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GS Paper 1: History	21 April 2026
TOPICS COVERED	
21A	Adi Sankara: guiding light आदि शंकर: मार्गदर्शक प्रकाश

Jumbo power

Friendly fight: Elephants, guided by their mahouts, take part in a traditional contest during the Suwori festival at Boko in Kamrup district of Assam on Monday. The festival coincides with Rongali Bihu and is celebrated across communities in Boko, a cultural crossroads. PTI

Friendly fight: Elephants, guided by their mahouts, take part in a traditional contest during the Suwori festival at Boko in Kamrup district of Assam on Monday. The festival coincides with **Rongali Bihu** and is celebrated across communities in Boko, a cultural crossroads

Reformer remembered

Folk artists perform during a procession held as part of **Basava Jayanthi celebrations** in Shivamogga, Karnataka, on Monday. The birth

anniversary celebrations of the social reformer was marked by messages of uplift of the downtrodden sections of society

Folk artists perform during a procession held as part of Basava Jayanthi celebrations in Shivamogga, Karnataka, on Monday. The birth anniversary celebrations of the social reformer was marked by messages of uplift of the downtrodden sections of society. S.K. DINESH

FAITH

GS I: History: A&C

Adi Sankara: guiding light

Adi Sankara, rated as one of the top philosophers, who propounded the Advaita philosophy (Paramatma and Jivatma are one and the material world is nothing but maya or illusion), is unparalleled and continues to remain relevant. Devotees may attribute various forms to Paramatma, but He is One. An ordinary devotee can gain true insight of the above philosophy only through jnana, said B. Damodhara Deekshithar. This in itself is complete only when the devotee gets the blessings of a guru.

One may think that one can gain jnana from perusing books or through experiences; however, unless one gains the grace of a guru, such jnana is incomplete. One can gain the guru's grace in any of the three ways: through touch, through guru's eyes falling on one and remaining for a few minutes on one, and through the mind of a guru focusing on a devotee's mind from afar. A bird always sits on its egg (touch), nourishing it. When the mother fish turns and looks at its new hatchlings, it is enough to satiate their hunger. When Dhruv set out to the forest for tapas, in order to become the leader of the universe, he came across Narada, who gently placed his head on the young lad's head: Dhruv gained jnana. As an eight-year old, Adi Sankara himself went in search of a guru on embracing sanyasa on receiving his mother's permission. He travelled to Omkareshwar and received initiation from Govinda Bhagavatpada.

Devotees ask if one should seek a guru or acharya. A guru is one who dispels agnana while an acharya is one who shows the disciple the right path. Adi Sankara was both guru and acharya, and therefore unparalleled.

21A. Adi Sankara: guiding light
आदि शंकर: मार्गदर्शक प्रकाश

- **Adi Sankara**, rated as one of the top **philosophers**, who propounded the **Advaita philosophy** (Paramatma and Jivatma are one and the material world is nothing but **maya** or illusion), is unparalleled and continues to remain relevant.

आदि शंकर, जिन्हें शीर्ष **दार्शनिकों** में गिना जाता है, जिन्होंने **अद्वैत दर्शन** (परमात्मा और जीवात्मा एक हैं और भौतिक संसार केवल **माया** या भ्रम है) का प्रतिपादन किया, अतुलनीय हैं और आज भी प्रासंगिक बने हुए हैं।

- Devotees may attribute various forms to **Paramatma**, but He is One.

भक्त **परमात्मा** को विभिन्न रूप दे सकते हैं, लेकिन वह एक ही हैं।

- An ordinary devotee can gain true insight of the above philosophy only through **jnana**, said **B. Damodhara Deekshithar**.

एक सामान्य भक्त इस दर्शन की सच्ची समझ केवल **ज्ञान** के माध्यम से ही प्राप्त कर सकता है, ऐसा **बी. दामोधर दीक्षितर** ने कहा।

- This in itself is complete only when the devotee gets the **blessings of a guru**.

यह तभी पूर्ण होता है जब भक्त को **गुरु का आशीर्वाद** प्राप्त होता है।

- One may think that one can gain jnana from perusing **books** or through **experiences**; however, unless one gains the **grace of a guru**, such jnana is incomplete.

कोई यह सोच सकता है कि वह **पुस्तकों** या **अनुभवों** से ज्ञान प्राप्त कर सकता है; लेकिन जब तक **गुरु की कृपा** नहीं मिलती, ऐसा ज्ञान अधूरा रहता है।

- One can gain the guru's grace in any of the three ways: through **touch**, through guru's **eyes** falling on one and remaining for a few minutes on one, and through the **mind** of a guru focusing on a devotee's mind from afar.

गुरु की कृपा तीन तरीकों से प्राप्त की जा सकती है: **स्पर्श** से, गुरु की **दृष्टि** कुछ समय तक पड़ने से, और गुरु के **मन** का दूर से भक्त के मन पर केंद्रित होने से।

- A bird always sits on its egg (**touch**), nourishing it.

एक पक्षी अपने अंडे पर बैठता है (**स्पर्श**), जिससे वह उसे पोषण देता है।

- When the mother fish turns and looks at its new hatchlings, it is enough to satiate their hunger.
  जब मछली अपने नए बच्चों की ओर देखती है, तो वह उनकी भूख मिटाने के लिए पर्याप्त होता है।
- As an eight-year old, **Adi Sankara** himself went in search of a guru on embracing **sanyasa** on receiving his mother's permission.
  आठ वर्ष की आयु में, **आदि शंकर** ने अपनी माता की अनुमति से **संन्यास** लेकर गुरु की खोज में निकल पड़े।
- He travelled to **Omkareshwar** and received initiation from **Govinda Bhagavatpada**.
  वे **ओंकारेश्वर** गए और **गोविंद भगवत्पाद** से दीक्षा प्राप्त की।
- A guru is one who dispels **agnana** while an acharya is one who shows the disciple the **right path**.
  गुरु वह होता है जो **अज्ञान** को दूर करता है, जबकि आचार्य वह होता है जो शिष्य को **सही मार्ग** दिखाता है।

GS Paper II: Polity	21 April 2026
TOPICS COVERED	
21A	SC asks petitioner to move HC in BJP MLA contempt case सुप्रीम कोर्ट ने याचिकाकर्ता से भाजपा विधायक अवमानना मामले में हाई कोर्ट जाने को कहा

SC asks petitioner to move HC in BJP MLA contempt case

GS II: Polity

The Hindu Bureau
NEW DELHI

The Supreme Court on Monday asked a petitioner to move the Madhya Pradesh High Court to assist in criminal contempt proceedings initiated against BJP MLA Sanjay Satyendra Pathak, who is accused of attempting to contact a sitting High Court judge hearing an illegal mining case linked to the lawmaker.

A Bench headed by Chief Justice Surya Kant allowed Ashutosh Dixit to withdraw his petition in the apex court with liberty to approach the High Court.

Mr. Dixit had filed a complaint with the State Economic Offences Wing in Bhopal last year alleging that the family-owned mining companies of Mr. Pathak, who represents Vijayraghavgarh Assembly Constituency, carried out extraction and production in quantities far exceeding the sanctioned limits, but failed to deposit the due government revenue.

He had subsequently moved the State High Court on the ground that the authorities were not acting on his complaints.

However, things took an unexpected turn when the judge hearing the case recused on the ground that the MLA had tried to contact him on the phone. The petitioner approached the apex court contending that the High Court, though it initiated contempt action, had not passed directions ensuring investigation.

21A. SC asks petitioner to move HC in BJP MLA contempt case

सुप्रीम कोर्ट ने याचिकाकर्ता से भाजपा विधायक अवमानना मामले में हाई कोर्ट जाने को कहा

- The **Supreme Court** on Monday asked a petitioner to move the **Madhya Pradesh High Court** to assist in criminal contempt proceedings initiated against **BJP MLA Sanjay Satyendra Pathak**, who is accused of attempting to contact a sitting High Court judge hearing an **illegal mining case** linked to the lawmaker.

सुप्रीम कोर्ट ने सोमवार को एक याचिकाकर्ता से कहा कि वह **मध्य प्रदेश हाई कोर्ट** जाए ताकि **भाजपा विधायक संजय सत्येंद्र पाठक** के खिलाफ शुरू की गई आपराधिक अवमानना कार्यवाही में सहायता कर सके, जिन पर एक **अवैध खनन मामले** की सुनवाई कर रहे हाई कोर्ट के जज से संपर्क करने का आरोप है।

GS Paper II: Governance	21 April 2026
TOPICS COVERED	
21A	Puzzle of missing urgency around learning सीखने के प्रति तात्कालिकता की कमी की पहेली

Puzzle of missing urgency around learning

GS II: Governance: Education

Jatin Goyal

Civil Servant of the DANICS cadre, presently posted in the UT of Dadra & Nagar Haveli and Daman & Diu

India, like many other developing countries, has been in the midst of a learning crisis, as evidenced by Annual Status of Education Reports (ASER), notwithstanding the marginal improvements seen in the last few years. Yet, the absence of learning outcomes, especially Foundational Literacy and Numeracy (FLN), has failed to generate urgency on the ground, despite policy backing and unprecedented funding.

Why does a crisis of such magnitude not result in immediate action? The answer may lie in a concept often overlooked in public policy: salience. Systems change not merely when policies are well-designed or resources are abundant, but when enough people recognise a problem, believe it matters, and act on it.

The necessity of salience

Vietnam provides a useful example. Researchers from the RISE Programme at the Blavatnik School of Government, Oxford, found that Vietnam outperformed far richer nations in learning outcomes despite having no significant advantage with respect to spending or infrastructure. The explanation was disarmingly simple yet profound: Vietnam improved learning outcomes because it wanted to. The 'wanting to' reflects salience – a shared recognition that learning matters. In India, this salience remains weak at the field level.

However, there is no dearth of policy intent. The National Education Policy, 2020 clearly identifies FLN as an urgent national priority, with the NIPUN Bharat Mission mobilising administrative machinery and financial resources. The Prime Minister himself has emphasised the importance of fluency in oral reading to enable children to transition from 'learning to read' to 'reading to learn'. Yet, this policy intent has not fully translated into field-level urgency. Across schools and communities, learning outcomes often remain secondary. Conversations in school management committees or parent-teacher meetings tend to focus on buildings, toilets, and teacher vacancies, rather than the fundamental question: can children read and understand a basic text?

Accepting that millions of children are in school but not learning is deeply unsettling for educators who have spent their careers expanding access and enrolment

Myriad factors

The gap can be explained by the following reasons. First, learning is inherently difficult to observe. Unlike a pothole or missing rations, poor learning is intangible. A child copying from the blackboard can create the illusion of learning. Further, the concept of oral reading fluency – where reading becomes effortless enough for cognitive effort to shift from decoding words to understanding meaning – is not widely understood. As a result, findings from surveys such as ASER, which show that many Grade 5 children cannot fluently read a Grade 2 text, often seem exaggerated and are dismissed.

Second, power asymmetries weaken accountability, particularly in the education sector. Children have no voice, and their parents may lack the tools to assess learning. Teachers and administrators, by contrast, occupy positions of greater authority and social capital. Decision-making and teacher accountability remain centralised, while local institutions have limited influence. The exit of the middle class from public schooling further reduces bottom-up pressure, a key determinant of salience in a system.

Third, the scale of the crisis is under-recognised. When a senior official was briefed by the author that fluent reading in Grade 5 had improved from 20% to 65% in the Union Territory of Dadra & Nagar Haveli and Daman & Diu, his first reaction was one of alarm: "What do you mean 35% of children still cannot read?" His reaction was valid but revealing. It shows how even well-intentioned actors may not grasp the scale of the crisis.

Fourth, there is a fundamental disconnect in how responsibility is perceived: schooling is seen as the state's responsibility, while learning is often implicitly seen as dependent on the child's ability or family support. This undermines the role of systemic factors such as pedagogy, teacher support, curriculum design, and accountability mechanisms that are critical to shaping outcomes.

