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THE HINDU NEWSPAPER

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Tushar Mehta reappointed Solicitor-General for 3 years

The Centre has reappointed Tushar Mehta the Solicitor-General of India for a further term of three years from July 1. An order in this regard was issued by the Department of Personnel and Training (DoPT) on June 20, an official source said. The Appointments Committee of the Cabinet approved the reappointment, ensuring continuity in the government's legal representation before the Supreme Court and other constitutional courts. The Centre also reappointed five Additional Solicitors-General – Vikramjit Banerjee, K.M. Nataraj Suryaprakash V. Raju, N. Venkataraman, and Aishwarya Bhati – for the Supreme Court for a three-year term.

23J6. Tushar Mehta reappointed Solicitor-General for 3 years

तुषार मेहता को तीन वर्षों के लिए पुनः सॉलिसिटर जनरल नियुक्त किया गया

- The Centre has reappointed Tushar Mehta, the **Solicitor-General of India**, for a further term of **three years** from **July 1**. केंद्र सरकार ने भारत के महाधिवक्ता तुषार मेहता को 1 जुलाई से आगे के तीन वर्षों के लिए पुनः नियुक्त किया है।
- An order in this regard was issued by the **Department of Personnel and Training** on **June 20**, an official source said. एक आधिकारिक सूत्र के अनुसार, इस संबंध में कार्मिक एवं प्रशिक्षण विभाग द्वारा 20 जून को आदेश जारी किया गया।
- The **Appointments Committee of the Cabinet** approved the reappointment, ensuring continuity in the government's legal representation before the **Supreme Court** and other constitutional courts.

मंत्रिमंडल की नियुक्ति समिति ने इस पुनर्नियुक्ति को स्वीकृति प्रदान की, जिससे उच्चतम न्यायालय तथा अन्य संवैधानिक न्यायालयों के समक्ष सरकार के विधिक

प्रतिनिधित्व में निरंतरता सुनिश्चित हुई है।

- The Centre also reappointed **five Additional Solicitors-General** — **Vikramjit Banerjee, K.M. Nataraj, Suryaprakash V. Raju, N. Venkataraman, and Aishwarya Bhati** — for the **Supreme Court** for a **three-year term**.

केंद्र सरकार ने उच्चतम न्यायालय के लिए पाँच अतिरिक्त महाधिवक्ताओं — विक्रमजीत बनर्जी, के. एम. नटराज, सूर्यप्रकाश वी. राजू, एन. वेंकटरमण और ऐश्वर्या भाटी — को भी तीन वर्ष की अवधि के लिए पुनः नियुक्त किया है।

Alan Greenspan, U.S. Fed 'maestro', passes away at 100

PCS
Reuters

Alan Greenspan, hailed as the greatest Federal Reserve chairman when he retired in 2006 but derided for a severe financial crisis that followed barely 2 years later, died on Monday aged 100, his wife said.

Greenspan, who exerted a powerful influence on the U.S. economy during his tenure at the helm of the Fed from August 1987 to January 2006, died at his home from complications of Parkinson's Disease, Andrea Mitchell said in a statement.

"He was a giant of a man who helped shape the



Alan Greenspan

U.S. economy for decades under presidents of both parties, but was always honest in acknowledging his mistakes," Ms. Mitchell said.

"He will be remembered for his brilliance and his kindness. Being his life

partner was the joy of my life," she added.

Mr. Greenspan oversaw the second-longest economic expansion in U.S. history, an uninterrupted decade of growth from March 1991 to March 2001. His decision to let economy run – despite pressure to raise interest rates against an inflation threat that never materialised – helped foster years of U.S. prosperity and earned him rock star status as an economic "maestro." The era was marked by his prescient judgment that a productivity surge in the mid-1990s would keep inflation contained.

23J6. Alan Greenspan, U.S. Fed 'maestro', passes away at 100

अमेरिकी फेड के 'माएस्ट्रो' एलन ग्रीनस्पैन का 100 वर्ष की आयु में निधन

- Alan Greenspan**, hailed as the greatest **Federal Reserve chairman** when he retired in 2006 but derided for a severe **financial crisis** that followed barely 2 years later, died on Monday aged **100**, his wife said.

एलन ग्रीनस्पैन, जिन्हें 2006 में सेवानिवृत्ति के समय सबसे महान फेडरल रिज़र्व अध्यक्ष माना गया था, लेकिन लगभग 2 वर्ष बाद आए गंभीर वित्तीय संकट के लिए आलोचना का सामना करना पड़ा, उनका सोमवार को 100 वर्ष की आयु

में निधन हो गया, उनकी पत्नी ने कहा।

- Greenspan, who exerted a powerful influence on the **U.S. economy** during his tenure at the helm of the **Fed** from August 1987 to January 2006, died at his home from complications of **Parkinson's Disease**, Andrea Mitchell said in a statement.

बीनस्पैन, जिन्होंने अगस्त 1987 से जनवरी 2006 तक **फेड** के प्रमुख के रूप में कार्य करते हुए **अमेरिकी**

अर्थव्यवस्था पर गहरा प्रभाव डाला, उनका अपने घर पर **पार्किंसन रोग** से जुड़ी जटिलताओं के कारण निधन हो गया, एंड्रिया मिशेल ने एक बयान में कहा।

PARKINSON'S DISEASE (PD)

- **Parkinson's Disease (PD)** is a **progressive neurodegenerative disorder** that primarily affects movement, balance, coordination, and several non-motor functions of the body.
- It occurs when nerve cells (neurons) in a specific part of the brain called the **Substantia Nigra** gradually degenerate and die.
- These neurons produce **dopamine**, a neurotransmitter that helps control smooth and coordinated muscle movements.
- As dopamine levels decrease, symptoms of Parkinson's disease gradually appear and worsen over time.
- The disease is named after **Dr. James Parkinson**, who first described it in **1817** in his work *An Essay on the Shaking Palsy*.

Basic Science Behind Parkinson's Disease

Role of Dopamine

- Dopamine is a chemical messenger that allows different parts of the brain to communicate effectively.
- It plays a major role in:
 - Movement control.
 - Coordination.
 - Learning.
 - Motivation.
 - **Reward mechanisms.**
- In Parkinson's disease, approximately **60–80% of dopamine-producing neurons** are lost before significant symptoms become noticeable.

Substantia Nigra

- The **Substantia Nigra** is located in the midbrain.
- It forms part of the **Basal Ganglia**, which regulates voluntary movement.
- Degeneration of this region leads to the characteristic movement problems seen in Parkinson's disease.

Causes

- The exact cause remains unknown.
- **Most cases are considered idiopathic**, meaning no single definite cause has been identified.

Genetic Factors

- **Certain gene mutations can increase susceptibility.**
- Important genes include:
 - **LRRK2**
 - **SNCA**
 - **PARKIN**
 - **PINK1**

Environmental Factors

- **Exposure to some pesticides and industrial chemicals may increase risk.**

- Repeated head injuries have also been associated with a higher risk.

Ageing

- Age is the most significant risk factor.
- Most cases occur after the age of **60 years**.

Major Symptoms

Motor Symptoms

- Resting tremor (shaking of hands, fingers, legs, or jaw).
- Bradykinesia (slowness of movement).
- Muscle rigidity or stiffness.
- Postural instability and balance problems.
- Difficulty in walking.
- Reduced facial expressions ("masked face").

Non-Motor Symptoms

- Depression and anxiety.
- Sleep disturbances.
- Constipation.
- **Loss of smell (Anosmia).**
- Cognitive impairment.
- Fatigue.
- Speech difficulties.
- Autonomic dysfunction (blood pressure and bladder control issues).

Stages of Parkinson's Disease

Early Stage

- Mild tremors.
- Slight stiffness.
- Symptoms often affect only one side of the body.

Moderate Stage

- Increasing difficulty with movement.
- Walking and balance problems begin.

Advanced Stage

- Severe mobility limitations.
- Dependence on caregivers for daily activities.
- Cognitive decline may develop in some patients.

Diagnosis

Clinical Diagnosis

- There is currently no single laboratory test that definitively diagnoses Parkinson's disease.
- Diagnosis is mainly based on:
- Medical history.
- Neurological examination.
- Observation of symptoms.

Brain Imaging

- MRI is used mainly to exclude other disorders.
- Specialized imaging such as dopamine transporter scans (DaT scans) may assist diagnosis.

Treatment

Levodopa

- The most effective medication.
- It is converted into dopamine inside the brain.

Dopamine Agonists

- Mimic dopamine action.
- Examples:
- Pramipexole.

- Ropinirole.

MAO-B Inhibitors

- Help preserve dopamine.

Deep Brain Stimulation (DBS)

- Surgical procedure involving implantation of electrodes in specific brain regions.
- Useful in selected patients with advanced disease.

Supportive Therapies

- Physiotherapy.
- Speech therapy.
- Occupational therapy.
- Nutritional support.

Japanese firm JAMCO launches Centre of Excellence in Pune

PCS

Jagriti Chandra
PUNE

Tokyo-headquartered aircraft interiors company JAMCO Interiors on Monday launched its Centre of Excellence in Pune, committing \$150 million to expand its India workforce "six-fold" and build the country into a design engineering hub, while also beginning to source components from Indian suppliers.

"We are looking at design technology being transferred to India so that India becomes a design centre for our laboratory products," said Kate Schaefer, Executive Chair and CEO, JAMCO Interiors.

JAMCO will also see a similar centre being inaugurated in Bengaluru later this week. A design centre in India would mean back-office engineering support which sends out simple packages of independent design work evolving into engineering and product-development base capable of handling "cradle-to-grave" designing work spanning the original request for quotation (RFQ), product design and development, certification support, and entry into service. This growth will be supported by an increase in engineering manpower



Dignitaries at the inauguration of the Centre. BY ARRANGEMENT

from 100 to 500 in the next two to five years.

The company supplies approximately 50% of the world's widebody lavatories, including 100% on the Boeing 787 and 777, and approximately 40% of the world's widebody galleys (kitchen section), including 100% on the Boeing 787, along with 100% "Increased Cabin Efficiency" (ICE) galleys on the Airbus A350. Its portfolio also includes business class seating, branding panels, and window shades. The Pune centre has already received technology transfer for the design and development of aircraft galleys, and is expected to acquire similar capabilities for lavatories in the near future. So why India? The CEO says, "it's about access to highly educated engineers that is hard to do in Japan, and hard to do in the U.S. at the moment, as well."

