, NOT NATURE

Why do some individuals get tattooed while others don't? Is it because of differences in their genes?

Researchers from the University of Southern Denmark in Odense recently addressed these questions. Their findings, reported in February in the journal *Behaviour Genetics*, showed that differences in an individual's propensity to get tattooed were not due to nature but because of nurture.

'Nature' here refers to an intrinsic, genetically-determined predisposition that affects one's behaviour. 'Nurture' denotes extrinsic factors such as one's education, culture, family, and peers.

A tattoo is an indelible design registered on the skin by injecting inks and dyes into a skin layer called the dermis. There, the pigment particles become engulfed and subsequently kept in place by cells of the body's immune system, making them permanent.

In 1991, hikers stumbled on the naturally mummified remains of a man since named Ötzi the Iceman in northern Italy. Scientists found that he lived more than 5,000 years ago and had tattoos. Today, many sports and entertainment celebrities also sport tattoos — as do their fans, and indeed anyone who wishes to bear symbols they consider important or significant to themselves on their person.

Since adding any foreign substance to one's body is a health risk from a medical viewpoint, studying the long-term effects of tattooing on public health has been an important research focus.

### Sorting nature from nurture

If two offspring are born from the same pregnancy, they are called twins. The offspring can be genetically identical or non-identical. Identical twins share all of their genes while non-identical twins share on average only 50% of their genes.

After the father's sperm fertilises the mother's egg, the unified cell that is formed is called the zygote. The zygote then develops into an embryo that in turn grows into the baby.

Sometimes two sperm can simultaneously fertilise two eggs to produce two zygotes, and the zygotes can go on to form non-identical twins. On the other hand, identical twins are formed when an embryo from a single zygote splits at an early stage to become two embryos, and each then grows to become a baby.

For this reason, identical twins are also known as monozygotic twins and non-identical twins are called dizygotic twins. Monozygotic twins are always of the same biological sex, whereas dizygotic twins — like any other pair of siblings — can be either of the same or of different sexes.

If both members of a twin pair sport a tattoo, they are further said to be concordant. They are also concordant if both don't. But if one twin has a tattoo and the other doesn't, they are said to be discordant.

The researchers behind the new study were curious as to whether there was a 'greater' concordance at work in monozygotic twins than in dizygotic twins of the same sex. Their search came up empty, i.e. there was no greater concordance, even despite the fact that monozygotic twins share twice as many genes as dizygotic ones.



The finding suggested that genetic differences have little, if anything, to do with an individual wanting to get tattooed.

#### **More concordance for some defects**

In 2021, researchers from the Seoul National University College of Medicine in South Korea reported in the journal BJOG the concordance rates for several different birth defects found in 3,386 monozygotic and dizygotic twin pairs born between 2001 and 2019.

Birth defects affecting the nervous system, the circulatory system, cleft lip/palate, and the urinary system were found to be significantly more concordant in monozygotic than in dizygotic twins. The implication was that aberrant biological development in these systems is primarily due to one's genes.

On the other hand, the concordance rates did not significantly differ for malformations of the eye, ear, face or neck, the genital organs, and the musculoskeletal system, meaning that for these disorders, extrinsic aspects of the uterine environment, such as maternal nutrition, physiology, smoking, and infections, played a more significant role.

The researchers ended their paper writing: "we have shown empirically that tattooing ... is a cultural phenomenon with little to no evidence for genetic influences."

#### **NO MISMATCH BETWEEN CIRCULATING FLU STRAINS AND VACCINE STRAINS**

On March 7 and March 8, several newspapers reported a surge in influenza (flu) cases in the Delhi-NCR region, with some mentioning the "spike" as over 54%. The source of this news was a local survey (Local Circle) of over 13,000 people in the Delhi-NCR region. While the estimate was not based on clinical testing but on common viral fever symptoms, and the press release had only mentioned "viral illnesses (Covid/flu/viral fever)", newspaper reports attributed the "spike in cases" to influenza.

According to NCDC's Integrated Disease Surveillance Programme (IDSP) data posted on February 27, 2025, there were 516 influenza cases and six deaths in January this year. The number of flu cases across India for all of 2024 was 20,414 with 347 deaths. It is difficult to say if the cases reported in January this year are higher than in the same month last year as IDSP does not provide segregated monthly data. Compared with IDSP, the U.S. CDC provides a weekly influenza surveillance report.