Fifth, acknowledging the problem is difficult. Accepting that millions of children are in school but not learning is deeply unsettling for educators who have spent their careers expanding access and enrolment. For political actors, openly acknowledging the scale of the crisis carries political risks. Yet, this failure is not the result of any single political dispensation or bureaucratic actor, but of a long-standing systemic neglect of learning outcomes.

Finally, a sense of fatalism often prevails. When systems appear entrenched, it is easy to assume that change is unlikely. However, change is important and possible.

The way forward

Over the last two decades, large-scale assessments have moved learning outcomes to the centre of policy discourse. There is now growing evidence that improving foundational learning at scale is both possible and cost-effective, with approaches such as 'Teaching at the Right Level' and structured pedagogy demonstrating disproportionate gains across contexts. Importantly, salience can be built through personal experience by conducting village-level assessments. When parents or officials see first-hand that a child cannot read, the issue ceases to be abstract; it becomes immediate and impossible to ignore. The path forward lies in making learning visible, communicating the scale of the problem, and demonstrating that solutions exist. It also requires creating conditions where those responsible for delivery are compelled to act.

21A. Puzzle of missing urgency around learning
सीखने के प्रति तात्कालिकता की कमी की पहेली

- India, like many other developing countries, has been in the midst of a **learning crisis**, as evidenced by **Annual Status of Education Reports (ASER)**, notwithstanding the marginal improvements seen in the last few years.

भारत, कई अन्य विकासशील देशों की तरह, **शिक्षा संकट** के बीच रहा है, जैसा कि **एनुअल स्टेटस ऑफ एजुकेशन रिपोर्ट (ASER)** से स्पष्ट होता है, भले ही पिछले कुछ वर्षों में मामूली सुधार हुए हों।

- Yet, the absence of learning outcomes, especially **Foundational Literacy and Numeracy (FLN)**, has failed to generate urgency on the ground, despite policy backing and unprecedented funding.
  फिर भी, विशेष रूप से **मूलभूत साक्षरता और संख्यात्मकता (FLN)** के सीखने के परिणामों की कमी, नीति समर्थन और अभूतपूर्व वित्तपोषण के बावजूद, जमीनी स्तर पर तात्कालिकता पैदा करने में विफल रही है।
- Systems change not merely when policies are well-designed or resources are abundant, but when enough people recognise a problem, believe it matters, and act on it.
  प्रणालियाँ केवल अच्छी नीतियों या संसाधनों से नहीं बदलतीं, बल्कि तब बदलती हैं जब पर्याप्त लोग समस्या को पहचानते हैं, उसे महत्वपूर्ण मानते हैं और उस पर कार्य करते हैं।

The necessity of salience
प्रासंगिकता की आवश्यकता

- Vietnam provides a useful example.
  वियतनाम एक उपयोगी उदाहरण प्रस्तुत करता है।
- The explanation was simple: Vietnam improved learning outcomes because it wanted to.
  स्पष्टीकरण सरल था: वियतनाम ने सीखने के परिणामों में सुधार किया क्योंकि वह ऐसा चाहता था।
- The 'wanting to' reflects **salience** — a shared recognition that learning matters.
  यह 'चाहना' **प्रासंगिकता** को दर्शाता है — यह साझा समझ कि सीखना महत्वपूर्ण है।
- In India, this salience remains weak at the field level.
  भारत में यह प्रासंगिकता जमीनी स्तर पर कमजोर बनी हुई है।
- However, there is no dearth of policy intent.
  हालांकि, नीति के इरादे की कोई कमी नहीं है।
- The **National Education Policy, 2020** identifies **FLN** as an urgent national priority.
  राष्ट्रीय शिक्षा नीति, 2020 ने **FLN** को एक महत्वपूर्ण राष्ट्रीय प्राथमिकता के रूप में पहचाना है।
- The **NIPUN Bharat Mission** mobilises administrative machinery and financial resources.
  निपुण भारत मिशन प्रशासनिक तंत्र और वित्तीय संसाधनों को सक्रिय करता है।
- The Prime Minister has emphasised **oral reading fluency**.
  प्रधानमंत्री ने **मौखिक पढ़ने की प्रवाहशीलता** पर जोर दिया है।
- Acknowledging the crisis is difficult for educators and political actors.
  शिक्षकों और राजनीतिक व्यक्तियों के लिए इस संकट को स्वीकार करना कठिन है।
- A sense of **fatalism** often prevails.
  अक्सर **निराशावाद** हावी रहता है।

- Approaches like **Teaching at the Right Level** show significant gains.
  टीचिंग एट द राइट लेवल जैसे दृष्टिकोण महत्वपूर्ण सुधार दिखाते हैं।
- Salience can be built through **personal experience** and local assessments.
  प्रासंगिकता को **व्यक्तिगत अनुभव** और स्थानीय मूल्यांकन के माध्यम से बढ़ाया जा सकता है।

GS Paper II: Governance	21 April 2026
TOPICS COVERED	
21A	U.S. power, Latin American resistance अमेरिकी शक्ति, लैटिन अमेरिकी प्रतिरोध
21A	QUIZ: United Nations
21A	Tamil parties in Sri Lanka seek sustained Indian push to fulfil Indo-Lanka Accord

	श्रीलंका में तमिल दलों ने इंडो-लंका समझौते को लागू करने के लिए भारत से निरंतर प्रयास की मांग की
21A	India violating its obligations, says UN Rapporteur भारत अपने दायित्वों का उल्लंघन कर रहा है, संयुक्त राष्ट्र के रैपोर्टियर का कहना
21A	EU hosts peace conference on Gaza as it seeks greater sway in West Asia यूरोपीय संघ ने गाजा पर शांति सम्मेलन आयोजित किया, पश्चिम एशिया में अधिक प्रभाव की कोशिश

U.S. power, Latin American resistance

The U.S.'s increasingly aggressive and coercive approach in Latin America echoes earlier periods of intervention and gunboat diplomacy; this stance is likely to fuel a resurgence of anti-imperialist thinking and resistance across the region

GS II: IR [redacted]

WORLD INSIGHT

Tony Wood

In Latin America, as in other parts of the world, the second Donald Trump administration has adopted an increasingly aggressive policy.

From drone strikes on purported drug traffickers to increased tariffs on imports, and from the blockade on fuel shipments and threats of invasion in Cuba to the January 3 military incursion into Venezuela, the U.S.'s more coercive approach to its hemispheric neighbours evokes an earlier period of U.S. foreign policy.

Many commentators have found echoes of the 1989 capture of Panamanian leader Manuel Noriega in the kidnapping of Venezuelan President Nicolás Maduro. Others highlighted the longer history of U.S. interventions in Latin America, stretching back through the Cold War. That includes the Nixon administration's support for the 1973 coup against Salvador Allende in Chile or the CIA-sponsored removal of Guatemala's elected president, Jacobo Arbenz, in 1954.

Yet as a historian of early 20th-century Latin America, I believe the Trump administration's approach to Latin America more closely resembles an older pattern of U.S. policy. Between 1900 and the mid-1930s, U.S. forces intervened in one Latin American country after another. This practice was often justified by the Roosevelt Corollary, President Theodore Roosevelt's addition to the Monroe Doctrine. In cases of "chronic wrongdoing," Roosevelt said in 1904, the U.S. would find itself compelled to exercise an "international police power" in defence of U.S. interests.

But crucially, how Latin Americans responded to the U.S. exerting its dominance in the early 20th century may hold some lessons for the present day. One of the major side effects of the U.S.'s so-called gunboat diplomacy was an upsurge of resistance and anti-imperialist thinking in the region's political life.

In one voice: A protester carrying a sign reading 'Trump, Latin America is not yours,' as demonstrators oppose U.S. actions in Venezuela. FILE PHOTO

THE GIST

- The approach resembles an older pattern of U.S. policy, justified by the Roosevelt Corollary and the exercise of an "international police power".
- Across Latin America, movements from student organisations, labour unions, and leftist political parties put forward sharp critiques of U.S. power.
- Over time, deep divergences over strategy and principle pitted revolutionaries against democratic reformists, shaping politics in the region.

The roots of anti-imperialism

In the 30 years after Roosevelt asserted the U.S.'s right to intervene across the hemisphere, U.S. forces occupied Cuba three times — in 1906-09, 1912, and 1917-21. They also occupied Haiti from 1915 to 1934 and the Dominican Republic from 1916 to 1924. In Nicaragua, the U.S. deployed the Marines from 1912 to 1925 and then again from 1926 to 1933, waging a counterinsurgency in which it used aerial bombardment for the first time.

Across much of the region, then, this was a time when the U.S. was quick to resort to force, unburdened by any concerns for Latin American countries' sovereignty.

Yet this era of external intervention also coincided with a period of remarkable political ferment, which I describe in my recently published book, *Radical Sovereignty*.

In one place after another, from Buenos Aires to Mexico City and from Havana to Lima, movements sprang up that put forward sharp critiques of U.S power. Many of them grew out of student organisations in the late 1910s, while others drew on the rising strength of labour unions and newly formed leftist political parties.

In 1923, rural workers in the Mexican state of Veracruz formed a Peasant League. From the outset, they saw local issues as closely interwoven with international ones, and they argued that there was a compelling reason for this. As the league put it, "Our internationalism is not the child of a crazed enthusiasm for empty phrases... but of the need to take preventive measures, to bolster ourselves against the enemy," which they identified as "the imperialism of North America."

Many of Latin America's radical movements at this time were inspired by the recent example of the Mexican Revolution. The new Mexican Constitution of 1917 had nationalised the country's land and natural resources, putting it on a collision course with U.S. companies and landowners.

Others still were energised by the global repercussions of the Russian Revolution. This, of course, included several brand-new communist parties across the region. But at the time, many others in Latin America saw the Bolsheviks as part of a global anti-colonial wave.

Mexico City as an activist hub

My book explores the key role Mexico City played as a gathering point for these different political tendencies.

They included groups ranging from Mexican peasant leagues to the American Popular Revolutionary Alliance, an anti-imperialist movement formed by Peruvian exiles. Many of these organisations converged under the umbrella of the Anti-Imperialist League of the Americas. Founded in Mexico City in 1925, it soon had chapters in a dozen more countries across the region.

Between them, these movements brought into focus the novel features of U.S. power. As the Cuban student leader and communist Julio Antonio Mella saw it in 1925 – at a time when his native country was highly dependent on the U.S. but formally sovereign – the U.S. was distinct. Unlike European empires, it largely refrained from direct control of territories, though it had pressed the Cubans to include in their 1901 constitution a provision allowing it to intervene in the island at will.

In Mella's view, the U.S. was clearly an empire, one that mainly exercised its dominance through commercial or financial pressures. For him, the dollar and Wall Street were as central to U.S. power as the halls of government in Washington, DC.

For Ricardo Paredes, an Ecuadorean doctor who founded the country's Socialist Party in 1926, a new term was required to capture Latin American countries' contradictory position. Formally sovereign, they were not colonies as such. Yet they were economically and politically subordinated to Washington and Wall Street – "dependent countries," as he phrased it in 1928.

For the Peruvian poet Magda Portal, a leading member of the anti-imperialist American Popular Revolutionary Alliance, U.S. dominance played out differently in different parts of Latin America.

In a series of lectures she gave in Puerto Rico and the Dominican Republic in 1929, Portal divided the region into zones. While countries such as Argentina or Brazil were mainly sites for U.S. investment, Mexico and the Caribbean were regularly subjected to U.S. military force. Or, as Portal put it, "Here imperialism wears no disguise."

Portal concluded her lectures with a phrase that combined her analysis of U.S. dominance with a resonant appeal for unity: "We have a single and great enemy; let us form a single and great union."

United States of resistance?

Yet while there was much Latin American anti-imperialist thinkers could agree on, there were also profound divergences between them. This included questions of strategy as well as issues of principle. What role should different classes play in their movement? How radical a transformation of society were they pushing for? And what kind of state should emerge from it?