(The author was in Pune on the invitation of JAMCO)

23J6. Japanese firm JAMCO launches Centre of Excellence in Pune जापानी कंपनी JAMCO ने पुणे में सेंटर ऑफ एक्सीलेंस शुरू किया

- Tokyo-headquartered aircraft interiors company JAMCO Interiors on Monday launched its Centre of Excellence in Pune, committing \$150 million to expand its India workforce "six-fold" and build the country into a design engineering hub, while also beginning to source components from Indian suppliers.

टोक्यो मुख्यालय वाली विमान आंतरिक सज्जा कंपनी JAMCO Interiors ने सोमवार को पुणे में अपना सेंटर ऑफ एक्सीलेंस शुरू किया और भारत में अपने कार्यबल को "छह गुना" बढ़ाने तथा देश को डिज़ाइन इंजीनियरिंग हब बनाने के लिए 150 मिलियन डॉलर निवेश करने की प्रतिबद्धता जताई। साथ ही कंपनी भारतीय आपूर्तिकर्ताओं से पुर्जों की खरीद भी शुरू करेगी।

- "We are looking at design technology being transferred to India so that India becomes a design centre for our laboratory products," said Kate Schaefer, Executive Chair and CEO, JAMCO Interiors.

JAMCO Interiors की कार्यकारी अध्यक्ष और CEO केट शेफर ने कहा, "हम डिज़ाइन तकनीक को भारत में स्थानांतरित करने की दिशा में काम कर रहे हैं ताकि भारत हमारे प्रयोगशाला उत्पादों के लिए एक डिज़ाइन केंद्र बन सके।"

- JAMCO will also see a similar centre being inaugurated in Bengaluru later this week.

JAMCO इस सप्ताह के अंत में बेंगलुरु में भी इसी प्रकार का एक केंद्र शुरू करेगा।

- A design centre in India would mean back-office engineering support which sends out simple packages of independent design work evolving into engineering and product-development base capable of handling "cradle-to-grave" designing work spanning the original request for quotation (RFQ), product design and development, certification support, and entry into service.

भारत में एक डिज़ाइन केंद्र का अर्थ होगा बैक-ऑफिस

इंजीनियरिंग सहायता, जो स्वतंत्र डिज़ाइन कार्यों के साधारण पैकेज भेजने से आगे बढ़कर इंजीनियरिंग और उत्पाद-विकास आधार में विकसित होगी, जो मूल RFQ (Request for Quotation), उत्पाद डिज़ाइन एवं विकास, प्रमाणन सहायता और सेवा में प्रवेश तक के “क्रैडल-टू-ग्रेव” डिज़ाइन कार्य को संभाल सकेगी।

- The company supplies approximately 50% of the world's widebody lavatories, including 100% on the Boeing 787 and 777, and approximately 40% of the world's widebody galleys (kitchen section), including 100% on the Boeing 787, along with 100% Increased Cabin Efficiency (ICE) galleys on the Airbus A350.

कंपनी दुनिया के लगभग 50% वाइडबॉडी विमान शौचालयों की आपूर्ति करती है, जिनमें Boeing 787 और 777 के लिए 100% आपूर्ति शामिल है। साथ ही यह दुनिया की लगभग 40% वाइडबॉडी गैली (रसोई अनुभाग) की आपूर्ति करती है, जिसमें Boeing 787 के लिए 100% तथा Airbus A350 के लिए 100% Increased Cabin Efficiency (ICE) गैली शामिल हैं।

- Its portfolio also includes business class seating, branding panels, and window shades. इसके उत्पाद पोर्टफोलियो में बिज़नेस क्लास सीटिंग, ब्रांडिंग पैनल और विंडो शेड्स भी शामिल हैं।
- The Pune centre has already received technology transfer for the design and development of aircraft galleys, and is expected to acquire similar capabilities for lavatories in the near future.

पुणे केंद्र को विमान गैली के डिज़ाइन और विकास के लिए पहले ही प्रौद्योगिकी हस्तांतरण प्राप्त हो चुका है, और निकट भविष्य में शौचालयों के लिए भी ऐसी ही क्षमताएँ प्राप्त होने की उम्मीद है।

Messi sets record, Argentina in knockouts

The talisman goes past Klose for the most number of goals in the showpiece after missing an early penalty; his brace consigns Austria to a 0-2 defeat

FIFA WORLD CUP

Avd
DALLAS

The takeover had begun long before kick-off. The previous evening, thousands had gathered at the Klyde Warren Park for the traditional Argentine Bandera, a fan rally named after the Spanish word for flag, *bandera*. They draped downtown Dallas in blue and white and filled the Texas air with songs carried across generations. For one weekend, it looked like Buenos Aires had travelled north, settling briefly among the glass towers and endless freeways of Dallas.

Twenty-four hours later, Argentina repaid the devotion with a 2-0 victory over Austria, a result that secured its place in the knockouts.

The songs had grown louder as the crowd poured into the AT&T Stadium, and five minutes into the game, the sense of inevitability appeared to be justified.



18 and counting... Messi etched his name in the record books with a perfectly placed strike in the first half and followed it up with one in injury time. REUTERS & GETTY IMAGES



Argentina won a penalty after a lengthy VAR review determined that Lautaro Martinez was brought down inside the box. But to the disbelief of the Messi faithful congregated here, the Argentine captain dragged his effort wide.

The rare ignominy appeared to cast a brief shadow over the South Americans, and Austria, sensing an opportunity, tried to

turn possession into pressure. Perhaps, for the first time in this edition, the world champion looked ill at ease, its rhythm disrupted and composure tested by an opponent unwilling to be overawed.

Messi almost conjured a moment of magic in the 19th minute. Twisting his way into the penalty area, he discovered just enough space for a shot, but Alex-

ander Schlager was alert to the danger and smothered the effort.

The goal that finally soothed the Argentine nerves arrived in the 38th minute. Thiago Almada cleverly stepped over a diagonal pass from Facundo Medina, allowing it to run into Messi's path. Arriving centrally, the captain opened his body and guided a precise finish beyond

the goalkeeper. And, just like that, he was the holder of most number of goals in the showpiece, going past German Miroslav Klose.

A free-kick whipped in from the left by Marcel Sabitzer after the break provided Austria with its closest opportunity to claw back. But Emiliano Martinez reacted sharply to block its path.

Argentina had chances

to extend its lead, but the finishing remained uncharacteristically wasteful from Lionel Scaloni's side. Yet as the game drifted into stoppage time, *La Albicel-este* found the reward its persistence deserved. As Austria failed to clear its lines inside a crowded penalty box, it was Messi, who reacted quickest, hammering home from close range.

23J6. Messi sets record, Argentina in knockouts

मेसी ने बनाया रिकॉर्ड, अर्जेंटीना नॉकआउट चरण में पहुँचा

- The talisman goes past Klose for the most number of goals in the showpiece after missing an early penalty; his brace consigns Austria to a 0-2 defeat.

शुरुआती पेनाल्टी चूकने के बावजूद इस दिग्गज खिलाड़ी ने क्लोज़े को पीछे छोड़ते हुए टूर्नामेंट में सबसे अधिक गोल करने का रिकॉर्ड बनाया; उनके दो गोलों ने ऑस्ट्रिया को 0-2 की हार दी।

- And, just like that, he was the holder of most number of goals in the showpiece, going past German **Miroslav Klose**.
और इसी के साथ उन्होंने जर्मनी के **मिरोस्लाव क्लोज़े** को पीछे छोड़ते हुए टूर्नामेंट में सर्वाधिक गोल करने का रिकॉर्ड अपने नाम कर लिया।



PCS

Vondrousova gets ban for refusing anti-doping test

Former Wimbledon women's champion Marketa Vondrousova has been handed a four-year suspension for refusing an anti-doping test in December, the International Tennis Integrity Agency (ITIA) said on Monday.

23J6. Vondrousova gets ban for refusing anti-doping test

एंटी-डोपिंग परीक्षण से इनकार करने पर वॉद्रूशोवा पर प्रतिबंध

- Former Wimbledon women's champion Marketa Vondrousova has been handed a four-year suspension for refusing an anti-doping test in December, the International Tennis Integrity Agency (ITIA) said on Monday.

पूर्व विंबलडन महिला चैंपियन मार्केटा वॉद्रूशोवा को दिसंबर में एंटी-डोपिंग परीक्षण से इनकार करने के कारण चार वर्ष के निलंबन की सजा दी गई है, यह जानकारी इंटरनेशनल टेनिस इंटीग्रिटी एजेंसी (ITIA) ने सोमवार को दी।

Chiranth becomes the first Indian to win at Motegi racetrack

PCS

MOTORSPORTS

Sports Bureau

Chiranth Vishwanath from Bengaluru became the first Indian to win a race at the iconic Mobility Resort Motegi racetrack in Japan recently.

He finished the third round of the FIM Asia Road Racing Championship with a victory and fourth-place finish in the TVS Asia Championship category.



Chiranth.

Having qualified fourth after a series of fastest laps in the official practice session, 18-year-old Chiranth, astride a TVS Apache RR 310, led from the start in Race-1. However, in the

fifth lap of the eight-lap race, he fell to P5 after contact with another rider. But he recovered, passing three riders in the last lap to post a win, his first of the championship.

In Race-2, Chiranth was in second until the last lap when a contact with a fellow rider cost him two spots. The win and P4 finish helped Chiranth move up to fourth in the championship as he prepares for the next round in Indonesia in August.

23J6. Chiranth becomes the first Indian to win at Motegi racetrack

चिरंथ मोटेगी रेसट्रैक पर जीत दर्ज करने वाले पहले भारतीय बने

- Chiranth Vishwanath from Bengaluru became the first Indian to win a race at the iconic Mobility Resort Motegi racetrack in Japan recently.

बेंगलुरु के चिरंथ विश्वनाथ हाल ही में जापान के प्रतिष्ठित मोबिलिटी रिजॉर्ट मोटेगी रेसट्रैक पर रेस जीतने वाले

पहले भारतीय बने।



- He finished the **third round** of the **FIM Asia Road Racing Championship** with a victory and **fourth-place finish** in the **TVS Asia Championship** category.
 उन्होंने FIM एशिया रोड रेसिंग चैम्पियनशिप के तीसरे दौर का समापन TVS एशिया चैम्पियनशिप श्रेणी में एक जीत और चौथे स्थान के साथ किया।

Aaruthran owns the Mini under-10 race

The boy comes out on top in the Super Heat and Finals; Shiv Neel, Narain Karthikeyan's son, takes the honours in the Mini category

MOTORSPORTS

PCS
Sports Bureau

Aaruthran Prabhu (Kartkrew Motorsports) dominated the mini under-10 category, winning both the Super Heat and Finals, in the second round of the RA Motorsports-promoted IAME National Series India held in Coimbatore on Sunday.