While influenza infection does occur year-round in India, it peaks during monsoon season with a secondary peak during winter. As per a May 2023 Viewpoint in the Indian Journal of Medical Research, influenza causes "substantial disease and deaths" every year in India. Acute respiratory infection (ARI) surveillance between 2016 and 2018 by six centres spread across India found 15.4% of cases were influenza, whereas 12.7% of severe acute respiratory infection (SARI) cases were influenza. Estimating the number of flu deaths is a challenge as "routine testing for influenza is not done in clinical settings and influenza is rarely certified as a cause of death".

By modelling 'excess' deaths using death data from the Sample Registration System and virological data from the influenza surveillance network of 10 labs across eight States from 2010-2013, a June 2020 paper estimated a mean of 1,27,092 influenza-associated respiratory and circulatory deaths per year in India.





Estimated flu-associated deaths were high among adults over 65 years and children under five years. Yet, according to the May 2018 guidelines for influenza vaccination issued by the Health Ministry, influenza vaccine is only considered “desirable” for people older than 65 years and children below five years.

WHO recommends that influenza strains be used in the vaccine for the coming flu seasons months in advance based on the strains that are currently circulating. On February 28, 2025, WHO announced the recommendations for influenza vaccine composition for the 2025-2026 northern hemisphere influenza season. The recommendations made months before the next flu season give the manufacturers sufficient time to make vaccines. Though there are a few ways to make flu vaccines, including cell-based and recombinant vaccines, the most common method is to use chicken eggs to grow the virus strains. Egg-based vaccine production takes months to finish. Serum Institute’s influenza vaccine is egg-based, while Sanofi makes both egg-based and recombinant vaccines.

While in most cases the strains used in influenza vaccines match with the strains that circulate in the following season, at times the match is not perfect leading to reduced vaccine effectiveness. “When vaccines are introduced, they represent strains identified from the previous year’s circulating viruses. While seasonal mismatches between WHO-declared strains and actual circulating strains can occur, no such mismatch has been reported this time. Currently, the circulating strain in north India is expected to align with the WHO-identified strains for the region,” Dr Rajeev Dhere, Senior Scientific Advisor, Serum Institute tells The Hindu.

As of February 15, 2025, for the 2024-25 season, an estimated 57 million doses of flu vaccine were administered to adults in the U.S., and as of March 1, 2025, nearly 47% of children received a flu vaccine. Influenza vaccine uptake in India has been historically low. It has not increased significantly despite some of the worst flu outbreaks in recent years — 2015 recorded the most number of cases (42,592) and 2,990 deaths in India. Though not at the same scale, there have been large flu outbreaks since 2015 — in 2017 there were 38,811 cases and 2,270 deaths, 28,798 cases and 1,218 deaths in 2019, and 20,414 cases and 347 deaths in 2024. Influenza vaccine is not part of India’s universal immunisation programme.

As per the Health Ministry guidelines, healthcare workers “should be vaccinated”. The vaccine is “recommended” for pregnant women, children and adults with chronic illnesses, while it is “desirable” for adults older than 65 years and children under five years despite the high mortality in the two extreme age groups. A 2022 study found that only 1.5% of adults aged 45 years or older were ever vaccinated for influenza.

“Influenza vaccine uptake in India remains low (less than 5%). While the market has shown significant year-on-year growth, overall coverage remains inadequate due to low public awareness and the absence of widespread programmes. We have observed an increased uptake of flu vaccines in India with the market growing by 21% in 2025 vs 2024,” says a Sanofi spokesperson. Serum manufactures 3,00,000-4,00,000 doses and can scale up to over a million depending on the demand, Dr. Dhere says.

#### WHAT ARE DNA POLYMORPHISMS AND HOW DO THEY DIFFERENTIATE BETWEEN PEOPLE?

Just like the government uses an Aadhaar number to uniquely identify an individual for social security purposes, a person’s DNA fingerprint can be used for biological purposes. This is why



DNA analysis is such a big deal. Today, it is most often (but not exclusively) used together with technologies like PCR, capillary electrophoresis, and fingerprinting.

### What is DNA?

Each of an individual's cells — in one's skin, blood, teeth, bone, etc. — contain 46 DNA molecules. One set of 23 is inherited via sperm from the father and the other 23 via the egg from the mother. Sperm and egg cells are exceptional because they have only one copy of the genome each, not two. These facts underpin the generation and use of DNA fingerprints to identify individuals and their relatives.