Over time, these differences turned into deep rifts that pitted revolutionaries against democratic reformists, internationalists against nationalists, and pro-Soviets against anti-communists. These disagreements played an important role in Latin American politics over the rest of the century. While many of these rifts became especially prominent during the Cold War, they developed out of earlier divisions over how best to counter U.S. dominance.

The anti-imperialist upsurge of the 1920s and '30s was formative for a generation of Latin American radicals. Several of those who entered political life during these years went on to play key roles in major events of the 20th century. Raúl Roa, for example, who served as foreign secretary for Cuba's revolutionary government from 1959 to 1976, was first politicised in the island's anti-imperialist movement of the 1920s.

The men and women whose political visions were formed in the interwar period carried those ideals forward into the Cold War era. In important ways, the 1920s and 1930s laid vital groundwork for later and better-known radical movements.

Past is, of course, not always prologue. It is impossible to predict what the long-term consequences of current U.S. policy in Latin America will be, especially given the rightward tilt that is currently unfolding across the region.

But looking at the region's anti-imperialist traditions does point to one possible outcome: The U.S.'s newly aggressive stance will, sooner rather than later, fuel a resurgence of anti-imperialist sentiment as the organising principle for a new generation of activists.

(Tony Wood is Assistant Professor of History, Modern Latin America, University of Colorado Boulder. This article is republished from The Conversation)

21A. U.S. power, Latin American resistance
अमेरिकी शक्ति, लैटिन अमेरिकी प्रतिरोध

- The U.S.'s increasingly **aggressive and coercive approach** in Latin America echoes earlier periods of intervention and **gunboat diplomacy**.
  लैटिन अमेरिका में अमेरिका का बढ़ता हुआ **आक्रामक और दबावपूर्ण रवैया** पुराने हस्तक्षेप और **गनबोट कूटनीति** की याद दिलाता है।
- From **drone strikes** on drug traffickers to increased **tariffs**, and from fuel blockades to threats of invasion in **Cuba** and military incursion into **Venezuela**, the U.S. has intensified pressure.
  ड्रोन हमलों, बढ़े हुए **टैरिफ**, **क्यूबा** पर ईंधन नाकेबंदी और **वेनेजुएला** में सैन्य कार्रवाई तक, अमेरिका ने दबाव बढ़ाया है।
- यह अमेरिका की पुरानी विदेश नीति की याद दिलाता है।
- Many commentators compare this to the 1989 capture of **Manuel Noriega** and actions against **Nicolás Maduro**.
  कई विश्लेषक इसे 1989 में **मैनुअल नोरीएगा** की गिरफ्तारी और **निकोलस मादुरो** के खिलाफ कार्रवाइयों से जोड़ते हैं।
- It also recalls U.S. interventions like the 1973 coup against **Salvador Allende** and the 1954 removal of **Jacobo Arbenz**.
  यह 1973 में **सल्वाडोर अलेंदे** के खिलाफ तख्तापलट और 1954 में **जाकोबो आर्बेन्ज़** को हटाने जैसी घटनाओं की याद दिलाता है।
- This was justified by the **Roosevelt Corollary** to the **Monroe Doctrine**.
  इसे **मोनरो सिद्धांत** के **रूजवेल्ट उपसिद्धांत** से उचित ठहराया गया।
- The U.S. claimed an **"international police power"** in cases of wrongdoing.
  अमेरिका ने गलतियों के मामलों में **"अंतरराष्ट्रीय पुलिस शक्ति"** का दावा किया।

- The U.S. occupied **Cuba**, **Haiti**, **Dominican Republic**, and **Nicaragua** multiple times.
  अमेरिका ने कई बार **क्यूबा**, **हैती**, **डोमिनिकन गणराज्य** और **निकारागुआ** पर कब्जा किया।
- He argued U.S. dominance relied on **economic and financial power**.
  उन्होंने कहा कि अमेरिकी प्रभुत्व **आर्थिक और वित्तीय शक्ति** पर आधारित है।
- Thinkers described Latin America as **"dependent countries"**.
  विचारकों ने लैटिन अमेरिका को **"निर्भर देश"** कहा।

Questions and Answers to the previous day's daily quiz: 1. Name the U.S. president who coined the phrase 'United Nations' in a 1942 Allied declaration. **Ans: Franklin D. Roosevelt**
2. Which are the two languages, from among the UN's six official languages, that are not the national language of any permanent Security Council member? **Ans: Spanish and Arabic**
3. The X in 1956 triggered the first 'Emergency Special Session' of the UN General Assembly. This is a procedure reserved for when the Security Council enters a deadlock, in this case caused by two permanent members vetoing resolutions against their own

21A.QUIZ: Franklin D. Roosevelt and the phrase "United Nations"

- The phrase **"United Nations"** was coined by the U.S. President Franklin D. Roosevelt in the **Declaration by United Nations (1942)** during World War II.
- This declaration was signed by **26 Allied nations**, who committed to fighting the Axis Powers and supporting the principles of collective security and cooperation.

Spanish and Arabic among UN official languages

- The United Nations recognises **six official languages**: English, French, Russian, Chinese, Spanish, and Arabic, as per official UN documentation.
- Among these, **Spanish and Arabic** are not the national languages of any of the five permanent members (P5) of the **United Nations Security**

Council.

- Spanish is widely used across Latin America, while Arabic is dominant in West Asia and North Africa, reflecting global linguistic diversity.

1956 Suez Crisis and Emergency Special Session

- The **1956 Suez Crisis** triggered the first **Emergency Special Session (ESS)** of the UN General Assembly.
- The crisis began when Egypt nationalised the Suez Canal, leading to military intervention by Britain, France, and Israel.
- The UN Security Council failed to act due to vetoes by permanent members Britain and France, causing a deadlock.
- Under the "Uniting for Peace" resolution (1950), the General Assembly convened the ESS to address the crisis.
- This marked a major development in UN functioning, allowing the General Assembly to step in when the Security Council is blocked.

Tamil parties in Sri Lanka seek sustained Indian push to fulfil Indo-Lanka Accord

Vice-President C.P. Radhakrishnan 'assures' Sri Lankan Tamil representatives that India's position on devolution stands; provincial polls discussed with Sri Lankan side; the 1987 framework seeking equal rights and greater political power for Tamils 'has not been fully realised', say parties

GS II: IR

Meera Srinivasan
COLOMBO

Sri Lanka's Tamil parties have sought sustained Indian engagement to ensure the implementation of the Indo-Lanka Accord of 1987, signed during the early years of the civil war to address the aspirations of Tamils for equal rights and greater political power.

A delegation of leaders representing Tamils from the island's north and east on Sunday conveyed this to Vice-President C.P. Radhakrishnan, who was on a two-day official visit to Sri Lanka.

Pointing to the "state-to-state treaty", signed by Prime Minister Rajiv Gandhi and President J.R. Jayewardene in July 1987, the prominent Tamil party Ilankai Tamil Arasu Katchi (ITAK) pointed out that the true spirit of the Accord is yet to be realised.

Representatives of Sri Lanka's Tamil parties with Vice-President C.P. Radhakrishnan in Colombo on Sunday. SPECIAL ARRANGEMENT

"We told him that the Accord has never been fully realised, not even through the 13th Amendment, which is also yet to be fully implemented. Regardless of whoever comes into government here [in Sri Lanka] or there [India], the agreement must be fulfilled, and that is to have an arrangement based on a federal model, with irrevocable power sharing," ITAK General Secretary and former Jaffna MP M.A. Sumanthiran told *The Hindu*, following the meeting.

Since the end of the civil war in May 2009, the ITAK and the Tamil National Alliance it formerly led, have consistently sought meaningful power devolution within a "united, undivided, indivisible" Sri Lanka, including through the 13th Amendment. The only legislative guarantee of a measure of power devolution to the island's nine provinces, including the Tamil-majority Northern and Eastern provinces, the Amendment flows from the Accord. However, neither has seen full implementation in the four decades.

"When we pointed out that Provincial Councils have been defunct for over seven years, the Vice President told us he has spoken to the Sri Lankan side about holding early provincial elections and assured us that India's position on power devolution remains constant and that there is no change," Mr. Sumanthiran said.

Waning interest

For a decade now, Tamil commentators have been flagging India's apparently waning interest in Sri Lanka's Tamil question, amid its development cooperation and strategic priorities. Meanwhile, Tamil political parties have raised concern in every meeting with the Indian leadership. The widely respected late Tamil leader R. Sampanthan told *The Hindu* in 2022 that India has a "special duty" in ensuring that the island's Tamil question is resolved.

While seeking a greater push from India on power devolution, senior Tamil politician and ITAK President C.V.K. Sivagnanam recalled Prime Minister Narendra Modi's March 2015 address to the Sri Lankan Parliament when he said he was a "firm believer in cooperative federalism."

Tamil National People's Front General Secretary and former Jaffna MP Selvarajah Kajendren handed over a document to the Indian Vice-President, outlining their position that meaningful power devolution is not possible within Sri Lanka's unitary state structure.

While the leftist Janatha Vimukthi Peramuna [JVP] has historically opposed the Indo-Lanka Accord, seeing it as India-imposed, the ruling National People's Power coalition it leads has promised to bring in a new Constitution addressing Tamil aspirations. The exercise is yet to take off, and no timeline has been shared yet.

The Tamil parties and the Vice-President also discussed Indian assistance for development projects, the persisting fisheries conflict and the possible return of Sri Lankan refugees in India. On the question of returning refugees, Mr. Radhakrishnan said India could explore supporting the returning refugees. "He said India spends money looking after them there, so they might as well put that to use to set them up here, with housing and other needs," Mr. Sumanthiran said.

21A. Tamil parties in Sri Lanka seek sustained Indian push to fulfil Indo-Lanka Accord

श्रीलंका में तमिल दलों ने इंडो-लंका समझौते को लागू करने के लिए भारत से निरंतर प्रयास की मांग की

- Sri Lanka's Tamil parties have sought sustained Indian engagement to ensure the implementation of the **Indo-Lanka Accord of 1987**, signed during the early years of the **civil war** to address the aspirations of Tamils for equal rights and greater political power.

श्रीलंका के तमिल दलों ने **1987 के इंडो-लंका समझौते** के कार्यान्वयन को सुनिश्चित करने के लिए भारत की

निरंतर भागीदारी की मांग की है, जो **गृहयुद्ध** के शुरुआती वर्षों में तमिलों के समान अधिकार और अधिक राजनीतिक शक्ति की आकांक्षाओं को पूरा करने के लिए हस्ताक्षरित हुआ था।

- Pointing to the "state-to-state treaty", signed by Prime Minister **Rajiv Gandhi** and President **J.R. Jayewardene** in July 1987, the prominent Tamil party **Ilankai Tamil Arasu Katchi (ITAK)** pointed out that the true spirit of the Accord is yet to be realised.
  जुलाई 1987 में प्रधानमंत्री **राजीव गांधी** और राष्ट्रपति **जे.आर. जयवर्धने** द्वारा हस्ताक्षरित "राज्य-से-राज्य संधि" की ओर इशारा करते हुए प्रमुख तमिल दल **इलंकई तमिल अरसु कच्ची (ITAK)** ने कहा कि समझौते की वास्तविक भावना अभी तक साकार नहीं हुई है।
- "We told him that the Accord has never been fully realised, not even through the **13th Amendment**, which is also yet to be fully implemented.
  "हमने उनसे कहा कि समझौता कभी पूरी तरह लागू नहीं हुआ, यहां तक कि **13वां संशोधन** भी पूरी तरह लागू नहीं हुआ है।
- Regardless of whoever comes into government here [in Sri Lanka] or there [India], the agreement must be fulfilled, and that is to have an arrangement based on a **federal model**, with irrevocable power sharing," ITAK General Secretary and former Jaffna MP **M.A. Sumanthiran** told The Hindu, following the meeting.
  चाहे यहां [श्रीलंका] या वहां [भारत] कोई भी सरकार आए, समझौते को लागू किया जाना चाहिए, और इसके लिए **संघीय मॉडल** पर आधारित व्यवस्था और अपरिवर्तनीय शक्ति साझाकरण होना चाहिए," ITAK के महासचिव और पूर्व जाफना सांसद **एम.ए. सुमंथिरन** ने बैठक के बाद कहा।
- The only legislative guarantee of a measure of power devolution to the island's nine provinces, including the Tamil-majority **Northern and Eastern provinces**, the Amendment flows from the Accord.
  द्वीप के नौ प्रांतों, जिनमें तमिल बहुल **उत्तरी और पूर्वी प्रांत** शामिल हैं, को शक्ति विकेंद्रीकरण की एकमात्र विधायी गारंटी यह संशोधन है, जो इस समझौते से उत्पन्न होता है।