The Mini category also provided thrilling competition. Shiv Neel Narain (NKRA Motorsports), son of India's first Formula One driver Narain Karthikeyan, inherited victory in the Finals following the post-

race disqualification of race winner Ridhaan Anil Kumarr for a technical infringement.

Bafna bounces back

Among the older categories, Laksh Bafna (LB Racing) recovered brilliantly from retirement in the Super Heat to claim a commanding victory in the Senior Finals. Rehan Khan Rasheed (Momentum Motorsports) continued his impressive form in the Junior category by dominating both the Super Heat and Finals from pole.

Provisional results (all finals):

Seniors (18 laps): 1. Laksh Bafna (LB Racing) 13mins,

35.740secs, 2. Tanmay Kothari (Red Rabbit Racers) 13:43.070, 3. Mikkel Leib Rajan (Momentum Motorsports) 13:49.059.

Juniors (16 laps): 1. Rehan Khan Rasheed (Momentum Motorsports) 12:25.748, 2. Aditya Prathap (Momentum Motorsports) 12:28.842, 3. Abhishikt Barse (Crest Motorsports) 12:31.390.

Mini (14 laps): 1. Shiv Neel Narain (NKRA with KKM) 11:30.666, 2. Eeshan Swaroop (Kartkrew Motorsports) 11:31.326, 3. Rudra Gokulnath (NKRA with Momentum) 11:34.340.

Mini under-10 (14 laps): 1. Aaruthran Prabhu (Kartkrew Motorsports) 11:45.865, 2. Abdur Rehman (Momentum Motorsports) 12:10.884, 3. Parth Singh (NKRA with KKM) 12:20.351.

23J6. Aaruthran owns the Mini under-10 race

आरुथ्रन ने मिनी अंडर-10 रेस पर कब्ज़ा जमाया

- The boy comes out on top in the **Super Heat and Finals**; **Shiv Neel, Narain Karthikeyan's son**, takes the honours in the **Mini category**.

इस बाल रेसर ने सुपर हीट और फाइनल्स दोनों में शीर्ष स्थान हासिल किया; नारायण कार्तिकेयन के पुत्र शिव नील ने मिनी श्रेणी में सम्मान प्राप्त किया।

• **Aaruthran Prabhu (Kartkrew Motorsports)** dominated the **Mini under-10 category**, winning both the **Super Heat and Finals**, in the second round of the **RA Motorsports-promoted IAME National Series India** held in **Coimbatore** on Sunday.

आरुथ्रन प्रभु (कार्टक्रेव मोटरस्पोर्ट्स) ने रविवार को कोयंबटूर में आयोजित RA मोटरस्पोर्ट्स प्रोत्साहित IAME नेशनल

सीरीज़ इंडिया के दूसरे चरण में मिनी अंडर-10 श्रेणी में दबदबा बनाते हुए सुपर हीट और फाइनल्स दोनों जीते।

GS Paper 1: History		23 June 2026
TOPICS COVERED		
23J6	ASI transfers Rakhigarhi skeletons to AnSI for a scientific investigation एसआई ने वैज्ञानिक जांच के लिए राखीगढ़ी के कंकाल एएनएसआई को हस्तांतरित किए	
23J6	QUIZ	
23J6	Israeli strikes leave Lebanon's ancient coastal city of Tyre shaken, shattered इज़रायली हमलों ने लेबनान के प्राचीन तटीय शहर टायर को झकझोर दिया, तबाह कर दिया	

ASI transfers Rakhigarhi skeletons to AnSI for a scientific investigation

GS I: History

Sreeparna Chakrabarty
NEW DELHI

Human skeletal remains excavated from the archaeological site of Rakhigarhi in Haryana have been formally handed over by the Archaeological Survey of India (ASI) to the Anthropological Survey of India (AnSI), a national research institute under the Union Culture Ministry, for a detailed scientific investigation.

The transfer, carried out under a memorandum of understanding (MoU) between the two institutions, is expected to significantly advance multidisciplinary research into one of the most important urban centres of the Indus-Saraswati Civilisation, B.V. Sharma, Director of AnSI, said.

Rakhigarhi, spread across approximately 550 hectares in Haryana, is widely recognised as the largest known settlement



Ancient remains: The skeleton of a woman, excavated in a trench on Mound 7 at Rakhigarhi in Haryana, in April 2022. FILE PHOTO

of the Harappan Civilisation. Archaeological excavations have revealed evidence of continuous habitation, from the Early Harappan to the Mature Harappan periods.

Mound 7 at the excavation site has been identified as a burial plot where 56 skeletons were recovered, including that of a woman, roughly 4,600 years old, which created a buzz in the fields of history, anthropology, genomics, and even linguistics.

DNA analysis of the skeleton revealed that the Rakhigarhi woman did not possess the steppe pastoral gene, fanning the debate on Aryan migration to India. The word "Aryan" has been interchangeably used for the steppe pastoralists, though to avoid racial connotations, many scholars now prefer to use the term Indo-Aryan.

Three complete human skeletons among those recovered from Mound 7, along with skeletal frag-

ments recovered from other burials, have now been transferred to the AnSI's ancient human skeletal repository and laboratory in Kolkata for a detailed examination. The remaining skeletal materials obtained at these sites are also expected to be transferred in a few days, the Culture Ministry said in a statement on Monday.

Researchers believe the remains present a rare opportunity to apply modern scientific techniques, including ancient DNA (aDNA) analysis, stable isotope studies, osteological assessments, palaeopathological investigations, and environmental reconstruction, the statement added.

The research will be conducted in collaboration with leading scientific institutions, including the Birbal Sahni Institute of Palaeosciences, University College London, and the Banaras Hindu University.

23J6. ASI transfers Rakhigarhi skeletons to AnSI for a scientific investigation एसआई ने वैज्ञानिक जांच के लिए राखीगढ़ी के कंकाल एनएसआई को हस्तांतरित किए

- Human skeletal remains excavated from the archaeological site of Rakhigarhi in Haryana have been formally handed over by the Archaeological Survey of India to the Anthropological Survey of India, a national research institute under the Union Culture Ministry, for a detailed scientific investigation.

हरियाणा स्थित राखीगढ़ी पुरातात्विक स्थल से उत्खनित मानव कंकाल अवशेषों को भारतीय पुरातत्व सर्वेक्षण द्वारा औपचारिक रूप से भारतीय मानवविज्ञान सर्वेक्षण को, जो केंद्रीय संस्कृति मंत्रालय के अधीन एक राष्ट्रीय अनुसंधान संस्थान है, विस्तृत वैज्ञानिक अध्ययन हेतु सौंप दिया गया है।

- The transfer, carried out under a memorandum of understanding between the two institutions, is expected to significantly advance multidisciplinary research into one of the most important urban centres of the Indus-Saraswati Civilisation, B.V. Sharma, Director of the Anthropological Survey of India, said.

समझौता ज्ञापन के अंतर्गत दोनों संस्थानों के बीच किए गए इस हस्तांतरण से सिंधु-सरस्वती सभ्यता के सबसे महत्वपूर्ण नगरीय केन्द्रों में से एक पर बहुविषयक अनुसंधान को महत्वपूर्ण गति मिलने की अपेक्षा है, ऐसा भारतीय मानवविज्ञान सर्वेक्षण के निदेशक बी. वी. शर्मा ने कहा।

- Rakhigarhi, spread across approximately 550 hectares in Haryana, is widely recognised as the largest known settlement of the Harappan Civilisation.

हरियाणा में लगभग 550 हेक्टेयर क्षेत्र में फैला राखीगढ़ी, हड़प्पा सभ्यता की अब तक ज्ञात सबसे बड़ी बस्ती के रूप में व्यापक रूप से मान्यता प्राप्त है।

- Archaeological excavations have revealed evidence of continuous habitation, from the **Early Harappan** to the **Mature Harappan** periods.

पुरातात्विक उत्खननों से प्रारम्भिक हड़प्पा काल से लेकर परिपक्व हड़प्पा काल तक निरंतर मानव निवास के प्रमाण प्राप्त हुए हैं।

- Mound 7** at the excavation site has been identified as a burial plot where **56 skeletons** were recovered.

उत्खनन स्थल के टीला संख्या 7 को एक दफन स्थल के रूप में पहचाना गया है, जहाँ से 56 कंकाल प्राप्त हुए।

- These included that of a woman, roughly **4,600 years old**, which created a buzz in the fields of **history, anthropology, genomics, and linguistics**.

इनमें लगभग 4,600 वर्ष पुरानी एक महिला का कंकाल भी शामिल था, जिसने इतिहास, मानवविज्ञान, जीनोमिक्स और भाषाविज्ञान के क्षेत्रों में व्यापक चर्चा उत्पन्न की।

- DNA analysis** of the skeleton revealed that the **Rakhigarhi woman** did not possess the **steppe pastoral gene**, fuelling the debate on **Aryan migration** to India.

कंकाल के डीएनए विश्लेषण से पता चला कि राखीगढ़ी की महिला में स्टेपी पशुपालक जीन उपस्थित नहीं था, जिससे भारत में आर्य प्रवासन संबंधी बहस को नया बल मिला।

- The word "**Aryan**" has been interchangeably used for the steppe pastoralists, though many scholars now prefer the term **Indo-Aryan** to avoid racial connotations.

"आर्य" शब्द का उपयोग प्रायः स्टेपी पशुपालकों के लिए किया जाता रहा है, किन्तु नस्लीय अर्थों से बचने के लिए अनेक विद्वान अब इंडो-आर्य शब्द को प्राथमिकता देते हैं।

- Three complete human skeletons among those recovered from **Mound 7**, along with skeletal fragments recovered from other burials, have now been transferred to the **Anthropological Survey of India's ancient human skeletal repository and laboratory in Kolkata** for detailed examination.

टीला संख्या 7 से प्राप्त तीन पूर्ण मानव कंकालों तथा अन्य दफन स्थलों से प्राप्त अस्थि-अवशेषों को विस्तृत परीक्षण हेतु कोलकाता स्थित भारतीय मानवविज्ञान सर्वेक्षण के प्राचीन मानव कंकाल भंडार एवं प्रयोगशाला में स्थानांतरित किया गया है।

- Researchers believe the remains present a rare opportunity to apply modern scientific techniques, including **ancient DNA analysis, stable isotope studies, osteological assessments, palaeopathological investigations, and environmental reconstruction**.