The DNA is packed inside chromosomes. For example, chromosome no. 3 contains 6.5% of the total DNA in each cell. The chromosome 3 from the father contains DNA that is largely similar to that derived from the mother. The few parts that are different are called polymorphisms.

DNA polymorphisms can be used to differentiate one person from another. They can also tell us whether a paternal chromosome no. 3 came from the father's mother or father, and likewise for a maternal chromosome no. 3. That is, polymorphisms make the tracing of ancestry possible. DNA profiles are typically generated using polymorphisms in parts of the DNA called short tandem repeats (STRs).

### What are STRs?

DNA has two strands. Each strand is a sequence of four chemical bases: adenine (A), cytosine (C), guanine (G), and thymine (T). The strands are anti-parallel and complementary. 'Anti-parallel' means the strands run in opposite directions. 'Complementary' means the As and Cs of one strand bond with Ts and Gs on the other. When a cell divides and needs to make a copy of its DNA, it pulls the strands apart and makes a new complementary strand for each one: As on one strand get Cs on the other and Ts get Gs. Thus, the daughter DNA has the same sequence of bases. In rare cases, the cell will make a mistake and insert the wrong base. This is called a mutation. In general, mutations occur less than once per billion base-pairs per generation.

An STR is a short sequence of base-pairs on the DNA that is repeated some number of times, such as GATCGATCGATCGATC (on the complementary strand, this STR will have the sequence CTAGCTAGCTAGCTAG). STRs are often polymorphic. Unrelated individuals almost certainly have different numbers of repeat units in at least some STRs.

### How do we make copies of DNA?

Scientists need to make many copies of the DNA present in particular STRs to make studying them easier. They use a laboratory procedure called Polymerase Chain Reaction (PCR) to make copies of a particular stretch of DNA (up to 5,000 base-pairs). Even if they have a very small amount of DNA to begin with, PCR can make millions of copies in a short span of time.

First, scientists extract some genetic material from tissue that contains the DNA of interest. They heat it to about 95° C for 25 seconds to split the strands apart. Second, they introduce multiple molecules into the sample. The first is the primer, a short single-stranded piece of DNA that binds to a single strand: As and Ts on the primer bind with Ts and As in the strand and Cs and Gs with the Gs and Cs. The sequence of bases on the primer is configured so that it binds to the portion of interest on the DNA. The temperature in this phase is lowered to around 60° C.



Next, another molecule called DNA polymerase enters the reaction. It holds the bound primer, like for grip, and synthesises the rest of it according to the complementary bases on the strand.

To help, scientists add more bases into the sample. If a polymerase called Taq polymerase is used, the temperature is held at around 72° C. In these three steps, called one cycle, a new copy of the DNA segment is ready. If there is only one starting copy and each cycle operates with 100% efficiency, making a million copies of the segment will take about 50 minutes. The device that performs these steps is called a thermocycler.

#### **What is a DNA fingerprint?**

New copies of DNA can be made to move through a capillary under the influence of an electric field. The smaller ones move faster. This technique is called capillary electrophoresis. Multiple STRs can simultaneously be sized in the same test. The sizes of the various paternal/maternal variants of the different STRs are compiled in a table. This table is unique to each individual and is called their DNA fingerprint (only monozygotic twins have the same DNA fingerprints).

This fingerprint can be established using DNA from teeth, bones, blood (a drop is enough), spit, semen, skin cells, etc.

DNA fingerprints can establish parent/child relationships and help identify individuals from their mortal remains at disaster sites. DNA from blood stains, sweat, and spit from cloth or soil, retrieved from crime scenes, can be used to identify suspects. Experts also use them to identify or exclude potential donors during organ donation.

DNA is very stable. Scientists have extracted it almost intact from 65,000-year-old human remains preserved only by desiccation or cold. Many 'cold cases' have been solved by examining new profiles made from DNA extracted from crime scene materials in the archives. DNA fingerprints have also exonerated wrongly accused convicts.

### **SEQUENCING OF 10,000 TB GENOME SAMPLES COMPLETED**

The Department of Biotechnology, under the Ministry of Science and Technology, has completed the genomic sequencing of a third, or 10,000 samples, of the target of 32,500 samples of *Mycobacterium tuberculosis* — the bacterium behind tuberculosis (TB) — in a bid to improve the understanding of drug-resistant TB and capture unique genomic features of the bacterium in India.