India violating its obligations, says UN Rapporteur

GS II: IR

Muneef Khan
NEW DELHI

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

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

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


Francesca Albanese

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

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

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

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

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

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

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

(The author is an independent journalist)

21A. India violating its obligations, says UN Rapporteur
भारत अपने दायित्वों का उल्लंघन कर रहा है, संयुक्त राष्ट्र के रैपोर्टियर का कहना

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

भारत "**अंतरराष्ट्रीय कानून** के तहत अपने दायित्वों का उल्लंघन कर रहा है", यह बात कब्जे वाले फिलिस्तीनी क्षेत्रों पर संयुक्त राष्ट्र की विशेष रैपोर्टियर **फ्रांसेस्का अल्बनीज़** ने द हिंदू को दिए साक्षात्कार में कही।

- Ms. Albanese's comments were in response to questions about the findings in her latest report titled '**Torture and Genocide**', which she presented at the **61st session** of the **UN Human Rights Council**, on March 23.
  सुश्री अल्बनीज़ की टिप्पणियां उनकी नवीनतम रिपोर्ट '**टॉर्चर एंड जेनोसाइड**' के निष्कर्षों पर पूछे गए सवालों के जवाब में थीं, जिसे उन्होंने **23 मार्च** को **संयुक्त राष्ट्र मानवाधिकार परिषद के 61वें सत्र** में प्रस्तुत किया।
- Responding to how she views India's legal and moral responsibility by associating with Israel and its war, Ms. Albanese said that while India is "violating its obligations" under International law, it might also be "facing responsibility".
  इजरायल और उसके युद्ध से जुड़कर भारत की कानूनी और नैतिक जिम्मेदारी पर प्रतिक्रिया देते हुए, सुश्री अल्बनीज़ ने कहा कि भारत जहां **अंतरराष्ट्रीय कानून** के तहत अपने दायित्वों का उल्लंघन कर रहा है, वहीं उसे "जिम्मेदारी का सामना" भी करना पड़ सकता है।
- "In an ideal world, if there was a court that was capable of dealing with all member states who have violated the law to support Israel causing harm to the Palestinians, probably the Indian government would face this court as well," Ms. Albanese said.
  "एक आदर्श दुनिया में, यदि ऐसा कोई न्यायालय होता जो उन सभी देशों से निपट सकता जिन्होंने इजरायल का समर्थन कर कानून का उल्लंघन किया है और फिलिस्तीनियों को नुकसान पहुंचाया है, तो संभवतः भारत सरकार को भी उस अदालत का सामना करना पड़ता," सुश्री अल्बनीज़ ने कहा।
- During Prime Minister **Narendra Modi's** state visit to Israel in February, he spoke to the **Knesset** hailing India's cultural, political and military relationship with Israel.
  फरवरी में प्रधानमंत्री **नरेंद्र मोदी** की इजरायल यात्रा के दौरान उन्होंने **केनेस्सेट** में भारत और इजरायल के सांस्कृतिक, राजनीतिक और सैन्य संबंधों की सराहना की।
- He described Israel as the "fatherland" of Indian-origin Jews, while the visit also brought upgraded ties sealed with a '**Special Strategic Partnership**'.
  उन्होंने इजरायल को भारतीय मूल के यहूदियों की "पितृभूमि" बताया और इस यात्रा में संबंधों को '**विशेष रणनीतिक साझेदारी**' के साथ और मजबूत किया गया।

21A. EU hosts peace conference on Gaza as it seeks greater sway in West Asia
यूरोपीय संघ ने गाजा पर शांति सम्मेलन आयोजित किया, पश्चिम एशिया में अधिक प्रभाव की कोशिश

- More than **60 nations** sent representatives to **Brussels** on Monday for talks with Palestinian representatives on **stability, security and long-term peace** in the region.
  60 से अधिक देशों ने सोमवार को **ब्रुसेल्स** में क्षेत्र में **स्थिरता, सुरक्षा और दीर्घकालिक शांति** पर फिलिस्तीनी प्रतिनिधियों के साथ वार्ता के लिए अपने प्रतिनिधि भेजे।
- There is renewed momentum in the **European Union (EU)** to put meaningful pressure on Israel over its military campaigns in **West Asia** after the election defeat of **Viktor Orban** in Hungary, a staunch ally of Israeli Prime Minister **Benjamin Netanyahu**.
  यूरोपीय संघ (EU) में **पश्चिम एशिया** में इजरायल के सैन्य अभियानों पर दबाव बनाने की नई गति आई है, हंगरी में **विक्टर ऑर्बन** की चुनावी हार के बाद, जो इजरायली प्रधानमंत्री **बेंजामिन नेतन्याहू** के मजबूत सहयोगी थे।
- The **27-nation bloc** has largely been on the sidelines in West Asia despite being the biggest provider of aid to the Palestinians and backing a **two-state solution** to the Israeli-Palestinian conflict.
  27 देशों का समूह पश्चिम एशिया में काफी हद तक किनारे रहा है, जबकि वह फिलिस्तीनियों को सबसे बड़ा सहायता प्रदाता है और **दो-राष्ट्र समाधान** का समर्थन करता है।

GS Paper III: Economy	21 April 2026
TOPICS COVERED	
21A	Collectors race for investments निवेश के लिए कलेक्टरों की दौड़
21A	Draft rules for roll-out of Ethanol 85 fuel to be notified soon एथेनॉल 85 ईंधन के रोल-आउट के लिए मसौदा नियम जल्द अधिसूचित किए जाएंगे

Collectors race for investments

The CM will assign ranks to districts depending on how much capital is created

GS III: Economy

STATE OF PLAY

V. Raghavendra
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At the recent Collectors' Conference in Andhra Pradesh, Chief Minister N. Chandrababu Naidu exhorted District Collectors (DCs) to play a proactive role in attracting investments to supplement the efforts of the State Investment Promotion Committee, the State Investment Promotion Board (SIPB), the AP Economic Development Board and other agencies. At the district level, there are District Industries Promotion Committees which have DCs as their chairpersons.

These Collectors have their work cut out for them as the CM has decided to assign ranks to districts on the basis of how much investment and employment has been created, and based on the Speed of Doing Business (SoDB). These DCs are not only expected to hold meetings with prospective entrepreneurs but also convince them to set up units in their districts. Further, the CM wants DCs to focus on giving prompt regulatory clearances in order to set a benchmark when it comes to SoDB.

On proper execution

The CM's plan bodes well as Collectors will have a thorough knowledge of the strengths of their districts; they can help in identifying and promoting specific areas where entrepreneurs can invest. Rayalaseema, for instance, has already emerged as a hub for renewable energy companies due to the relatively low cost of land compared to coastal areas. However, DCs should be careful to hand over the sites in a comprehensive manner, that is, they should

solve both land and non-land issues, such as access to water, electricity etc., in a way that does not later give any scope for hurdles in bringing the investment to fruition.

Some districts have inherent advantages over others in terms of the natural resources that are available, or proximity to other industrial centres. The Visakhapatnam and Anakapalli districts in the north, and the Tirupati, Nellore and Chittoor districts in the south have been the most sought after destinations due to their proximity to Visakhapatnam and Chennai. Incidentally, the DCs of Anakapalli, Visakhapatnam, Nellore, Tirupati and Kurnool districts were appreciated at the Collectors' Conference for achieving "impeccable results" in having some major projects already grounded. Most major industries/businesses are still making a beeline to these places. Therefore, some DCs already have a natural advantage, which might make other Collectors uneasy about the competition for ranks, given the lack of a level-playing field.

Another instruction to the DCs has been to entrust the responsibility of following up on projects to Mandal Special Officers, and to appoint Joint Collectors and Municipal Commissioners as special officers to major projects in order to ensure that any and all issues are sorted right from the very beginning, after the submission of the Industrial Entrepreneur Memorandum.

Ambitious plans

The CM, taking a step in the right direction, told the DCs to promote IT, MSMEs and tourism in places where they can't attract big industrial projects. He has also decided to give discretionary powers to the Collectors to allot up to five acres of land to projects, especially in the tourism sector, through the AP Industrial Infrastructure Corporation Limited. This is expected to help Collectors in quickly onboarding those keen to set up tourism facilities.

Post bifurcation, the Chief Minister has pivoted from single-city dependence to region-anchored industrialisation, building sectoral hubs across the coastal, delta, and Rayalaseema regions. The decriminalisation of minor offences in the purview of various departments, for which the AP Jan Vishwas (Amendment of Provisions) Bill, 2026 has been passed, is intended to help in achieving the desired SoDB.

The DCs have time till the next Collectors' Conference to be held in June/July to apprise the CM to what extent they have succeeded in mobilising investments. According to official sources, the government has tied up with 771 companies for investments amounting to nearly ₹20.35 lakh crore across 12 departments, a vast chunk of it in the Energy, Industries and Commerce Departments, since June 2024.

These projects are in different stages, and the government is eager to translate all proposals into reality at the earliest. It is in this context that the DCs are expected to compete for getting fresh investments, and rightly so – as efforts at the grassroots level will make the State prosper.

21A. Collectors race for investments
निवेश के लिए कलेक्टरों की दौड़

- **The CM will assign ranks to districts depending on how much capital is created**

मुख्यमंत्री जिलों को बनाए गए पूंजी के आधार पर रैंक देंगे

- At the recent **Collectors' Conference** in Andhra Pradesh, Chief Minister **N. Chandrababu Naidu** exhorted District Collectors (DCs) to play a proactive role in attracting investments.

आंध्र प्रदेश में हाल ही में हुई **कलेक्टर्स कॉन्फ्रेंस** में मुख्यमंत्री **एन. चंद्रबाबू नायडू** ने जिला कलेक्टरों (DCs) को निवेश आकर्षित करने में सक्रिय भूमिका निभाने के लिए प्रेरित किया।

- They are expected to supplement the efforts of the **State Investment Promotion Committee**, **State Investment Promotion Board (SIPB)**, and **AP Economic Development Board**.

उनसे अपेक्षा की गई है कि वे **स्टेट इन्वेस्टमेंट प्रमोशन कमेटी**, **स्टेट इन्वेस्टमेंट प्रमोशन बोर्ड (SIPB)** और **एपी इकोनॉमिक डेवलपमेंट बोर्ड** के प्रयासों को पूरक बनाएं।

- At the district level, **District Industries Promotion Committees** exist with DCs as chairpersons.

जिला स्तर पर **डिस्ट्रिक्ट इंडस्ट्रीज प्रमोशन कमेटी** होती हैं, जिनके अध्यक्ष DC होते हैं।

- The CM has decided to assign **ranks to districts** based on investment, employment, and **Speed of Doing Business (SoDB)**.