शोधकर्ताओं का मानना है कि ये अवशेष प्राचीन डीएनए विश्लेषण, स्थिर समस्थानिक अध्ययन, अस्थि-विज्ञान संबंधी मूल्यांकन, प्राचीन रोगविज्ञान संबंधी जांच तथा पर्यावरणीय पुनर्निर्माण जैसी आधुनिक वैज्ञानिक तकनीकों के उपयोग का एक दुर्लभ अवसर प्रदान करते हैं।

- The research will be conducted in collaboration with leading scientific institutions, including the **Birbal Sahni Institute of Palaeosciences, University College London, and Banaras Hindu University**.

यह अनुसंधान बीरबल साहनी पुराजीवविज्ञान संस्थान, यूनिवर्सिटी कॉलेज लंदन तथा बनारस हिन्दू विश्वविद्यालय सहित प्रमुख वैज्ञानिक संस्थानों के सहयोग से किया जाएगा।

RAKHIGARHI

- Rakhigarhi** is one of the most important archaeological sites of the **Indus Valley Civilization (IVC)** and is widely regarded as the **largest known Harappan site in the Indian subcontinent**.
- It is located in **Hisar District, Haryana**, on the **Ghaggar-Hakra (ancient Saraswati-Drishadvati) plain**.
- Located near the villages of **Rakhi Khas and Rakhi Shahpur** in Haryana.



- Approximately 150 km northwest of Delhi.
- Discovery and Excavation**
 - The site was identified in 1963.
 - Systematic excavations were carried out by the **Archaeological Survey of India (ASI)** between 1997–2000 under **Amarendra Nath**.
 - Further excavations were undertaken by **Deccan College, Pune**, under **Prof. Vasant Shinde** between 2011–2016.

Questions and Answers to the previous day's daily quiz:

- Why did PM Modi, in his speech at the UN in 2014, suggest June 21 be observed as International Day of Yoga? **Ans: It is the longest day of the year in the Northern Hemisphere**
- What was the theme for IDY this year? **Ans: Yoga for Healthy Ageing**
- Of the five broad classifications of Yoga, two are Bhakti and Karma Yoga. Name the other 3. **Ans: Jnana, Dhyana and Kriya**
- Which sadhana: i) advocates appropriate food and food habits for healthy living; ii). dissociating one's consciousness from the sense organs that connect with the external objects. **Ans: 'Yuktahara' and 'Pratyahara'**
- From which animals are these asanas inspired: Catur Svanasana, Sasakasana, Ustrasana? **Ans: Dolphin, hare/rabbit and camel**
- From where does the shloka 'saṃ gacchadhvaṃ saṃ vadadhvaṃ saṃ vo manāmsi jānatām | devā bhāgaṃ yathā pūrve saṃjānānā upāsate' that traditionally starts a yoga session come from? **Ans: Rig Veda.**
- Visual: Name this eminent yoga exponent. **Ans: B.K.S. Iyengar**

23J6. QUIZ

1. Why did PM Modi suggest June 21 as the International Day of Yoga at the UN in 2014?

- Prime Minister **Narendra Modi**, during his address to the **United Nations General Assembly (UNGA)** in September 2014, proposed that **21 June** be observed as the **International Day of Yoga**.
- He highlighted that this date coincides with the **Summer Solstice**, the longest day in the Northern Hemisphere, and holds special significance in many cultures and spiritual traditions.
- In Indian yogic philosophy, it is associated with the

transition towards **Dakshinayana** and symbolizes harmony between humans and nature.

- The UN adopted the proposal on 11 December 2014 with support from **177 member states**, one of the highest co-sponsorships for any UN resolution.

2. What was the theme for the International Day of Yoga (IDY) this year?

- The theme for **International Day of Yoga 2026** was “**Yoga for Healthy Ageing**.”
- The theme emphasizes yoga's role in promoting physical fitness, mental well-being, flexibility, balance, and emotional resilience throughout life.
- With increasing life expectancy worldwide, healthy ageing has become a major public health priority.

3. Apart from **Bhakti Yoga** and **Karma Yoga**, what are the other three broad classifications of Yoga?

- Yoga traditions are often classified into different paths according to the seeker's temperament and spiritual goals. **Jnana Yoga** is the path of knowledge, wisdom, and self-inquiry.
- Dhyana Yoga** focuses on meditation and concentration to attain higher consciousness.
- Kriya Yoga** emphasizes disciplined practices, purification techniques, and spiritual exercises aimed at self-realization.
- Along with **Bhakti Yoga** (devotion) and **Karma Yoga** (selfless action), these paths provide complementary approaches for achieving physical, mental, and spiritual development.

4. What are 'Yuktahara' and 'Pratyahara'?

- Yuktahara** is a concept found in yogic texts that advocates moderation and balance in diet.
- It emphasizes consuming nutritious food in appropriate quantities and maintaining healthy eating habits to support physical and mental well-being.
- Pratyahara**, the fifth limb of **Ashtanga Yoga** described by **Patanjali**, involves consciously withdrawing the mind from external sensory distractions.



- Through Pratyahara, practitioners gain greater control over their senses and develop inner awareness.

5. From which animals are the following asanas inspired: Catur Svanasana, Sasakasana and Ustrasana?

- Many yoga postures are inspired by observations of nature and animals. **Catur Svanasana**, commonly known as the **Dolphin Pose**, mimics the streamlined posture of a dolphin and helps strengthen the shoulders and spine.
- Sasakasana**, or **Rabbit Pose**, resembles the crouched posture of a rabbit and promotes spinal flexibility and relaxation.
- Ustrasana**, known as the **Camel Pose**, imitates the arched stance of a camel and is an important back-bending posture that improves posture, chest expansion, and flexibility.
- These animal-inspired asanas reflect yoga's deep connection with the natural world and bodily awareness.

6. From where does the shloka "Saṃ gacchadhvaṃ saṃ vadadhvaṃ..." originate?

- The shloka "**Saṃ gacchadhvaṃ saṃ vadadhvaṃ saṃ vo manāṃsi jānatām...**" originates from the **Rig Veda (Mandala 10, Sukta 191)**.
- It is a celebrated Vedic hymn promoting unity, cooperation, and collective harmony.
- The verse encourages people to move together, speak together, and share common understanding and purpose.
- Because yoga seeks harmony among individuals, society, and nature, this mantra is often recited at the beginning of yoga sessions.
- It reflects the ancient Indian vision of social cohesion, mutual respect, and spiritual unity, making it highly relevant to the universal message of yoga even today.

Israeli strikes leave Lebanon's ancient coastal city of Tyre shaken, shattered

A new ceasefire between Israel and Hezbollah is in effect; even as the U.S. and Iran meet for talks, uncertainty and fear linger in the 5,000-year-old city that has survived multiple wars; more than 4,000 Lebanese people have been killed in strikes that residents say often came without warning

GS I: History

NEWS ANALYSIS

Associated Press
TYRE

The dust has barely settled in Tyre after weeks of Israeli airstrikes on the ancient city along Lebanon's Mediterranean coast. Despite the relative calm, life remains largely at a standstill.

A new ceasefire between Israel and the Iranian-backed Hezbollah militant group is in effect. But previous ceasefires have broken down. Uncertainty and fear linger, even as the U.S. and Iran meet for talks in Switzerland that Lebanese residents hope will bring calm to their troubled country.

Over 4,000 people in Lebanon have been killed in Israeli strikes since the latest Israel-Hezbollah war began in March, two days after the Iran war began, when Hezbollah fired at Israel. The group has also clashed with Israeli troops making their deepest incursion into southern Lebanon in over a quarter century.

Large swaths of southern Lebanon have been left in ruins, including Tyre.

During the summer, Lebanon's fourth largest city is usually filled with tourists lounging on its beaches, walking through its Roman ruins, eating freshly caught seafood at pictures-



A hopeful homecoming: A displaced girl gestures as she returns with her family to their home following an interim deal between the U.S. and Iran, in Tyre, Lebanon, on Sunday. REUTERS

que restaurants or taking boat tours.

Now, tables at the few restaurants that haven't closed are empty. Parking lots that are usually packed with beachgoers' vehicles are filled with displaced people living in tents. Fishermen and mariners say they can't sail far from port for fear of being targeted.

Continuing anxiety

"Every day they tell us there's a truce or ceasefire. Where is this truce? We can't see it," said Ali Bazzi, 31, who lives alone on a tour boat that belongs to family friends. His home in Toura, several kilometres away, was destroyed by an

Israeli strike. Like many who have fled to Tyre from surrounding areas, he doesn't dare return until he sees long-term calm.

For months, Mr. Bazzi has been sleeping on a mattress on the deck, and selling sandwiches at a small stand a few steps away to earn money.

Israel in early June warned the entirety of Tyre to leave before it launched intense airstrikes across the city, saying it was targeting Hezbollah.

But Mr. Bazzi stayed. He recalled the emptied, ghostly city and the cries of women and children as Israeli strikes began. And he said he woke one night to

the sound of a drone hovering over the port and worried it had come for him.

Even as the new ceasefire appeared to be largely holding, Tyre residents still pause anxiously when they hear Israeli jets overhead.

It seems at least one building has been reduced to rubble on every street. Others remain standing with several floors blown off. Pictures of those killed, including paramedics, families, and Hezbollah militants, are posted as memorials on the ruins of buildings and dashboards of parked cars.

The city's iconic heritage sites are not un-

scathed. Several buildings next to the remains of a 2nd century citadel were struck. Debris knocked the crowns off some Roman columns and damaged stones on the Roman road that have existed for thousands of years. Employees hope the damage to the UNESCO World Heritage site can be repaired.

"We're waiting for a committee to come and inspect it," said Adnan Istanbuli, an employee at the Lebanese Directorate General of Antiquities. "The city of Tyre is 5,000 years old, and what happened to it is huge."

Just south of the city, the shoreline in Mansouri, a well-known wildlife preserve for sea turtles and other animals, is now inaccessible after Israeli strikes. Mona Khalil, a well-known environmentalist who lived along that shore, died Friday from her wounds, weeks after a strike hit her home.

Recurring damage

One of Tyre's largest hospitals is repairing some of its units that were destroyed when an Israeli airstrike struck a building across the street.

Doctors at the Jabal Amel Hospital have lived through multiple wars over the past few decades but said this one is different. In the past, they felt relatively safe as long as they were in the hospital. This time, the Israeli strikes occurred

nearby and without warning.

Doors and windows were blown off. Staff rushed to treat wounded patients and colleagues. Thick smoke filled the hospital.

"We used to be scared, but we're a lot more scared now," said intensive care unit nurse Khadeeja Yousef, whose unit overlooks the hospital parking lot, now reduced to rubble and charred cars.