Of the sequenced samples, 7% are said to be resistant to a single drug. The preliminary numbers were reported at an event organised by the DBT on Monday to mark World TB Day.

The genome sequencing initiative, part of Data-Driven Research to Eradicate TB (Dare2eraD TB), an umbrella programme of the DBT, was launched in 2022 with a goal to sequence about 32,500 samples from across the country. It is tied to the Centre's broader mission to eliminate TB. Nine labs of the DBT, the Council of Scientific and Industrial Research (CSIR) and the Indian Council of Medical Research (ICMR) are involved in the programme as part of a consortium called Indian Tuberculosis Genomic Surveillance. Officials said they expected all the samples to be sequenced by October 2025.

Prime Minister Narendra Modi, in 2018, at the End TB Summit, claimed that India would "eradicate" tuberculosis in the country by 2025. This, he underlined, would be five years ahead of



the World Health Organization's (WHO) target of 2030. India has the highest number of diagnosed TB cases and therefore is critical to eliminating the millennia-old disease.

In WHO parlance, 'eradicating' a disease means bringing the number of cases close to zero. "Eliminating TB," the WHO says, means getting the number down to about one in a million. As per the latest estimates, India has 1,990 cases per million in 2022, down from 2,370 per million in 2015.

India accounts for about 28% of new TB cases worldwide. This again, refers to those who have been clinically confirmed to have TB, and those with 'latent' TB could be potentially up to 3,000 per million, Dr. Soumya Swaminathan, former head of the Indian Council of Medical Research (ICMR) and advisor to the Health Ministry on tuberculosis, told The Hindu last August. Having a large pool of those asymptomatic with TB means they will continue to spread the disease.

### Major challenge

Another major challenge is the prevalence of drug-resistant TB.

Of the 10,000 samples sequenced as part of the DBT project, 7% were reportedly resistant to a single drug, according to a presentation made on Thursday by scientists at the National Institute of Immunology (NII).

"Better understanding of multi-drug resistant tuberculosis along with careful use of AI means you can make tests that will reduce the time taken to confirm TB from three weeks to one week," said Debasisa Mohanty, Director, NII.

In the dataset, most of the those with TB spanned 18-45 years of age. A significant number of them were diabetic and underweight.

## ACCESS TO ABORTION, FOETAL VIABILITY, AND LAWS THEREOF: WOMEN ARE CAUGHT IN THE CROSSFIRE

As people on the inside, we have heard, too often to ignore, doctors bemoan abortions — having to perform them, counselling women who approach them, the very concept of it. Not all, but enough of us would say, "They're basically making us commit murder," in a dozen different ways, each more or less as unempathetic.

The image seared into memory from medical school is of a woman in tears, undergoing a procedure with minimal sedation to undergo an abortion at 14 weeks, as the service provider, a consultant, kept muttering under her breath, 'making me a culprit in her crime, and now she has tears?' These statements, it seems, grow stronger, and more vitriolic, the later the abortion is scheduled. It seems that the more advanced the gestation is, the stronger are these ethical pangs.

In the debate over abortion rights, few concepts are as legally and ethically contentious as foetal viability — the point at which a foetus can survive outside the womb. The problem is that there is no single, definitive moment when viability occurs. Though several different definitions of foetal viability have existed, it is safe to say that the foetus' right to life grows stronger as the period of the pregnancy progresses. However, this vagueness of viability lends itself to legal and ethical arguments surrounding abortions across the world.

India can consider itself somewhat lucky. In the same year that the U.S. Supreme Court overturned Roe v. Wade and set abortion rights back by half a century, the Indian top court delivered a

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





momentous judgment. It noted that single “unmarried” women, who often struggle to access abortion care, are naturally granted reproductive choice as part of their personal liberty. These rulings are generally praised for giving women bodily autonomy for abortions — amended from 20 weeks up to 24 weeks in 2021.

### **Medicolegal barriers**

What happens after 24 weeks? That’s where the question of foetal viability enters, and the ethical argument surrounding abortions heat up. The most recent amendment to The Medical Termination of Pregnancy Act, 1971 (MTP Act) allows abortions to be conducted by one registered medical practitioner (RMP) until 20 weeks, and two RMPs up to 24 weeks of pregnancy. From 24 to 30 weeks of pregnancy, all abortions must be reviewed by a medical board.