मुख्यमंत्री ने **जिलों को रैंक** देने का निर्णय लिया है, जो निवेश, रोजगार और **स्पीड ऑफ डूइंग बिजनेस (SoDB)** पर आधारित होगा।

- DCs are expected to meet **prospective entrepreneurs** and convince them to set up units.
  DCs से अपेक्षा है कि वे **संभावित उद्यमियों** से मिलें और उन्हें इकाइयाँ स्थापित करने के लिए प्रेरित करें।
- They must also ensure **prompt regulatory clearances**.
  उन्हें **त्वरित नियामकीय स्वीकृतियाँ** भी सुनिश्चित करनी होंगी।

On proper execution
सही क्रियान्वयन पर

- Collectors have knowledge of the **strengths of their districts**.
  कलेक्टरों को अपने **जिलों की ताकतों** की जानकारी होती है।
- They can identify and promote **investment opportunities**.
  वे **निवेश के अवसरों** की पहचान और प्रचार कर सकते हैं।
- **Rayalaseema** has emerged as a hub for **renewable energy companies**.
  रायलसीमा नवीकरणीय ऊर्जा कंपनियों का केंद्र बनकर उभरा है।
- DCs must ensure solutions to both **land and non-land issues** like water and electricity.
  DCs को **भूमि और गैर-भूमि समस्याओं** जैसे पानी और बिजली का समाधान सुनिश्चित करना चाहिए।
- Some districts have advantages like **natural resources** and proximity to **industrial centres**.
  कुछ जिलों को **प्राकृतिक संसाधनों** और **औद्योगिक केंद्रों** के पास होने का लाभ मिलता है।
- **Visakhapatnam, Anakapalli, Tirupati, Nellore, Chittoor** are preferred destinations.
  विशाखापत्तनम, अनकापल्ली, तिरुपति, नेल्लोर, चित्तूर पसंदीदा स्थान हैं।
- Some DCs were appreciated for achieving **"impeccable results"**.
  कुछ DCs को **"बेहतरीन परिणाम"** हासिल करने के लिए सराहा गया।
- Unequal advantages may create concerns about a **level-playing field**.
  असमान लाभ **समान प्रतिस्पर्धा के मैदान** पर चिंता पैदा कर सकते हैं।
- DCs must assign **Mandal Special Officers** for project follow-up.
  DCs को परियोजनाओं के लिए **मंडल विशेष अधिकारियों** को नियुक्त करना होगा।
- **Joint Collectors and Municipal Commissioners** will oversee major projects.
  जॉइंट कलेक्टर और म्यूनिसिपल कमिश्नर बड़े प्रोजेक्ट्स की निगरानी करेंगे।

Ambitious plans
महत्वाकांक्षी योजनाएं

- The CM asked DCs to promote **IT, MSMEs, and tourism**.
  मुख्यमंत्री ने DCs से **आईटी, MSMEs और पर्यटन** को बढ़ावा देने को कहा।
- Collectors can allot up to **five acres of land** for projects.
  कलेक्टर परियोजनाओं के लिए **पांच एकड़ भूमि** तक आवंटित कर सकते हैं।
- This will help in quickly onboarding **tourism projects**.
  यह **पर्यटन परियोजनाओं** को तेजी से शुरू करने में मदद करेगा।
- Post bifurcation, the State shifted to **region-based industrialisation**.
  विभाजन के बाद राज्य ने **क्षेत्र-आधारित औद्योगिकीकरण** अपनाया।
- The **AP Jan Vishwas (Amendment of Provisions) Bill, 2026** aims to improve SoDB.
  एपी जन विश्वास (संशोधन प्रावधान) विधेयक, 2026 SoDB को सुधारने का लक्ष्य रखता है।
- DCs have time till the next **Collectors' Conference** to show results.
  DCs के पास अगले **कलेक्टर्स कॉन्फ्रेंस** तक परिणाम दिखाने का समय है।
- The government has tied up with **771 companies** for investments worth **₹20.35 lakh crore**.
  सरकार ने **771 कंपनियों** के साथ **₹20.35 लाख करोड़** के निवेश के लिए समझौते किए हैं।

- These projects are in different stages of implementation.
  ये परियोजनाएं विभिन्न चरणों में हैं।
- The government aims to convert all proposals into reality.
  सरकार सभी प्रस्तावों को वास्तविकता में बदलना चाहती है।
- DCs are expected to compete for **fresh investments**.
  DCs से **नए निवेश** के लिए प्रतिस्पर्धा की अपेक्षा की जा रही है।
- Grassroots efforts will ensure the **State's prosperity**.
  जमीनी स्तर के प्रयास **राज्य की समृद्धि** सुनिश्चित करेंगे।

Draft rules for roll-out of Ethanol 85 fuel to be notified soon

GS III: Economy

Jagriti Chandra
NEW DELHI

The government will "very soon" issue draft rules on the roll-out of Ethanol 85 (E85) as vulnerabilities in oil exports exposed during the West Asia crisis sharpen the focus on alternative fuels, a senior government official said. While a final date is yet to be decided, the official said the rollout is expected "in a couple of years".

E85 is a fuel blend made of up to 85% ethanol and 15% petrol (gasoline).

"Draft regulations will be notified very soon. There is consensus within the government. There is also market consensus and preliminary testing too has been carried out," the official said, speaking on condition of anonymity.

The E85 blend will be introduced as a separate fuel grade, distinct from E20, in which ethanol blending could go up to 27%, which is permissible under a notification issued in 2023, the official explained.

High levels of ethanol blending offer several benefits, including "greater energy security for the country and a reduction in vehicular pollution," the official said.

Such a high-ethanol fuel will require dedicated engine compatibility, as well as separate dispensing infrastructure at fuel pumps that will also dispense E20 petrol.

An engine designed to run on E85 can also operate on lower ethanol blends, including E60 and E50.

On competing demands for ethanol-blended fuel, including from aviation, where India has a 1% blending target in aviation turbine fuel for international flights under the International Civil Aviation Organization's plan to achieve net-zero carbon emissions by 2050, the official said there was "surplus" ethanol available in the country.

The government has mandated the sale of petrol with up to 20% ethanol across all States and Union Territories from April 1.

21A. Draft rules for roll-out of Ethanol 85 fuel to be notified soon

एथेनॉल 85 ईंधन के रोल-आउट के लिए मसौदा नियम जल्द अधिसूचित किए जाएंगे

- The government will "very soon" issue draft rules on the roll-out of **Ethanol 85 (E85)** as vulnerabilities in oil exports exposed during the **West Asia crisis** sharpen the focus on alternative fuels, a senior government official said.
  सरकार "बहुत जल्द" **एथेनॉल 85 (E85)** के रोल-आउट पर मसौदा नियम जारी करेगी क्योंकि **पश्चिम एशिया संकट** के दौरान तेल निर्यात की कमजोरियों ने वैकल्पिक ईंधनों पर ध्यान बढ़ा दिया है, एक वरिष्ठ सरकारी अधिकारी ने कहा।
- While a final date is yet to be decided, the official said the rollout is expected "in a couple of years".
  हालांकि अंतिम तिथि अभी तय नहीं हुई है, अधिकारी ने कहा कि रोल-आउट "कुछ वर्षों में" होने की उम्मीद है।
- **E85** is a fuel blend made of up to **85% ethanol** and **15% petrol (gasoline)**.
  E85 एक ईंधन मिश्रण है जिसमें **85% एथेनॉल** और **15% पेट्रोल (गैसोलीन)** होता है।
- "Draft regulations will be notified very soon.
  "मसौदा नियम बहुत जल्द अधिसूचित किए जाएंगे।
- There is consensus within the government.
  सरकार के भीतर सहमति है।
- There is also market consensus and preliminary testing too has been carried out," the official said, speaking on condition of anonymity.
  बाजार में भी सहमति है और प्रारंभिक परीक्षण भी किए जा चुके हैं," अधिकारी ने गुमनामी की शर्त पर कहा।
- The **E85 blend** will be introduced as a separate fuel grade, distinct from **E20**, in which ethanol blending could go up to **27%**, which is permissible under a notification issued in **2023**, the official explained.
  E85 मिश्रण को एक अलग ईंधन ग्रेड के रूप में पेश किया जाएगा, जो **E20** से अलग होगा, जिसमें एथेनॉल मिश्रण **27%** तक हो सकता है, जो **2023** की अधिसूचना के तहत अनुमत है, अधिकारी ने बताया।

- High levels of ethanol blending offer several benefits, including "greater **energy security** for the country and a reduction in **vehicular pollution**," the official said.
  एथेनॉल मिश्रण के उच्च स्तर कई लाभ देते हैं, जैसे देश के लिए अधिक **ऊर्जा सुरक्षा** और **वाहन प्रदूषण** में कमी, अधिकारी ने कहा।
- Such a high-ethanol fuel will require dedicated **engine compatibility**, as well as separate **dispensing infrastructure** at fuel pumps that will also dispense **E20 petrol**.
  इस तरह के उच्च एथेनॉल ईंधन के लिए विशेष **इंजन संगतता** और ईंधन पंपों पर अलग **डिस्पेंसिंग इंफ्रास्ट्रक्चर** की आवश्यकता होगी जो **E20 पेट्रोल** भी उपलब्ध कराएंगे।
- An engine designed to run on **E85** can also operate on lower ethanol blends, including **E60** and **E50**.
  E85 पर चलने के लिए बना इंजन कम एथेनॉल मिश्रण जैसे **E60** और **E50** पर भी काम कर सकता है।
- On competing demands for ethanol-blended fuel, including from **aviation**, where India has a **1% blending target** in aviation turbine fuel for international flights under the **International Civil Aviation Organization's** plan to achieve **net-zero carbon emissions by 2050**, the official said there was "surplus" ethanol available in the country.
  एथेनॉल मिश्रित ईंधन की प्रतिस्पर्धी मांगों, जिसमें **विमानन क्षेत्र** भी शामिल है, जहां भारत का अंतरराष्ट्रीय उड़ानों के लिए **1% मिश्रण लक्ष्य** है, जो **इंटरनेशनल सिविल एविएशन ऑर्गनाइजेशन** की **2050 तक नेट-ज़ीरो कार्बन उत्सर्जन** योजना के तहत है, इस पर अधिकारी ने कहा कि देश में एथेनॉल की "अधिशेष" उपलब्धता है।
- The government has mandated the sale of petrol with up to **20% ethanol** across all **States and Union Territories** from **April 1**.
  सरकार ने **1 अप्रैल** से सभी **राज्यों और केंद्र शासित प्रदेशों** में **20% एथेनॉल** मिश्रित पेट्रोल की बिक्री अनिवार्य कर दी है।

GS Paper III: Science and Technology	21 April 2026
TOPICS COVERED	
21A	The strategic vulnerability in India's LPG supply model भारत के LPG आपूर्ति मॉडल में रणनीतिक कमजोरी
21A	From light waves to quantum physics: the science behind smart washbasins प्रकाश तरंगों से क्वांटम भौतिकी तक: स्मार्ट वॉशबेसिन के पीछे का विज्ञान

The strategic vulnerability in India's LPG supply model

GS III: S&T [illegible]

India's Liquefied Petroleum Gas (LPG) problem is not a passing shortage. It comes from a gap that has grown too wide to ignore. India consumed about 33.15 million tonnes of LPG last year, but domestic production met only about 40% of that need. The remaining 60% had to be imported. Put plainly, India's total LPG demand is now about 250% of indigenous production, while annual LPG imports are equal to about 150% of domestic LPG output. That is not a minor balancing gap. It is a significant mismatch between what India produces and what its kitchens consume.

This matters because LPG in India is overwhelmingly a household fuel; commercial LPG accounts for less than 10% of national consumption. So, the imported molecule is not mainly feeding a flexible industrial user that can cut runs or switch feedstock. It is going into domestic kitchens. This is what makes India's LPG dependence more serious than a normal product-import issue. A petrochemical plant can slow down. A household kitchen cannot.

Shrikant Madhav Vaidya

Former Chairman of Indian Oil Corporation Ltd. and an energy strategist

India's LPG use is mainly household-based, heightening import vulnerability

No longer a dependable corridor

The crisis now has exposed this sharply. About 90% of India's LPG imports normally transit the Strait of Hormuz. India must now accept that the Strait of Hormuz cannot be treated as a routinely dependable corridor for household fuel security. Even if the present tensions ease, the old assumption of uninterrupted normality will not return easily. The risk attached to this route has now entered the strategic calculation in a lasting way.