Cardiologist Mohamad Nassar's private clinic across the street was hit. Now he rummages through the debris, looking for hundreds of books he had collected for over three decades.

"I don't care about any heart monitoring machines or anything else, but the books are dear to my heart," he said.

People in Tyre are constantly reminded that prospects for long-term stability are unclear as negotiations continue between Israel and Lebanon in Washington, with Hezbollah playing no role and resisting efforts to disarm it. Large swaths of land just south of the city are under Israeli control, stretching to the United Nations-mandated Blue Line that separates the countries.

In recent days, smoke from distant Israeli artillery fire was visible from Tyre's shoreline. And on a distant hilltop, an Israeli flag could be seen.

23J6. Israeli strikes leave Lebanon's ancient coastal city of Tyre shaken, shattered

इज़रायली हमलों ने लेबनान के प्राचीन तटीय शहर टायर को झकझोर दिया, तबाह कर दिया

TYRE: A HISTORIC CITY IN LEBANON

- Tyre is an ancient coastal city in **southern Lebanon**.
- It is located on the **Mediterranean coast**, about **83 km south of Beirut**.
- It was one of the most important cities of ancient **Phoenicia**.
- Tyre is famous for its **maritime trade**, **purple dye**, **Phoenician colonies**, **Roman ruins** and **UNESCO World Heritage status**.
- UNESCO describes Tyre as a great Phoenician city that ruled the seas and founded colonies such as **Carthage** and **Cadiz**.



- The city became prominent as a **Phoenician city-state** during the **first millennium BCE**.
- Phoenicians were known as skilled sailors, traders and colonizers.
- Tyre became especially famous for its **purple dye**, often called **Tyrian purple**.
- One of the most famous events in Tyre's history was the **Siege of Tyre in 332 BCE**.

Tyre under Hellenistic, Roman and Byzantine Rule

- The city contains major archaeological remains from the **Roman period**, including roads, baths, arches, necropolis areas and the famous **Roman Hippodrome**.
- The **Roman Hippodrome of Tyre** is one of the most important ancient chariot-racing sites in the region.
- In the Byzantine period, Tyre remained an important religious and urban centre.
- The **Al-Mina site** contains remains close to the ancient harbour and Roman urban structures.

UNESCO World Heritage Site

- Tyre was inscribed as a **UNESCO World Heritage Site in 1984**.
- UNESCO recognized Tyre because of its outstanding Phoenician and Roman heritage.
- Its cultural memory survives through legends connected with **Europa, Dido or Elissa**, and the foundation traditions of **Carthage**.

Phoenician, Hellenistic, Roman, and Byzantine Periods

- The **Phoenician, Hellenistic, Roman, and Byzantine periods** represent successive historical phases of the **Mediterranean and Near Eastern world**.
- The **main geographical focus** was the **Mediterranean region**, especially the **Levant, Greece, Anatolia, Egypt, North Africa, Italy, and Constantinople**.

PHOENICIAN PERIOD

- The **Phoenicians** were ancient people of the **eastern Mediterranean coast**, mainly in present-day **Lebanon, Syria, and northern Israel**.
- Their important cities were **Tyre, Sidon, Byblos, and Arwad**. These were not one united empire but independent maritime city-states.
- The Phoenicians were famous for **sea trade, shipbuilding, colonisation, purple dye, glasswork, metalwork, and the alphabet**.
- Their period is broadly placed between **1500 BCE and 300 BCE**, though Phoenician influence continued later through **Carthage in North Africa**.

Important Contributions of Phoenicians

- The **Phoenician alphabet** was one of their greatest contributions.
- It had **22 consonantal letters** and strongly influenced later **Greek, Latin, and modern European scripts**.
- They established trade colonies across the Mediterranean, including **Carthage**, which later became a major power.
- **Carthage**, founded by Phoenicians, became a major commercial empire and later a Roman province. **UNESCO identifies Carthage as a major Punic and Roman archaeological site**.

Hellenistic Period

- The **Hellenistic Period** began after the death of **Alexander the Great in 323 BCE**.
- It **ended with the defeat of Cleopatra VII and the Roman annexation of Egypt in 30 BCE**.
- The word **Hellenistic** means the spread of **Greek culture, language, art, science, and political ideas across non-Greek regions**.
- Alexander's empire broke into successor kingdoms ruled by his generals, known as the **Diadochi**.

Major Hellenistic Kingdoms

- **Ptolemaic Kingdom** in Egypt.
- **Seleucid Empire** in Syria, Mesopotamia, Persia, and parts of Central Asia.
- **Antigonid Kingdom** in Macedonia and Greece.



- **Pergamon** in Asia Minor.
- These kingdoms mixed **Greek culture** with **Egyptian, Persian, Mesopotamian, Jewish, and Indian cultural elements**.
- Important Features of the Hellenistic Period**
- **Alexandria in Egypt** became a great centre of learning.
- The **Library of Alexandria** symbolised the growth of knowledge and scholarship.
- Important developments occurred in **mathematics, astronomy, medicine, sculpture, philosophy, and urban planning**.
- Hellenistic art became more emotional, realistic, dramatic, and expressive compared to classical Greek art.

Roman Period

- The **Roman Period** refers to the rise and expansion of Rome from a city-state into a Mediterranean empire.
- The **Roman Empire** began under **Augustus in 27 BCE** and the Western Roman Empire ended in **476 CE**.
- **Augustus ruled from 27 BCE to 14 CE** and established the system known as the **Principate**.

Important Features of the Roman Period

- Rome developed a strong system of **law, administration, army, roads, aqueducts, towns, and citizenship**.
- The Roman Empire connected Europe, North Africa, and West Asia through the **Mediterranean Sea**.
- The period of relative peace and stability under early emperors is called **Pax Romana**.
- Roman engineering produced durable roads, bridges, amphitheatres, public baths, drainage systems, and water supply networks.
- The **Appian Way**, begun in **312 BCE**, is a famous Roman road and was added to the UNESCO World Heritage List in **2024**.

Roman Cultural Importance

- Latin became a major language of administration, law, literature, and religion.
- Roman law influenced many later legal systems.
- Christianity emerged within the Roman Empire and later became a major religion of the empire.
- **Emperor Constantine** played a major role in the rise of Christianity and shifted imperial focus toward the eastern city of **Constantinople**.

Byzantine Period

- The **Byzantine Empire** was the continuation of the **Eastern Roman Empire**.
- It was centred on **Constantinople**, founded by **Constantine I** as a new imperial capital in **330 CE**.
- The **Byzantine Empire** lasted until the fall of Constantinople to the **Ottoman Turks** in **1453 CE**.

Important Features of the Byzantine Period

- The **Byzantines** called themselves **Romans**, though modern historians call them **Byzantines**.
- Their empire preserved **Roman law, Greek learning, Christian theology, and classical traditions**.
- The **official culture gradually became more Greek-speaking**.
- Byzantine society was deeply influenced by **Eastern Orthodox Christianity**.
- The **Hagia Sophia** in Constantinople became one of the greatest examples of Byzantine architecture.

Justinian and the Byzantine Peak

- Emperor **Justinian I** ruled from **527 CE to 565 CE**.
- His reign is famous for the **Justinian Code**, which preserved and organised Roman law.
- He reconquered parts of **North Africa, Italy, and the western Mediterranean**.
- By the **6th century CE**, the eastern Mediterranean remained a major commercial and religious zone of the Byzantine world.

Comparative Understanding

Period	Approximate Time	Main Region	Main Contribution
Phoenician	1500–300 BCE	Levant and Mediterranean	Trade, colonies, alphabet
Hellenistic	323–30 BCE	Eastern Mediterranean and Near East	Spread of Greek culture
Roman	27 BCE–476 CE in the West	Mediterranean Empire	Law, roads, administration, empire
Byzantine	330–1453 CE	Eastern Mediterranean	Roman continuity, Greek culture, Christianity



GS Paper 1: Society	23 June 2026
TOPICS COVERED	



A protester dressed in traditional Zulu attire gestures during a protest in Umlazi township south-west of Durban in South Africa on Monday. The country has been on edge following weeks of sometimes violent xenophobic unrest that has left at least two people dead. AFP

A protester dressed in traditional **Zulu** attire gestures during a protest in Umlazi township south-west of Durban in **South Africa** on Monday. The country has been on edge following weeks of sometimes violent xenophobic unrest that has left at least two people dead.

• The **Zulu (AmaZulu)** are the largest ethnic group in **South Africa** and are among the most influential cultural and historical communities in Africa. They primarily inhabit the province of **KwaZulu-Natal** in eastern South Africa.

• The Zulu people belong to the larger **Nguni-speaking Bantu group**, which migrated into southern Africa centuries ago.

GS Paper 1: Geography	23 June 2026
TOPICS COVERED	
23J6	No longer temporary hideouts, Sahel forests becoming jihadist strongholds अब केवल अस्थायी ठिकाने नहीं, साहेल के जंगल जिहादी गढ़ बनते जा रहे हैं

No longer temporary hideouts, **Sahel** forests becoming jihadist strongholds

GS 1: Geography
Agence France Presse
DAKAR

Along Mali's National Route 6, a major thoroughfare connecting the capital to the country's centre, the Army has reshaped the landscape: the vegetation from the surrounding forest has been cleared in anticipation of jihadist ambushes.

Armed groups use forest areas both as refuge and a base for launching deadly attacks on roads across Africa's Sahel region.

In Mali, jihadists from JNIM, Al-Qaeda's Sahel branch, operate from the vast 80,000-hectare (200,000-acre) Faya forest, located a quick drive from the capital, Bamako, from which they carry out attacks against toll sta-

tions, public transportation and freight trucks.

Since June, Faya has become an "off-limits military zone to civilians", along with 38 other parks and forests that are "likely to serve as refuges for armed terrorist groups", according to an inter-ministerial decree.

The armed forces, it said, would eliminate "all targets located in the specified zones".

Mali's decision is part of a series of security measures taken after large-scale jihadist attacks by JNIM and its ethnic Tuareg separatist allies in late April, which notably killed the country's Defence Minister.

The forests and parks covered by the decree stretch in a wide arc across

the southern section of the country from the Senegal and Mauritania border in the west to Guinea and Ivory Coast in the east.

Tough terrain

"These are large natural areas that are sometimes not very well controlled by the state. There are no permanent settlements in many of these zones, no infrastructure, and police stations or military bases are located elsewhere," said Franklin Nossiter, Sahel analyst at the International Crisis Group.

"So it has become easier for jihadist groups to move around and establish themselves there and more difficult to drive them out", he told AFP.