Medical boards are governed by strict laws. They can only approve cases where the foetus has abnormalities that are incompatible with life, or if continuing the pregnancy would significantly harm the pregnant person’s health. “Even if a foetus has some serious illness but can be medically managed with available facilities, even if the life expectancy is limited in a foetus with thalassemia, we do not recommend [an abortion],” Jyoti Bunglowalla, an obstetrician in Indore, says. This reflects the general medical doctrine, where the sanctity of life outweighs the quality of life.

“Late-term abortions are mostly in cases of assault, especially cases of minors, where the victim doesn’t really come out about the pregnancy until it is at an advanced stage,” Dr. Bunglowalla says. “We have to remember that these are not common cases. We have great legislations protecting both women and doctors for abortions up to 20 weeks.”

The decision-making process for these abortions is on a case-by-case basis, and guided by the Medical Board. Their decisions can be appealed in a court of law, and here, the subjectivity of law deepens even more.

### **Stopping the heart beat**

In 2023, a 27-year-old mother of two did not discover her pregnancy until almost 25 weeks. This was due to lactational amenorrhoea a condition where breastfeeding mothers do not resume their menstrual cycles. Her previous pregnancy a year back, had led her to develop postpartum depression and psychosis, which was being managed on medication. With a breastfeeding infant and a serious mental health condition, she sought an MTP, and a medical board was set up. While the MTP was initially allowed, a member of the board emailed the court. At this late stage, they stated, they would either have to deliver a preterm baby who would need intensive care, or would have to stop the heartbeat to complete the abortion. This email was sent five days after the MTP had been allowed, and the petitioner was now 26 weeks pregnant.

Despite the fact that “stopping the heartbeat” is a routine procedure in late-term abortions for foetuses with congenital anomalies, this case was dependent on morality. The woman was asked if she would want to “stop the heartbeat”, without considering the moral and emotional burden it placed on her. No, she said, but she was resolute in not wanting the child either. The court ruled for her to continue the pregnancy.

Others have been denied late-term abortions since then. The law accedes to women their reproductive choice, but it may also favour the unborn child’s right to live — as long as they do not show any obvious congenital anomalies. This, despite the fact that most of these judgments



state that the foetus would almost certainly suffer harm if the pregnancy were to be terminated at that point.

"While it is possible to resuscitate and manage a 24 weeker in a state-of-the art private facility, it is rare," Shruti Kashyap, a paediatrician, says. "When you think of Indian set-ups, with the scarcity of resources, maybe a 26 week [foetus] can be managed, given the best possible care." The 24-week limit is based on the theoretical concept of viability. So what happens as medical advancements allow us to resuscitate foetuses at an even earlier period? Will abortion rights be based on neonatal medicine developments?

#### **A question of ethics**

Philosophically speaking, one could argue for or against the rights of the foetus, depending on one's own beliefs. Ethics in medicine are led by the premise of *primum non nocere* or 'first, do no harm'. This, arguably, should prioritise the rights of the pregnant person, and the harm that she may incur. "Now the problem [beyond 24 weeks] is that even if one terminates the pregnancy, they'll have a premature delivery. The news makes it sound like doctors are denying abortions. At that point we have to consider both the foetus and the mother's life. Even the case of the 14-year-old [who approached the court] at 30 weeks — her abortion was not carried out because there was a high risk to her life if the abortion is carried out at that stage. If there is any risk, how can one conscientiously agree [to provide an abortion]?"

However, cases like the 2023 judgement show that the courts can, and do, prioritise foetal life over the mother's mental and physical health. Late term abortions are not requested commonly— and this case may have set a precedent, showing that women can be compelled to carry pregnancies, even if they vouch that the pregnancy is unwanted and dangerous to their well-being.

Studies have consistently shown that most women do not believe that abortion is a method of family planning, and a majority believe it is a sin. Given this context, it can be surmised that abortion is often a last measure, not a first choice. Why, then, does the general opinion among providers seem to paint all women as ignorant beneficiaries?

#### **Exception to the law**

One must remember that the MTP Act doesn't provide abortions on request. It is an exception to the law against abortions, to protect providers from the Indian Penal Code in very specific cases. This means that doctors often seek to protect themselves. "When providers attend to an unmarried person seeking an MTP, they ask for consent — but this is usually because they want to protect themselves against lawsuits," Sita Srinivasan, a gynaecologist practising in Assam, says.