Import dependence alone, however, does not tell the full story. Japan imports a larger share of LPG than India does. China and South Korea also import large volumes of LPG. But what matters is not only how much a country imports. It is where the molecule goes, what alternatives households already have, and how much storage supports the system.

Lessons from Japan

The *table* shows why raw percentages can mislead. Japan appears more import-dependent than India on LPG. Yet, Japanese household vulnerability is far lower – LPG serves only about 40% of households. Electricity accounts for about 55% of residential final energy use, and city gas also has a large residential base. More importantly, Japan has about 108.3 days of LPG stock through national and private reserves. Japan imports more, but it cushions that dependence with alternatives and storage.

China and South Korea are different again. In China, a large share of its LPG demand is driven by the petrochemical sector. In South Korea, household energy is supported much more by natural gas and electricity.

India's position is more exposed because the imported molecule goes overwhelmingly into domestic kitchens. India's problem is not that it imports LPG – many countries do. India's problem is that it imports LPG for the one use that is hardest to defer and also the hardest to replace quickly.

India's storage position also needs to be seen clearly. The Petroleum Planning and Analysis Cell reports about 15 days of LPG tankage cover in the broad operational sense across import locations, bottling plants, refineries and fractionators. But visible underground cavern-based deep storage is only about 140,000 tonnes – 60 TMT at Visakhapatnam (Andhra Pradesh) and 80 TMT at Mangaluru (Karnataka) which is equal to only about 1.5 days of national demand. The first number shows that the system is not empty. The second shows that reserve-style protection is still very thin for a country of India's size and import dependence.

There is another point that deserves attention. India is not buying LPG in a loose, neutral global market. The exportable pool is not large, and it is already heavily claimed by a few Asian buyers.

Just four Asian countries absorb a little over half of the world's exportable LPG pool. And the rest is not sitting idle waiting to be redirected. Much of it is already tied up in petrochemicals, household cooking and heating, and autogas. This is why any sustained loss of dependable Gulf supply can quickly tighten the market.

What India should do

How can India reduce its vulnerability?

First, it should stop treating all LPG molecules as one pool. During the present disruption, India has already directed refiners to prioritise propane and butane for cooking LPG rather than for petrochemical or gasoline-blending use. That logic should continue. Domestically produced LPG and refinery-origin C3/C4 (propane/butane) streams should be reserved first for household fuel security. Petrochemical users should increasingly arrange their own feedstock imports. The government should not have to defend domestic kitchens and industrial feedstock demand from the same protected pool.

Second, India should build a deeper LPG buffer. An initial goal of two to three weeks of protected cover for the household pool would be a sensible start. At current demand levels, that means about 1.3 million tonnes for 14 days and 1.9 million tonnes for 21 days. This is a large jump from the current cavern capacity, but it is the minimum scale at which India can begin to claim meaningful resilience.

Third, India needs a sustained campaign for electric cooking in urban and semi-urban India. This cannot be a one-season appeal. It has to continue over the years. Households with reliable power, adequate wiring and access to induction cooking should be encouraged to shift their primary cooking load away from LPG. A 'Give it up 2.0' plan should be launched.

The aim is simple: reduce the number of homes for which the LPG cylinder remains the first and only kitchen fuel. Piped Natural Gas (PNG) should expand where density supports it, but electricity is the broader lever.

India's LPG vulnerability will continue to persist unless policy addresses a basic mismatch: demand that is too high relative to domestic production; imports that are too concentrated in a single corridor, and excessive dependence concentrated in household kitchens. The answer is not simply to buy more LPG cargoes. It is to reserve domestic molecules for kitchens, separate petrochemical demand, build more storage, and steadily reduce the number of homes that rely on LPG alone.

India's LPG problem is not a passing shortage. It is an enduring mismatch between what the country produces and what its kitchens consume. This is why India's asymmetric LPG demand will remain a lasting vulnerability – unless the design of the system itself changes.

Why India is more exposed

High household dependence and tight global supply make the LPG risk sharper

A household LPG vulnerability matrix

Country	LPG import share of total demand	Total LPG demand as % of domestic production	LPG imports as % of domestic production	Household kitchen criticality of LPG	LPG cover / storage position
India	**60%**	**250%**	**150%**	**Very high**	**15 days operational tankage cover (PPAC); ~1.5 days in cavern-based deep storage**
Japan	70%	333.3%	233.3%	Low	108.3 days
China	40.4%	167.7%	67.7%	Low to moderate	No clear public LPG-days figure verified here
South Korea*	~74.5%	~391.7%	~291.7%	Low	15-30 day stockholding obligation framework

** Indicative, based on publicly available market data*

Who absorbs the global exportable LPG pool?

Country	LPG imports used for comparison	Share of global LPG exports*	Main use of LPG
China	36.7 MMT	26.3%	Mainly petrochemical-driven at the margin
India	**19.89 MMT**	**14.2%**	**Mainly household cooking fuel**
Japan	9.8 MMT	7%	Mixed: household/commercial + chemicals
South Korea*	~7 MMT	~5%	Mixed, with strong industrial/petrochemical role
Total	73.39 MMT	52.5%	-

** Using global LPG exports of 139.8 MMT. South Korea is indicative*

21A. The strategic vulnerability in India's LPG supply model
भारत के LPG आपूर्ति मॉडल में रणनीतिक कमजोरी

- India consumed about **33.15 million tonnes** of LPG last year, but domestic production met only about **40%** of that need.
  भारत ने पिछले वर्ष लगभग **33.15 मिलियन टन** LPG की खपत की, लेकिन घरेलू उत्पादन ने केवल लगभग **40%** जरूरत को पूरा किया।
- The remaining **60%** had to be imported.
  शेष **60%** आयात करना पड़ा।
- This matters because LPG in India is overwhelmingly a **household fuel**.
  यह महत्वपूर्ण है क्योंकि भारत में LPG मुख्य रूप से **घरेलू ईंधन** है।
- Commercial LPG accounts for less than **10%** of national consumption.
  व्यावसायिक LPG राष्ट्रीय खपत का **10% से कम** है।

- About **90% of India's LPG imports** transit the **Strait of Hormuz**.
  भारत के लगभग **90% LPG आयात होर्मुज जलडमरूमध्य** से होकर गुजरते हैं।

BUILDING BLOCKS

From light waves to quantum physics: the science behind smart washbasins

Invisible infrared waves are emitted by IR LEDs and detected by photodiodes to enable devices like remotes, automatic washbasins to function; this 'magic' is actually optics and condensed matter physics in action, where invisible light interacts with sensors, electrons to create automatic responses

GS III: S&T

Adhip Agarwala

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

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

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

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

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

GETTY IMAGES

What exactly is a wave?

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

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

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

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

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

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

Invisible light

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

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

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

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

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

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

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

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

Sensors as switches

You may think of a sensor as a railway crossing manager. It allows the train to pass if it gets the correct torch signal from far. These sensors are called photodiodes. They conduct electricity if light falls on it. The torch is the IR-LED, the train is of electrons in any electrical circuit, and the crossing manager is the photodiode. When the remote is switched on (the LED is on), the IR light falls on the photodiode. The photodiode now allows for the current to pass and your TV or AC switches on. Otherwise, it is in the OFF state, and the current does not reach.

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

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

How washbasins detect hands

So what really happens in that multiplex washbasin?

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

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

Quantum mechanics

You may still wonder, how does a sensor work? How do electrons know the IR wave? How does the LED work? Much of this requires learning of quantum mechanics, condensed matter physics, and optics, something which one is taught in physics courses, for example, here at IIT Kanpur. If you are interested, you should consider studying physics.

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

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

(Adhip Agarwala is an Assistant Professor of Physics at IIT Kanpur)

21A. From light waves to quantum physics: the science behind smart washbasins

प्रकाश तरंगों से क्वांटम भौतिकी तक: स्मार्ट वॉशबेसिन के पीछे का विज्ञान

- Invisible infrared waves are emitted by IR LEDs and detected by photodiodes to enable devices like remotes, automatic washbasins to function; this 'magic' is actually optics and condensed matter physics in action, where invisible light interacts with sensors, electrons to create automatic responses.
  अदृश्य **इन्फ्रारेड तरंगें** IR LEDs द्वारा उत्सर्जित होती हैं और **फोटोडायोड** द्वारा पहचानी जाती हैं जिससे रिमोट और ऑटोमेटिक वॉशबेसिन जैसे उपकरण काम करते हैं; यह 'जादू' वास्तव में **ऑप्टिक्स** और **संघनित पदार्थ भौतिकी** का प्रयोग है, जहां अदृश्य प्रकाश **सेंसर** और **इलेक्ट्रॉनों** के साथ क्रिया करके स्वचालित प्रतिक्रिया उत्पन्न करता है।
- Even though phones now provide an inexhaustible source of entertainment, going to a nearby movie theatre to watch a film still has its own charm.
  हालांकि फोन अब मनोरंजन का असीम स्रोत प्रदान करते हैं, फिर भी पास के **मूवी थिएटर** में फिल्म देखने का अपना अलग आकर्षण होता है।
- The shared loud laughter, the annoying phone calls of neighbours, and even the endless paan-masala ads featuring fitness-enthusiastic Bollywood actors remind us of simpler times when only humans were sometimes called intelligent.
  साझा जोरदार हंसी, पड़ोसियों के परेशान करने वाले फोन कॉल, और फिटनेस-प्रेमी बॉलीवुड अभिनेताओं वाले अंतहीन **पान-मसाला विज्ञापन** हमें उन सरल समयों की याद दिलाते हैं जब केवल इंसानों को ही कभी-कभी बुद्धिमान कहा जाता था।
- But even though movie theatres have transformed from having inedible food to unaffordable food, a few things have changed for good.
  लेकिन भले ही **मूवी थिएटर** का खाना अखाद्य से महंगा हो गया हो, कुछ चीजें अच्छे के लिए बदली हैं।
- For example, one of the most magical things in recent multiplexes, even if you ignore the thousand-crore-movies and the ear-wrenching Dolby surround sound, is the humble-looking washbasins.
  उदाहरण के लिए, हाल के **मल्टीप्लेक्स** में सबसे जादुई चीजों में से एक, भले ही आप हजार करोड़ की फिल्मों और तेज **डॉल्बी साउंड** को नजरअंदाज करें, साधारण दिखने वाले वॉशबेसिन हैं।
- Incidentally, when you place your hand below the tap, it becomes self-aware and offers you water.
  जब आप नल के नीचे हाथ रखते हैं, तो यह स्वयं सक्रिय होकर आपको पानी देता है।
- In fact, multiplexes (and even airports and metro stations) now seem to be aware.
  वास्तव में, **मल्टीप्लेक्स**, हवाई अड्डे और मेट्रो स्टेशन अब जागरूक प्रतीत होते हैं।
- Doors open automatically, paused escalators start moving, and with a wave of your hand, sanitisers, dryers, and soap dispensers activate.
  दरवाजे अपने आप खुल जाते हैं, रुके हुए **एस्केलेटर** चलने लगते हैं, और हाथ हिलाने पर **सैनिटाइज़र**, ड्रायर और साबुन डिस्पेंसर सक्रिय हो जाते हैं।
- So, have you ever wondered how a washbasin detects you?
  तो क्या आपने कभी सोचा है कि वॉशबेसिन आपको कैसे पहचानता है?
- In fact, even before magical wands became popular, you had some in your homes.
  दरअसल, जादुई छड़ी लोकप्रिय होने से पहले ही आपके घर में यह मौजूद थी।
- Each of your remotes — be it for TV or AC — works like one.
  आपका हर **रिमोट**, चाहे टीवी का हो या एसी का, उसी तरह काम करता है।
- You point it from a distance, press a button, and suddenly the TV or AC comes to life.
  आप इसे दूर से निशाना बनाते हैं, बटन दबाते हैं और टीवी या एसी चालू हो जाता है।

- Hiding behind all of this non-Harry-Potter-universe magic is, as always, some beautiful piece of physics.
  इस गैर-हैरी-पॉटर वाले जादू के पीछे हमेशा की तरह सुंदर **भौतिकी** छिपी है।
- And this time, it is of a unique type of invisible light.
  और इस बार यह एक विशेष प्रकार का **अदृश्य प्रकाश** है।

What exactly is a wave?
वेव (तरंग) वास्तव में क्या है?