Burkina Faso and Niger, which also face violence



Keeping watch: Soldiers from Burkina Faso patrol along a road in the Sahel region. REUTERS/FILE PHOTO

from JNIM and the Islamic State in the Sahel Province (ISSP), have implemented similar forest security measures in recent years.

For example, southwestern Niger's heavily wooded Torodi region, an epicentre of jihadist violence located on the border with Burkina Faso, was declared a "red zone" by

the army.

An official from a Nigerian timber association active in the area told AFP that "these areas are hideouts for terrorists".

The jihadists, he said, "believe we are destroying their shelters, but we have avoided doing so on several occasions".

According to the official,

52 trucks were burned by the jihadists, and 24 drivers and apprentices were killed. "We stopped going to that hell," truck driver Hassane Gourouza said.

The forested regions are no longer just "temporary hideouts" for the groups, but have become "permanent operation bases", said Samir Bhattacharya, associate fellow at the Observer Research Foundation think tank.

"This transformation was driven by sustained military pressure in urban areas, and tactical advantages offered by forests like protection from aerial surveillance", he told AFP.

The forests also give jihadists a chance to "exploit local informal economies such as mining, grazing, smuggling and

poaching," he added.

Conflict monitor ACLED added that "the jihadist groups' continued use of nature reserves and designated forests indicates a deliberate reliance on these areas".

'Drones ineffective'

JNIM initially spread throughout the sub-region through the WArly-Pendjari (WAP) complex of reserves and national parks that straddle Benin, Niger and Burkina Faso, and which are also located near the borders of Nigeria and Togo, ACLED said.

ISSP, meanwhile, has established a network of camps in wooded hills along the border between Niger and Nigeria, an area offering isolated refuge, the NGO added.

JNIM, which first claimed responsibility for attacks in Nigeria in late 2025, knows the parks well, unlike the various Sahel armies.

For the military, "the terrain is inhospitable for armoured vehicles", according to a report by the Geneva-based Global Initiative Against Transnational Organised Crime (GI-TOC).

And armed drones are largely ineffective due to "dense vegetation cover", Nossiter added.

Driving jihadists out of the region and torching things down might only "fuel recruitment for jihadist groups, because if innocent people are killed, that's what will create the new jihadists of tomorrow", he warned.

23J6. No longer temporary hideouts, Sahel forests becoming jihadist strongholds

अब केवल अस्थायी ठिकाने नहीं, साहेल के जंगल जिहादी गढ़ बनते जा रहे हैं

- In Mali, jihadists from **JNIM, Al-Qaeda's Sahel branch**, operate from the vast **80,000-hectare Faya forest**, located a quick drive from the capital, **Bamako**, from which they carry out attacks against toll stations, public transportation and freight trucks.

माली में अल-कायदा की साहेल शाखा JNIM राजधानी बमाको के निकट स्थित विशाल 80,000 हेक्टेयर के फाया वन से संचालित होती है, जहाँ से वह टोल स्टेशनों, सार्वजनिक परिवहन और मालवाहक ट्रकों पर हमले करती है।



- Mali's decision is part of a series of security measures taken after large-scale jihadist attacks by **JNIM** and its **ethnic Tuareg separatist allies** in late April, which notably killed the country's **Defence Minister**.
माली का यह निर्णय अप्रैल के अंत में **JNIM** और उसके **तुआरेग अलगवादी सहयोगियों** द्वारा किए गए बड़े जिहादी हमलों के बाद उठाए गए सुरक्षा उपायों की श्रृंखला का हिस्सा है, जिनमें देश के **रक्षा मंत्री** की भी मृत्यु हुई थी।
- The forests and parks covered by the decree stretch in a wide arc across the southern section of the country from the **Senegal and Mauritania border in the west to Guinea and Ivory Coast in the east**.
इस आदेश के अंतर्गत आने वाले वन और पार्क देश के दक्षिणी भाग में पश्चिम में **सेनेगल और मॉरिटानिया** की सीमा से लेकर पूर्व में **गिनी और आइवरी कोस्ट** तक फैले हुए हैं।
- "This transformation was driven by sustained military pressure in urban areas, and tactical advantages offered by forests like **protection from aerial surveillance**", he told AFP.
उन्होंने AFP से कहा, "यह परिवर्तन शहरी क्षेत्रों में लगातार सैन्य दबाव और जंगलों द्वारा प्रदान किए गए सामरिक लाभों, जैसे हवाई निगरानी से सुरक्षा, के कारण हुआ है।"
- The forests also give jihadists a chance to "**exploit local informal economies such as mining, grazing, smuggling and poaching**," he added.
उन्होंने कहा कि जंगल जिहादियों को **खनन, चराई, तस्करी और अवैध शिकार** जैसी स्थानीय अनौपचारिक अर्थव्यवस्थाओं का लाभ उठाने का अवसर भी देते हैं।

Sahel and Sahara Region of Africa

- The **Sahara is the world's largest hot desert**, covering a vast part of **North Africa**. It extends roughly **4,800 km from west to east** and covers about **8.6 million sq. km**.
- The **Sahel is a semi-arid transition region** located immediately **south of the Sahara**. It extends broadly from **Senegal in the west to Sudan in the east**.
- The **Sahel is affected by Saharan dust storms, drought, desertification, water scarcity, migration, and pastoral movement**.
- In social terms, both regions are connected through **nomadic pastoralism, trans-Saharan trade, migration routes, cultural exchange, and resource conflicts**.

Society in the Sahara Region

- Sahara society has traditionally depended on **nomadic pastoralism, oasis farming, caravan trade, and desert survival skills**.
- Communities such as the **Tuareg, Berbers, Arabs, and other desert groups** have historically used camels for mobility, trade, and pastoral life.
- Oases are important social centres because they provide **water, date palms, settlement space, and trade halts**.
- The Sahara historically connected **North Africa, West Africa, and the Mediterranean world** through trans-Saharan trade routes.

Society in the Sahel Region

- Sahelian society is mainly based on **pastoralism, rain-fed agriculture, livestock rearing, millet cultivation, sorghum cultivation, and seasonal migration**.
- When rainfall fails, society faces **crop loss, livestock death, food insecurity, and forced migration**.
- The Sahel is socially sensitive because land, water, grazing routes, and farming areas are under pressure from **population growth, climate change, and conflict**.

Major Social Problems in the Sahel

- Desertification does not mean that the Sahara moves like a solid wall. It means that productive dryland becomes less fertile and less capable of supporting life.

Great Green Wall Initiative

- The **Great Green Wall Initiative** is an African-led programme to restore degraded land and improve livelihoods across the Sahel.



- Its major targets are to restore **100 million hectares** of degraded land, sequester **250 million tonnes of carbon**, and create **10 million green jobs by 2030**.
- This initiative is socially important because it aims to improve **food security, rural employment, climate resilience, women's livelihood, and community stability**.

GS Paper II: Governance		23 June 2026
TOPICS COVERED		
23J6	No one should own the law: why government standards should be public किसी का भी कानून पर स्वामित्व नहीं होना चाहिए: सरकारी मानक सार्वजनिक क्यों होने चाहिए	

No one should own the law: why government standards should be public

As part of the implementation of the Jan Vishwas framework, it has been proposed that all edicts of government be centrally published and that any such edict not publicly accessible be treated as null and void – a principle that should extend to public safety standards as well

GS II: Governance
Carl Malamud

The principle that rules governing public life must be widely accessible is not new to India. The first Indian road safety standard dates back to Emperor Ashoka, who commanded that his edicts of government be broadly disseminated throughout the land. The 7th Pillar Edict, now located in Delhi, had an extensive section on road safety.

Today, this work continues under the auspices of the Indian Roads Congress. While ostensibly a non-profit association, it is actually an arm of the government; it is subject to Right to Information Act; its website is maintained by the Network Information Centre, and its governing council is predominantly composed of government officials. It is a law-making enterprise with the force of the state.

The Indian Roads Congress publishes hundreds of standards, guidelines, and specifications relating to road safety and construction. These documents cover a wide range of technical matters, including route signage for national highways, vehicle design dimensions and weights, and the design of prestressed concrete road bridges.

These standards are widely incorporated into government practice, appearing in subordinate legislation as well as in regulations issued by bodies such as the National Rural Infrastructure Development Agency and the Ministry of Road Transport and Highways. The standards are also an integral part of the road construction efforts by the States and are frequently referred to in judicial opinions.

For over a decade, I've been systematically purchasing, scanning, and posting these road edicts on my website and on the Internet Archive, a non-profit public library based in the U.S. Many of these standards have been accessed tens of thousands of times, with even government agencies themselves reproducing and hosting copies. This work is entirely non-commercial: no fees are charged for access, no intellectual

property rights are asserted, and the source of every document is clearly identified. The underlying principle is straightforward – edicts of government constitute the raw materials of democracy, and a truly informed citizenry is indispensable to ensuring a government not merely for the people, but by the people.

Recently, a "takedown" notice was issued by the Indian Roads Congress – a demand for the immediate removal of its purportedly proprietary works – accompanied by threats of legal consequences for non-compliance. That demand has not been complied with, and it is necessary to explain why.

My nonprofit makes edicts of government available; it is the essence of our mission. In India, this included posting of over 14,000 Indian Standards issued by the Bureau of Indian Standards (BIS). Like the standards of the Indian Roads Congress, BIS standards are an integral part of public safety. It is impossible to meaningfully advance initiatives such as "Make in India" without ensuring "safe in India." These standards cover critical areas including the National Building Code, safety requirements for motorcycle helmets and drinking water, procedures for entering sewer systems, the operation of agricultural and textile machinery, and construction practices in areas prone to typhoons. Like the Indian Roads Congress, an elaborate law-making process is used before an Indian Standard is issued.

When BIS objected to my actions, myself and two Indian co-petitioners raised a Public Interest Litigation in the Hon'ble High Court of Delhi. Our suit went on for seven years, and then something interesting happened. During those seven years, we continued to post all the BIS standards for open access, yet during that time more and more people became aware of the standards and the sales of standards by BIS went up! But, here's the thing. Government doesn't make money selling these publications, but they are hard to procure.

It turns out BIS was losing more and

more money as their sales went up. Recognising the inefficiency of this model, a senior official in the Ministry directed that the standards be made freely available on the BIS website. This outcome aligned with the very relief that had been sought; accordingly, the matter was brought before the Chief Justice of the Delhi High Court, and a request was made to withdraw the petition. The court acceded to this request and disposed of the matter.