### **INCLUSIVE RESEARCH: BRINGING PATIENTS INTO THE FOLD**

Imagine you're at the doctor's office, discussing your latest test results or asking about a symptom that just doesn't seem to go away. The conversation moves from questions about your medical history and lifestyle to treatment options and next steps. But have you ever considered that your experiences could shape the research that led to those treatments? Most people don't. It's easy to picture patients interacting with doctors, but we don't usually think of them talking to a scientist. Yet, a global shift is underway; one that's bringing patients into the heart of research. This is Public and Patient Involvement and Engagement (PPIE), and it's transforming how research is done. Traditionally, medical research has been a top-down affair. Scientists define the problem, design the study, and analyse results, often with little to no input from the people the research is



ultimately meant to benefit. This can lead to studies that are scientifically rigorous but disconnected from real-world healthcare needs. PPIE challenges this status quo, by inviting patients, caregivers, and the public to be active partners in the research process.

#### **‘With’ the public**

Involve, U.K.’s National Institute for Health Research advisory group, defines PPIE as research carried out “with” or “by” the public, rather than “to,” “about” or “for” them. This involvement can take many forms: identifying research priorities based on lived experiences, helping design patient-friendly studies, ensuring findings translate into practical healthcare improvements, and improving communication between researchers and the public.

A key distinction must be made here: PPIE is not the same as simply taking patient feedback. It involves deep and genuine collaboration, where patients help make research decisions alongside scientists and clinicians. This model has been endorsed by healthcare systems across Europe and North America, with research organisations increasingly requiring PPIE in grant proposals. And it is no longer just a well-intended ideal — researchers are finding that when patients are involved from the start, the impact is real and measurable. Rachael Lawson, who is a senior lecturer & PPIE Lead at the Newcastle NIHR Biomedical Research Centre in England, talks about the impact of PPIE. In a 2024 review on early implementation of allied health therapies in the early stages of Parkinson’s disease to help slow the progression of symptoms, a patient co-authored the paper, providing insights that researchers might have missed. This highlights a crucial aspect of PPIE: incorporating the invaluable perspective of lived experience. She describes the efforts researchers make to ensure that interest in PPIE continues to thrive. “There is no “one-size-fits-all” solution. We tailor our programmes to the specific needs of participants. I have helped set up a regional interest group for patients with dementia and Parkinson’s and their caregivers.” Researchers visit members of these groups every month to build trust and instil a sense of community. “Some patients who are elderly or have cognitive impairments need our support. Often, we’ll send out team members to local participants armed with dictaphones and iPads to take interviews and collect data,” she says.

#### **Patients as partners**

A study by Lindsay H. Dewa and her team at Imperial College, London explored the benefits of involving young people with mental health challenges as co-researchers on a study about using technology to detect mental health deterioration. They helped design interview questions, analyse data, and present findings at conferences, demonstrating how co-production can lead to deeper insights and empower participants. Similarly, researchers at Cancer Research U.K., consulted focus groups of women at risk for breast cancer relapse, who helped design a clinical trial and recruit participants, prepare funding applications and develop patient-facing materials. In this way, the patients were partners, and not subjects of research.

Charities play a pivotal role in ensuring that patient voices shape research. Lesley Booth, the PPIEP Lead at MQ, U.K.’s leading mental health research charity, says: “While funding applications can include PPIE costs, the actual funds are often limited. This creates barriers to involvement since researchers may not have the means to compensate them. Charities like MQ step in to bridge this gap.” Their 10-year impact study revealed that a staggering 96% of researchers who included PPIE had reported improvements in their work.



### Where does India stand?

As PPIE becomes a global standard, India stands at a critical juncture. With strong evidence supporting its benefits and charities like MQ, Wellcome Trust, and McPin Foundation providing resources, both Indian scientists and patients have much to gain. India's expanding healthcare sector, digital innovations, and growing patient advocacy create a unique opportunity to integrate patient voices into research.

Shyam Sundar Arumugham, a psychiatrist at NIMHANS, is one of the few researchers in India welcoming this shift. His work includes patients as co-investigators, using their insights to refine research questions and design. This integration includes plans for a Lived Experience Expert panel and showcases a growing commitment to PPIE.



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