- Before we go on to the invisible, the first natural question to ask is what is light?
  अदृश्य पर जाने से पहले पहला प्रश्न है कि **प्रकाश क्या है**?
- And the short answer is — light is a wave.
  संक्षिप्त उत्तर है — प्रकाश एक **तरंग** है।
- A wave is a disturbance that moves periodically, like a child on a swing.
  तरंग एक ऐसी **व्यवधान (डिस्टर्बेंस)** है जो समय-समय पर चलती है, जैसे झूले पर बच्चा।
- Now imagine a large playground with a thousand swings, all tied together.
  कल्पना करें एक बड़े मैदान की जहां हजार झूले जुड़े हों।
- If you push just one swing, the disturbance travels through all of them until even the last swing starts moving.
  यदि आप एक झूले को धक्का देते हैं, तो यह **व्यवधान** सभी में फैलता है और आखिरी झूला भी हिलने लगता है।
- This moving disturbance is what we call a wave.
  इस चलती हुई व्यवधान को ही **तरंग** कहते हैं।
- A wave has a frequency, which depends on how fast the swing moves back and forth.
  तरंग की एक **आवृत्ति (फ्रीक्वेंसी)** होती है, जो गति पर निर्भर करती है।
- If it does it once in a second, we call it one Hertz.
  यदि यह एक सेकंड में एक बार होता है, तो इसे **1 हर्ट्ज़** कहते हैं।
- Instead, if it does it 1,000 times in a second, we call it 1 kilohertz.
  यदि यह एक सेकंड में 1000 बार हो, तो इसे **1 किलोहर्ट्ज़** कहते हैं।
- We see waves all the time — in ripples on water when a stone is thrown, or in sound when a car suddenly honks behind us in traffic.
  हम हर समय तरंगें देखते हैं — पानी में लहरें या **ध्वनि तरंगें**।
- Those are sound waves.
  वे **ध्वनि तरंगें** हैं।
- But light waves are a bit strange.
  लेकिन **प्रकाश तरंगें** थोड़ी अलग होती हैं।
- The reason is simple.
  कारण सरल है।
- In water waves, it is the water that moves after getting disturbed.
  पानी की तरंगों में पानी ही हिलता है।
- Similarly, in sound waves, it is the air that has been disturbed.
  ध्वनि तरंगों में **हवा** हिलती है।
- But what moves in a light wave?
  लेकिन प्रकाश तरंग में क्या चलता है?
- After all, sunlight travels from the sun to earth through outer space, which has nothing to move.
  सूर्य का प्रकाश **अंतरिक्ष** से होकर पृथ्वी तक आता है जहां कुछ नहीं होता।
- Light moves through a vacuum.
  प्रकाश **निर्वात** में भी चलता है।

Invisible light
अदृश्य प्रकाश

- Light belongs to the family of electromagnetic (EM) waves — a wave in which electric and magnetic fields oscillate.
  प्रकाश **विद्युतचुंबकीय तरंगों** का हिस्सा है जहां **विद्युत और चुंबकीय क्षेत्र** दोलन करते हैं।
- An electric field is generated by a battery, and a magnetic field by magnets.
  विद्युत क्षेत्र बैटरी से और चुंबकीय क्षेत्र **चुंबक** से बनता है।
- But here they are generated simultaneously and have to change with time.
  यहां दोनों साथ बनते हैं और समय के साथ बदलते हैं।
- In nature, they can be generated in multiple ways, one of which is by electrons inside an atom when they jiggle close to the nucleus.
  ये प्रकृति में कई तरीकों से बनते हैं, जैसे **परमाणु** के अंदर इलेक्ट्रॉनों की गति से।
- The faster the electrons jiggle, more is the frequency of the EM wave they create.
  इलेक्ट्रॉन जितना तेज हिलेंगे, तरंग की **आवृत्ति** उतनी अधिक होगी।
- When such waves fall on our eyes, we can see them — but only a very tiny window of such frequencies.
  जब ये तरंगें हमारी आंखों पर पड़ती हैं, हम उन्हें देख सकते हैं, लेकिन सीमित सीमा में।
- These frequencies are between 400 and 800 terahertz.
  ये आवृत्तियां **400 से 800 टेराहर्ट्ज़** के बीच होती हैं।
- These ranges of EM waves are termed visible light.
  इन्हें **दृश्य प्रकाश** कहा जाता है।
- In all of physics, the study of light and its properties remains one of the beautiful fields of study.
  भौतिकी में प्रकाश का अध्ययन सबसे सुंदर क्षेत्रों में से एक है।
- This area of study is optics.
  इसे **ऑप्टिक्स** कहते हैं।
- Even if we do not see all frequency waves, it does not mean they are not present.
  यदि हम सभी तरंगें नहीं देख सकते, इसका मतलब यह नहीं कि वे मौजूद नहीं हैं।
- In fact, we are drenched in electromagnetic waves of various types.
  हम विभिन्न प्रकार की **विद्युतचुंबकीय तरंगों** से घिरे हैं।
- Radio waves cannot be seen, but our radio transistors can pick them up.
  रेडियो तरंगें नहीं दिखतीं लेकिन रेडियो उन्हें पकड़ सकता है।
- Similarly, microwaves are another type of electromagnetic wave.
  माइक्रोवेव भी इसी प्रकार की तरंग हैं।
- The kind of waves that give the remote magic are called **Infrared (IR) waves**.
  रिमोट का जादू **इन्फ्रारेड तरंगों** से होता है।
- These waves are invisible to human eyes.
  ये तरंगें इंसानी आंखों को नहीं दिखतीं।

Sensors as switches
सेंसर स्विच के रूप में

- Sensors are called photodiodes.
  सेंसर को **फोटोडायोड** कहते हैं।
- They conduct electricity if light falls on it.
  ये प्रकाश पड़ने पर **विद्युत प्रवाह** होने देते हैं।
- When IR light falls on the photodiode, the circuit turns ON.
  जब IR प्रकाश पड़ता है, सर्किट चालू हो जाता है।

- Otherwise, it stays OFF.
  अन्यथा यह बंद रहता है।

How washbasins detect hands
वॉशबेसिन हाथ कैसे पहचानता है

- An IR LED and a sensor are placed together.
  एक **IR LED** और सेंसर साथ रखे जाते हैं।
- Normally, light does not reach the sensor.
  सामान्यतः प्रकाश सेंसर तक नहीं पहुंचता।
- When you place your hand, it reflects IR light.
  जब आप हाथ रखते हैं, तो यह **IR प्रकाश को परावर्तित** करता है।
- The reflected light reaches the sensor and turns ON the water.
  यह प्रकाश सेंसर तक पहुंचकर पानी चालू कर देता है।

Quantum mechanics
क्वांटम यांत्रिकी

- Understanding how sensors and electrons work requires **quantum mechanics**.
  सेंसर और इलेक्ट्रॉन को समझने के लिए **क्वांटम यांत्रिकी** जरूरी है।
- This is studied in physics courses.
  यह भौतिकी में पढ़ाया जाता है।
- Next time you go to a multiplex, enjoy not just the movie but also the science around you.
  अगली बार मल्टीप्लेक्स जाएं तो फिल्म के साथ विज्ञान का भी आनंद लें।

GS Paper III: Environment,	21 April 2026
TOPICS COVERED	
21A	Visakhapatnam zoo to display black panther after 40 years विशाखापत्तनम चिड़ियाघर में 40 साल बाद ब्लैक पैंथर का प्रदर्शन
21A	India's forests could nearly double carbon storage by 2100, study finds भारत के वन 2100 तक कार्बन भंडारण लगभग दोगुना कर सकते हैं, अध्ययन में पाया गया

GS III: Environment

Visakhapatnam zoo to display black panther after 40 years

A female black panther will be released into an enclosure at the Indira Gandhi Zoological Park (IGZP) in Andhra Pradesh's Visakhapatnam on Tuesday, ending a 40-year gap since the species was last on display at the zoo. The panther was brought from Assam State Zoo-cum-Botanical Garden in Guwahati last month as part of an inter-zoo exchange programme. IGZP curator G. Mangamma said the panther is received as part of an exchange that also covers other species.

21A. Visakhapatnam zoo to display black panther after 40 years

विशाखापत्तनम चिड़ियाघर में 40 साल बाद ब्लैक पैंथर का प्रदर्शन

- A female **black panther** will be released into an enclosure at the **Indira Gandhi Zoological Park (IGZP)** in Andhra Pradesh's Visakhapatnam on Tuesday, ending a **40-year gap** since the species was last on display at the zoo.

एक मादा **ब्लैक पैंथर** को मंगलवार को आंध्र प्रदेश के विशाखापत्तनम स्थित **इंदिरा गांधी प्राणी उद्यान (IGZP)** में बाड़े में छोड़ा जाएगा, जिससे इस प्रजाति के **40 साल के अंतराल** के बाद फिर से प्रदर्शन का अंत होगा।

- The panther was brought from **Assam State Zoo-cum-Botanical Garden** in Guwahati last month as part of an **inter-zoo exchange programme**.

इस पैंथर को पिछले महीने गुवाहाटी के **असम स्टेट जू-कम-बॉटनिकल गार्डन** से **चिड़ियाघर आदान-प्रदान कार्यक्रम** के तहत लाया गया था।

- IGZP curator **G. Mangamma** said the panther is received as part of an exchange that also covers **other species**.
  IGZP की क्यूरेटर **जी. मंगम्मा** ने कहा कि यह पैंथर एक ऐसे आदान-प्रदान का हिस्सा है जिसमें **अन्य प्रजातियां** भी शामिल हैं।

India's forests could nearly double carbon storage by 2100, study finds

The findings, published in *Environmental Research: Climate*, involved researchers from Indian institutes; biggest increases in vegetation carbon are projected in desert and semi-arid zones across Rajasthan, Gujarat and Madhya Pradesh, study says

GS III: Environment

Jacob Koshy
NEW DELHI

India's forests could store nearly twice as much carbon by the end of this century as they do now if current greenhouse gas emission trends continue, according to a new modelling study published this week in the journal *Environmental Research: Climate*.

The findings, involving researchers from multiple Indian institutes, present a granular forecast of how climate change will reshape the country's forest carbon stocks. Significantly, they diverge in important ways from official estimates compiled by the Forest Survey of India (FSI) - the official source of tree and forest cover data in India.

For this study, the authors used modelling to peer into the future and found that vegetation carbon biomass rises by 35% under a low-emissions future, 62% under a medium-emissions pathway, and as much as 97% under a high-emissions, fossil-fuel-intensive scenario by 2100. Till about 2030, all of the scenarios project roughly the same quantities of vegetation after which they diverge sharply – the steepest acceleration occurring after 2050.

Wake-up call: Climate change is silently rewriting every sector, including our forests, say scientists. SPECIAL ARRANGEMENT

The projected increases are driven primarily by two interacting forces: rising precipitation and elevated atmospheric CO_2. Higher rainfall, projected across much of India under all emissions scenarios, translates to more moisture available for trees to grow. Simultaneously, more available carbon dioxide means enhancing photosynthesis and water-use efficiency. Rainfall effects appear with a lag of roughly two years under low and medium emissions, extending to about four years under the high-emissions scenario to account for the fact that forests do not respond instantly to a single wet year, and that woody biomass accumulates slowly over time.