Parliament has recently passed the Jan Vishwas law, a move to "liberate governance from the steel cage". A recent post by business leaders Manish Sabharwal (co-founder of TeamLease) and Rahul Matthan (co-founder of Trilegal) called for the removal of "shadow instruments" – edicts that are not readily available to read. In addition to judicial decisions and primary legislation, they identify a wide array of non-statutory instruments that nonetheless carry the force of law, including regulations, circulars, master circulars, departmental and ministerial directions, office memoranda, public notices, general orders, guidance notes, advisories, press releases, schemes, consultation papers, standard operating procedures, policies, notifications, guidelines, government orders, departmental orders, and gazettes.

These instruments constitute what may properly be described as "edicts of government." Courts in other jurisdictions have affirmed that such edicts belong to the people. In the United States, the Supreme Court has held that "no man shall own the law," underscoring the principle that legal materials must remain in the public domain. Similarly, in the European Union, a constitutional bench has ruled that mandatory safety standards form an integral part of the law and that ensuring public access to them is of "overriding public importance."

As part of the implementation of Jan Vishwas, Mr. Sabharwal and Mr. Matthan have suggested that all edicts of government in India be posted on a central website, such as India Code, and

that any such edict not publicly accessible should be treated as null and void. This proposal is both sound and necessary, and it ought to extend expressly to public safety standards as well.

It is important, however, to distinguish such edicts from other categories of government publications. Not all documents issued by the state carry normative or binding force; many are informational or cultural in nature, including the numerous publications produced by bodies such as the Publications Division, the National Book Trust, and the Archaeological Survey of India.

Edicts of government have a special protected place in constitutional law, but works of government are any documents issued by the state, and these public works have a special importance. I have also purchased and posted thousands of such documents from the Union and State governments, and as with edicts, have over the years received a number of takedown notices. As with the Roads Congress, I have stated my position and respectfully declined to remove the documents.

In the U.S., the "works of government" clause in the copyright act states that documents issued by the federal government are not eligible for copyright. In England, the government maintains "crown copyright" but has an open government data license permitting reuse. It would be a simple matter for India to adopt a works of government policy.

Edicts of government are the law, and must be available for democracy to function. Works of government are also vital, public knowledge paid for by the people. Making both edicts and works more readily available will enrich our society and make government ever more relevant to the citizenry. These are small steps we can all take as we walk together up that long twisted path towards a better democracy, towards that shining city on the hill.

Carl Malamud is the president and founder of Public Resource, a U.S.-based NGO and author of 9 books.

23J6. No one should own the law: why government standards should be public
किसी का भी कानून पर स्वामित्व नहीं होना चाहिए: सरकारी मानक सार्वजनिक क्यों होने चाहिए

World is moving on from paying publishers — India should too

प्रकाशकों को भुगतान करने की व्यवस्था से विश्व आगे बढ़ रहा है — भारत को भी ऐसा करना चाहिए

- As part of the implementation of the **Jan Vishwas framework**, it has been proposed that all **edicts of the government** be centrally published and that any such **edict** not publicly accessible be treated as **null and void** — a principle that should extend to **public safety standards** as well.
जन विश्वास ढाँचे के कार्यान्वयन के अंतर्गत यह प्रस्तावित किया गया है कि सरकार के सभी **आदेशों** को केंद्रीय रूप से प्रकाशित किया जाए तथा ऐसा कोई भी **आदेश** जो सार्वजनिक रूप से उपलब्ध न हो, उसे **शून्य और अमान्य** माना जाए — यह सिद्धांत **सार्वजनिक सुरक्षा मानकों** पर भी समान रूप से लागू होना चाहिए।
- The principle that rules governing **public life** must be widely accessible is not new to India. यह सिद्धांत कि **सार्वजनिक जीवन** को नियंत्रित करने वाले नियम व्यापक रूप से सुलभ होने चाहिए, भारत के लिए नया नहीं है।
- The first Indian **road safety standard** dates back to **Emperor Ashoka**, who commanded that his edicts of government be broadly disseminated throughout the land.
भारत का पहला **सड़क सुरक्षा मानक सम्राट अशोक** के काल से संबंधित माना जाता है, जिन्होंने अपने शासकीय आदेशों को पूरे देश में व्यापक रूप से प्रसारित करने का निर्देश दिया था।
- The **Seventh Pillar Edict**, now located in **Delhi**, had an extensive section on road safety. वर्तमान में **दिल्ली** में स्थित **सातवें स्तंभ अभिलेख** में सड़क सुरक्षा से संबंधित विस्तृत प्रावधान शामिल थे।
- Today, this work continues under the **auspices of the Indian Roads Congress**. आज यह कार्य **भारतीय सड़क कांग्रेस** के संरक्षण में जारी है।
- While ostensibly a **non-profit association**, it is actually an arm of the government. यद्यपि यह औपचारिक रूप से एक **गैर-लाभकारी संस्था** प्रतीत होती है, परंतु वास्तव में यह सरकार की एक शाखा के रूप में कार्य करती है।
- It is subject to the **Right to Information Act**. यह **सूचना का अधिकार अधिनियम** के अंतर्गत आती है।
- Its website is maintained by the **National Informatics Centre**, and its governing council is predominantly composed of government officials.
इसकी वेबसाइट का संचालन **राष्ट्रीय सूचना विज्ञान केंद्र** द्वारा किया जाता है तथा इसकी संचालन परिषद मुख्यतः सरकारी अधिकारियों से मिलकर बनी है।
- It is a **law-making enterprise with the force of the state**. यह राज्य की शक्ति से युक्त एक **नियम-निर्माण संस्था** है।
- The **Indian Roads Congress** publishes hundreds of standards, guidelines, and specifications relating to road safety and construction.
भारतीय सड़क कांग्रेस सड़क सुरक्षा और निर्माण से संबंधित सैकड़ों मानक, दिशा-निर्देश और विनिर्देश प्रकाशित करती है।
- These documents cover a wide range of technical matters, including route signage for national highways, vehicle design dimensions and weights, and the design of prestressed concrete road bridges.
इन दस्तावेजों में राष्ट्रीय राजमार्गों के संकेतक, वाहनों के आयाम और भार, तथा पूर्वतनावित कंक्रीट सड़क पुलों के डिज़ाइन जैसे अनेक तकनीकी विषय शामिल हैं।
- These standards are widely incorporated into government practice, appearing in subordinate legislation as well as in regulations issued by various government bodies.
इन मानकों को व्यापक रूप से सरकारी कार्यप्रणाली में शामिल किया जाता है और वे अधीनस्थ विधानों तथा विभिन्न सरकारी निकायों द्वारा जारी नियमों का हिस्सा बनते हैं।



- In India, this included posting of over **14,000 Indian Standards** issued by the **Bureau of Indian Standards**.
भारत में इसके अंतर्गत **भारतीय मानक ब्यूरो** द्वारा जारी **14,000 से अधिक भारतीय मानकों** को सार्वजनिक रूप से उपलब्ध कराना शामिल था।
- Like the standards of the **Indian Roads Congress**, these standards are an integral part of public safety.
भारतीय सड़क कांग्रेस के मानकों की तरह ये मानक भी सार्वजनिक सुरक्षा का अभिन्न हिस्सा हैं।
- These standards cover critical areas including the **National Building Code**, safety requirements for motorcycle helmets and drinking water, procedures for entering sewer systems, operation of agricultural and textile machinery, and construction practices in typhoon-prone regions.
ये मानक **राष्ट्रीय भवन संहिता**, मोटरसाइकिल हेलमेट और पेयजल की सुरक्षा आवश्यकताओं, सीवर प्रणाली में प्रवेश की प्रक्रियाओं, कृषि एवं वस्त्र मशीनों के संचालन तथा चक्रवात-प्रभावित क्षेत्रों में निर्माण पद्धतियों जैसे महत्वपूर्ण क्षेत्रों को कवर करते हैं।
- Like the **Indian Roads Congress**, an elaborate law-making process is followed before an Indian Standard is issued.
भारतीय सड़क कांग्रेस की तरह ही किसी भारतीय मानक को जारी करने से पहले विस्तृत नियम-निर्माण प्रक्रिया अपनाई जाती है।
- Recently, Parliament passed the **Jan Vishwas Act**, a move intended to "liberate governance from the steel cage".
हाल ही में संसद ने **जन विश्वास अधिनियम** पारित किया, जिसका उद्देश्य शासन व्यवस्था को "लोहे के पिंजरे" से मुक्त करना बताया गया।
- These include regulations, circulars, master circulars, departmental directions, ministerial directions, office memoranda, public notices, general orders, guidance notes, advisories, press releases, schemes, consultation papers, standard operating procedures, policies, notifications, guidelines, government orders, departmental orders, and gazettes.
इनमें विनियम, परिपत्र, मुख्य परिपत्र, विभागीय निर्देश, मंत्रालयी निर्देश, कार्यालय ज्ञापन, सार्वजनिक सूचनाएँ, सामान्य आदेश, मार्गदर्शक टिप्पणियाँ, परामर्श पत्र, प्रेस विज्ञप्तियाँ, योजनाएँ, विचार-विमर्श दस्तावेज़, मानक संचालन प्रक्रियाएँ, नीतियाँ, अधिसूचनाएँ, दिशा-निर्देश, सरकारी आदेश, विभागीय आदेश तथा राजपत्र सम्मिलित हैं।

GS Paper II: International Relations	23 June 2026
TOPICS COVERED	
23J6	Trump ally defeats leftist rival in Colombian Presidential election कोलंबियाई राष्ट्रपति चुनाव में ट्रंप समर्थक ने वामपंथी प्रतिद्वंद्वी को हराया

Trump ally defeats leftist rival in Colombian Presidential election



GS II: IR
An U.S.-backed lawyer won Colombia's presidential run-off on Sunday, swinging the country hard right and sparking protests. Abelardo de la Espriella (pictured on the right) held 49.66% vote against leftist Senator Ivan Cepeda's 48.70%. U.S. President Donald Trump cheered the result, exclaiming "He Won, BIG!" AP

23J6. Trump ally defeats leftist rival in Colombian Presidential election

कोलंबियाई राष्ट्रपति चुनाव में ट्रंप समर्थक ने वामपंथी प्रतिद्वंद्वी को हराया

- An **U.S.-backed lawyer** won **Colombia's presidential run-off** on Sunday, swinging the country hard right and sparking protests.
एक अमेरिका समर्थित वकील ने रविवार को कोलंबिया के राष्ट्रपति रन-ऑफ चुनाव में जीत हासिल की, जिससे देश की राजनीति दक्षिणपंथ की ओर झुक गई और विरोध प्रदर्शन शुरू हो गए।