"Climate change is not just about rising temperatures – it is silently rewriting every sector, including our forests," said lead author Fathima Fitha. "Even where gains appear, they may mask deeper stresses, raising concerns about the stability of today's dense forests and the risk of releasing large stores of carbon. Human pressures, land-use change, and extreme events such as wildfires, droughts, and heatwaves are intensifying these risks. If we undermine our forests today, we risk amplifying emissions tomorrow."

The largest relative increases are projected not in India's established forest heartlands but in its driest margins. Desert and semi-arid zones across Rajasthan, Gujarat, western Madhya Pradesh, and adjoining dry interiors are expected to see vegetation carbon rise by more than 60% compared to historical levels under high emissions. The Trans-Himalayas, the Gangetic forest belt, and the Deccan Peninsula follow. The Western Ghats and the Himalayas – India's most biodiverse and ecologically significant forest zones – are projected to see comparatively smaller relative increases, constrained by ecological saturation and specific climatic pressures those regions face, the study shows.

The increase in vegetation doesn't mean that climate change is acting as a net good, the researchers warned, as the models do not capture disruptive forces such as deforestation, land conversion, fire, and pest outbreaks intensified by warming.

21A. India's forests could nearly double carbon storage by 2100, study finds
भारत के वन 2100 तक कार्बन भंडारण लगभग दोगुना कर सकते हैं, अध्ययन में पाया गया

- The findings, published in **Environmental Research: Climate**, involved researchers from Indian institutes; biggest increases in vegetation carbon are projected in **desert and semi-arid zones** across **Rajasthan, Gujarat and Madhya Pradesh**, study says.
  ये निष्कर्ष **Environmental Research: Climate** में प्रकाशित हुए, जिसमें भारतीय संस्थानों के शोधकर्ता शामिल थे; अध्ययन के अनुसार **राजस्थान, गुजरात और मध्य प्रदेश** के **रेगिस्तानी और अर्ध-शुष्क क्षेत्रों** में वनस्पति कार्बन में सबसे अधिक वृद्धि का अनुमान है।
- India's forests could store nearly twice as much **carbon** by the end of this century as they do now if current **greenhouse gas emission trends** continue, according to a new modelling study published this week.
  इस सप्ताह प्रकाशित एक नए मॉडलिंग अध्ययन के अनुसार, यदि वर्तमान **ग्रीनहाउस गैस उत्सर्जन प्रवृत्तियां**

जारी रहती हैं, तो भारत के वन इस सदी के अंत तक अभी की तुलना में लगभग दोगुना **कार्बन** संग्रह कर सकते हैं।

- The findings, involving researchers from multiple Indian institutes, present a **granular forecast** of how **climate change** will reshape the country's forest carbon stocks.
  इन निष्कर्षों में कई भारतीय संस्थानों के शोधकर्ता शामिल हैं, जो बताते हैं कि **जलवायु परिवर्तन** देश के वन कार्बन भंडार को कैसे प्रभावित करेगा इसका एक **विस्तृत पूर्वानुमान** प्रस्तुत करते हैं।
- Significantly, they diverge in important ways from official estimates compiled by the **Forest Survey of India (FSI)** — the official source of tree and forest cover data in India.
  महत्वपूर्ण रूप से, ये निष्कर्ष **फॉरेस्ट सर्वे ऑफ इंडिया (FSI)** द्वारा संकलित आधिकारिक आंकड़ों से कई महत्वपूर्ण तरीकों से अलग हैं, जो भारत में वन और पेड़ आवरण का आधिकारिक स्रोत है।
- For this study, the authors used modelling to peer into the future and found that vegetation carbon biomass rises by **35%** under a low-emissions future, **62%** under a medium-emissions pathway, and as much as **97%** under a high-emissions scenario by **2100**.
  इस अध्ययन के लिए लेखकों ने भविष्य का अनुमान लगाने हेतु मॉडलिंग का उपयोग किया और पाया कि वनस्पति कार्बन बायोमास **कम उत्सर्जन** स्थिति में **35%**, **मध्यम उत्सर्जन** में **62%**, और **उच्च उत्सर्जन** स्थिति में **2100** तक **97%** तक बढ़ सकता है।
- Till about **2030**, all of the scenarios project roughly the same quantities of vegetation after which they diverge sharply — the steepest acceleration occurring after **2050**.
  लगभग **2030** तक सभी परिदृश्य लगभग समान वनस्पति मात्रा दिखाते हैं, जिसके बाद इनमें तेज अंतर आता है — सबसे तेज वृद्धि **2050** के बाद होती है।
- The projected increases are driven primarily by two interacting forces: rising **precipitation** and elevated atmospheric **CO2**.
  अनुमानित वृद्धि मुख्य रूप से दो कारकों से प्रेरित है: बढ़ती **वर्षा** और वायुमंडलीय **CO2** में वृद्धि।
- Higher rainfall, projected across much of India, translates to more moisture available for trees to grow.
  भारत के अधिकांश हिस्सों में बढ़ती वर्षा का मतलब है पेड़ों के बढ़ने के लिए अधिक नमी उपलब्ध होना।
- Simultaneously, more available carbon dioxide means enhancing **photosynthesis** and **water-use efficiency**.
  साथ ही, अधिक कार्बन डाइऑक्साइड से **प्रकाश संश्लेषण** और **जल उपयोग दक्षता** बढ़ती है।
- Rainfall effects appear with a lag of roughly two years under low and medium emissions, extending to about four years under the high-emissions scenario.
  वर्षा के प्रभाव कम और मध्यम उत्सर्जन में लगभग दो वर्षों की देरी से दिखते हैं, जबकि उच्च उत्सर्जन में यह लगभग चार वर्षों तक बढ़ जाते हैं।
- "Climate change is not just about rising temperatures — it is silently rewriting every sector, including our forests," said lead author **Fathima Fitha**.
  मुख्य लेखिका **फातिमा फिथा** ने कहा, "जलवायु परिवर्तन केवल तापमान बढ़ने तक सीमित नहीं है — यह चुपचाप हर क्षेत्र, यहां तक कि हमारे वनों को भी बदल रहा है।"
- "Even where gains appear, they may mask deeper stresses, raising concerns about the stability of today's dense forests and the risk of releasing large stores of carbon."
  "जहां लाभ दिखते हैं, वहां भी गहरे तनाव छिपे हो सकते हैं, जिससे घने वनों की स्थिरता और बड़े कार्बन भंडार के उत्सर्जन का खतरा बढ़ता है।"
- "Human pressures, land-use change, and extreme events such as **wildfires, droughts, and heatwaves** are intensifying these risks."
  "मानव दबाव, भूमि उपयोग में परिवर्तन और **जंगल की आग, सूखा और हीटवेव** जैसी चरम घटनाएं इन जोखिमों को बढ़ा रही हैं।"
- "If we undermine our forests today, we risk amplifying emissions tomorrow."
  "यदि हम आज अपने वनों को कमजोर करते हैं, तो हम भविष्य में उत्सर्जन को और बढ़ाने का जोखिम उठाते हैं।"

- The largest relative increases are projected not in India's established forest heartlands but in its driest margins.
  सबसे अधिक सापेक्ष वृद्धि भारत के पारंपरिक वन क्षेत्रों में नहीं बल्कि उसके सबसे शुष्क क्षेत्रों में होने का अनुमान है।
- Desert and semi-arid zones across **Rajasthan, Gujarat, western Madhya Pradesh** are expected to see vegetation carbon rise by more than **60%** under high emissions.
  राजस्थान, गुजरात और पश्चिमी मध्य प्रदेश के रेगिस्तानी और अर्ध-शुष्क क्षेत्रों में उच्च उत्सर्जन के तहत वनस्पति कार्बन में **60% से अधिक** वृद्धि का अनुमान है।
- The **Trans-Himalayas**, the **Gangetic forest belt**, and the **Deccan Peninsula** follow.
  इसके बाद **ट्रांस-हिमालय**, **गंगा वन क्षेत्र**, और **दक्कन प्रायद्वीप** आते हैं।
- The **Western Ghats** and the **Himalayas** are projected to see comparatively smaller increases due to ecological saturation and specific climatic pressures.
  पश्चिमी घाट और **हिमालय** में पारिस्थितिक संतृप्ति और विशेष जलवायु दबावों के कारण अपेक्षाकृत कम वृद्धि का अनुमान है।
- The increase in vegetation doesn't mean that climate change is acting as a net good, the researchers warned.
  शोधकर्ताओं ने चेतावनी दी कि वनस्पति में वृद्धि का मतलब यह नहीं है कि जलवायु परिवर्तन लाभकारी है।
- The models do not capture disruptive forces such as **deforestation, land conversion, fire, and pest outbreaks** intensified by warming.
  मॉडल में **वनों की कटाई, भूमि परिवर्तन, आग और कीट प्रकोप** जैसे विघटनकारी कारकों को शामिल नहीं किया गया है, जो बढ़ते तापमान से और तीव्र हो सकते हैं।

GS Paper III: Disaster Management	21 April 2026
TOPICS COVERED	
21A	The price of negligence लापरवाही की कीमत

GS III: Disaster Management

The price of negligence

Human involvement in hazardous industries must be minimal

In yet another gruesome explosion at a fireworks unit on April 19 in Tamil Nadu's southern Virudhunagar district, 25 workers were killed and eight others injured. The number of injured went up to 20, including policemen and firefighters, after another explosion occurred at the unit later. In the past four years, at least 134 people have died and 89 have been injured in such explosions in the district, which is known for its concentration of fireworks units. It is an outright misnomer to describe this type of explosion as an accident, as any preliminary investigation would reveal. Accidents are associated with elements of surprise and unanticipated occurrence. But in the case of Virudhunagar, it is known to every worker – even if no separate sensitisation course is conducted – that the firecracker industry is hazardous and that any negligence of safety norms can result in disaster. Moreover, such explosions have occurred at regular intervals in the district, claiming the lives of scores of workers, most of whom come from economically weaker sections of society. Beyond expressing condolences and announcing solatium, the authorities at the Union and State levels have done little of substance to reduce, if not eliminate, the risk of such explosions. What they should and could have done is intensify meaningful monitoring, the absence of which is now and then felt in the form of explosions.

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

21A. The price of negligence
लापरवाही की कीमत

- In yet another gruesome **explosion** at a **fireworks unit** on April 19 in Tamil Nadu's southern **Virudhunagar district**, 25 workers were killed and eight others injured.

19 अप्रैल को तमिलनाडु के दक्षिणी **विरुधुनगर जिले** में एक **पटाखा यूनिट** में हुए एक और भयानक **विस्फोट** में 25 मजदूर मारे गए और आठ अन्य घायल हुए।

- In the past four years, at least 134 people have died and 89 have been injured in such explosions in the district, which is known for its concentration of **fireworks units**.

पिछले चार वर्षों में जिले में ऐसे विस्फोटों में कम से कम 134 लोगों की मौत हो चुकी है और 89 लोग घायल हुए हैं, यह जिला **पटाखा यूनिटों** की अधिकता के लिए जाना जाता है।

- But in the case of Virudhunagar, it is known to every worker that the **firecracker industry** is **hazardous** and that any negligence of **safety norms** can result in disaster.

लेकिन विरुधुनगर के मामले में हर श्रमिक जानता है कि **पटाखा उद्योग खतरनाक** है और **सुरक्षा नियमों** की किसी भी लापरवाही से आपदा हो सकती है।

- The unit was operating on a **Sunday**, a holiday for the fireworks industry, apparently without permission.

यह यूनिट **रविवार** को, जो पटाखा उद्योग के लिए अवकाश होता है, बिना अनुमति के संचालित हो रही थी।

- Contrary to licence norms allowing only **12 workers**, **40 people** were present at the time of the explosion.

लाइसेंस नियमों के विपरीत, जिसमें केवल **12 श्रमिकों** की अनुमति है, विस्फोट के समय **40 लोग** मौजूद थे।

- Official inspections may have been conducted but more as a **ritual** than a meaningful exercise.

आधिकारिक निरीक्षण हुए होंगे, लेकिन वे अधिकतर एक **औपचारिकता** के रूप में किए गए होंगे।