- **Abelardo de la Espriella** (pictured on the right) held **49.66% vote** against leftist Senator **Ivan Cepeda's 48.70%**.
अबेलार्डो डे ला एस्प्रीएला (दाई ओर चित्रित) को **49.66% वोट** मिले, जबकि वामपंथी सीनेटर **इवान सेपेदा** को **48.70% वोट** प्राप्त हुए।
- **U.S. President Donald Trump** cheered the result, exclaiming "He Won, **BIG!**"
अमेरिकी राष्ट्रपति **डोनाल्ड ट्रंप** ने इस परिणाम का स्वागत करते हुए कहा, "He Won, **BIG!**" अर्थात "उन्होंने बड़ी जीत हासिल की!"।

GS Paper III: Economy		23 June 2026
TOPICS COVERED		
23J6	Jairam writes to Sonowal, seeks clarity on Nicobar transshipment port project जयराम ने सोनोवाल को पत्र लिखकर निकोबार ट्रांसशिपमेंट बंदरगाह परियोजना पर स्पष्टता मांगी	
23J6	Reclaiming T.N.'s fiscal autonomy तमिलनाडु की राजकोषीय स्वायत्तता की पुनर्प्राप्ति	
23J6	Net FDI jumped to \$6.6 bn in April, highest in nearly 5 years अप्रैल में शुद्ध FDI बढ़कर 6.6 अरब डॉलर हुआ, लगभग 5 वर्षों में सबसे उच्च स्तर	
23J6	Cred founder Kunal Shah named WhatsApp chief क्रेड के संस्थापक कुणाल शाह बने व्हाट्सऐप प्रमुख	
23J6	EU courts Brazil as strategic partner in global race for critical minerals महत्वपूर्ण खनिजों की वैश्विक दौड़ में यूरोपीय संघ ने ब्राज़ील को रणनीतिक साझेदार के रूप में चुना	

Jairam writes to Sonowal, seeks clarity on Nicobar transshipment port project

GS III: Economy
NEW DELHI

Congress general secretary Jairam Ramesh has written to Union Minister Sarbajit Sonowal, seeking clarifications on the proposed International Container Transshipment Port (ICTP) at Galathea Bay on the Great Nicobar Island.

Making his letter public on Monday, Mr. Ramesh reiterated concerns over the ecological impact of the mega infrastructure project and said he was writing "as one among the very large number of people concerned with the ecological devastation that will be caused by the Great Nicobar Island Project".

Referring to discussions of the Public Private Partnership Appraisal Committee (PPPAC) held in March, the Congress leader noted that the Ministry itself had identified two major risks associated with the project



Jairam Ramesh

– "the development of a large-scale greenfield port project" and "the challenge of diverting and establishing transshipment traffic from existing well-established ports".

'Huge risks'

"I take it that these competing well-established ports are Colombo, Singapore and Port Klang. It is extraordinary that even while recognising these huge risks – quite apart from the certainty of ecological devastation that will

be caused by its construction – the transshipment port is being pushed through," he said in the letter dated June 21.

Mr. Ramesh sought clarity on the proposed ownership structure of the project. Citing a PPPAC recommendation that at least 55% equity in the special purpose vehicle be held by an Indian-owned and controlled entity, he asked whether this would permit 100% private ownership or if a minimum public sector stake was envisaged.

He also questioned whether ownership would be diversified among multiple operators or whether "the airports-like situation" would be allowed.

He further asked whether the Ministry would provide viability gap funding from its own budget after the PPPAC reportedly declined the Ministry's request for such support.

23J6. Jairam writes to Sonowal, seeks clarity on Nicobar transshipment port project

जयराम ने सोनोवाल को पत्र लिखकर निकोबार ट्रांसशिपमेंट बंदरगाह परियोजना पर स्पष्टता मांगी

- "I take it that these competing well-established ports are **Colombo, Singapore and Port Klang**.

"मेरा मानना है कि ये प्रतिस्पर्धी और स्थापित बंदरगाह कोलंबो, सिंगापुर और पोर्ट क्लैंग हैं।

Reclaiming T.N.'s fiscal autonomy

Tamil Nadu's problem today is not fiscal profligacy or corruption; the pressing problem is its model of inclusive growth itself; the real challenge is getting investment, generating decent jobs, improving wages, while actively renegotiating fiscal space with the Centre

CS III: Economy

ECONOMIC NOTES

Kalaiyarasan A.

The Government of Tamil Nadu's white paper is a comprehensive analysis of the State's financial status and economic conditions. Detailed like the white paper prepared by the Dravida Munnetra Kazhagam (DMK) in 2021, the Tamil Nadu Vetti Kazhagam's (TVK's) 120-page document begins with an important line: 'It is neither an exercise in retrospective blame nor a political statement'. In that spirit, this is a genuine exercise.

It indeed offers an honest account of what went wrong with tax collection: a shrinking base and leakages embedded in both revenue collection and expenditure patterns. While its diagnosis is rigorous, what is not clear, however, is how the government is going to fix the leakages and manoeuvre the welfare that it has promised during its election campaign.

Unsustainable fiscal deficit

The white paper lays bare the structural weaknesses facing Tamil Nadu's economy and outlines a possible course correction which, in that sense, has a lot more continuity than the earlier one submitted by the DMK.

Both literally state that "the current levels of fiscal deficit are unsustainable primarily because a substantial portion of the fiscal deficit is simply to fund the revenue deficit". It means the State is simply borrowing to fund current consumption rather than to create assets. To be sure, for every rupee borrowed about 60 paise goes to current consumption. But one has to be cautious in reading too much into this as substantial expenditure for health and education are under the revenue account.

In an economy, the government needs to raise resources to pay for the provision of public goods and services, build social and physical infrastructures needed for growth and protect the vulnerable from the market forces. In that sense, every policy is a political choice with losers and gainers not just within the present generation but also across generations since public debt shifts the burden of payment to future generations.

The white paper says that the State is deep in debt and its fiscal deficit is beyond the prescribed limit. On average, an individual pays about ₹38,000 in taxes to the State and the Union governments and receives about ₹54,500 worth of subsidies and services. The gap is typically funded by borrowing. The consolidated debt of each individual is then around ₹1.29 lakh, and the cumulative debt is about 28% of the State income, which is the cause for concern today.

Collapse of revenue generation

The serious concern that the report flags is not just debt but of the collapse of the revenue generation itself. While the white paper shows the account of revenue generation of the past five years, the collapse precedes this by at least a decade.

Make no mistake, Tamil Nadu was one of the few States that predominantly sustained itself on its own revenue for its expenditure – about 70% of its expenditure from its own tax in sharp contrast to States such as Bihar and Uttar Pradesh which largely rely on the Centre's transfer.

With the introduction of the GST in



A delicate equation: Tamil Nadu Chief Minister Joseph Vijay with Prime Minister Narendra Modi in New Delhi. Mr. Vijay has the enormous responsibility to not only put the State's inclusive growth model back on track, but also to reclaim fiscal autonomy from the Centre. @PMOINDIA X

2017, States have lost their autonomy on taxation. Tamil Nadu suffered the most. The State's Own Tax Revenue (SOTR) to Gross State Domestic Product (GSDP) ratio, which was 7.92% in 2011-12, has been steadily declining, and was down to 5.93% in 2021-22 and further down to 5.45% in 2025-26. The ratio reflects the State's capacity to mobilise its own tax resources relative to the size of its economy. While the white paper clearly shows that the decline is spread across all major tax heads – GST, petroleum VAT, State excise, stamp duty and motor vehicle tax, the GST alone accounts for about 53% total tax revenue. Despite having the second largest economy with the size of ₹35.29 lakh crore of GSDP, its GST collection was ₹72,008 crore lower than that of Karnataka (₹87,256 crore), and Gujarat (₹80,823 crore).

Beside the systemic corruption and inefficiencies in tax collection, the predominance of the service sector also contributed to the decline in GST collection. It appears many units within the sector are beyond the tax net.

Revenue leakages, sectoral debt

Similarly, motor vehicle tax collection has lagged since the number of vehicles registered in the State has not kept pace. Not to mention stamp duties in rent-seeking sectors such as real estate which is known for undervaluation of the property at registration and excessive leakages and corruption.

Even mining revenue is among the most striking examples of stagnation in non-tax income. Besides corruption in valuation, leakage in the assessment of minor mineral extraction also contributed to the decline.

The key sectors that drive the State in this debt trap are the power sector and transport. The power sector alone carries ₹2.47 lakh crore of debt.

The State has historically built progressive power subsidy model – taxing industries and paying for poor and farmers which have become sites of political rent-seeking tied to electoral cycles.

Beside the steady decline in its own tax collection, the State has also been increasingly losing its share in the Union transfer. For instance, Union tax devolution and grants-in-aid together constituted about 34.95% of Total Revenue Receipts in 2021-22 and it declined to 25.5% in 2025-26. Again, this decline precedes a decade. The State's share in total transfer was 5.305% in the 12th Finance Commission period, but it came down to 4.969% in the 13th Finance Commission period and fell down to 4.023% for the 16th Commission.

This declining share is due to the formula adopted by the successive Finance Commissions. The high weightage given to the per capita income distance, combined with population works to the State's disadvantage. In this sense, the State has become a victim of its own success; since per capita income distance favours poorer States by allocating them a larger share of resources, relatively developed States like Tamil Nadu receive less, effectively penalising their higher levels of economic progress. Even the weight assigned to GDP contribution by the 16th Finance Commission did not help as the formula remains unfavourable. Nor have criteria such as area and forest cover worked in the State's favour.

On the other hand, the shareable divisible pool has been shrinking thanks to the arbitrary cess and surcharges imposed by the Centre that takes away the legitimate resources of the States. In that sense, the State is a victim of both vertical and horizontal distribution.

With declining Union transfers and the erosion of its own revenue base, Tamil Nadu's government size – measured by total expenditure as a share of GSDP – has shrunk, weakening the State's fiscal capacity. Together, these factors, limit the State's ability to intervene in the economy.

As the white paper shows, about 64% of every rupee of revenue receipts in 2025-26 is pre-committed on the account of salaries, pensions and interest. With the inflexible non-discretionary

obligations of 23%, the pre-committed expenditure goes up to 87% leaving little room for any additional expenditure or any new schemes. Global uncertainty or any exogenous shock could make the economy paralysed.

Debt, demography and scissors effect

This potential debt trap also comes at a time when the State is witnessing faster demographic change. It's aging faster than any other large State in India. Tamil Nadu's median age is 34.25 years – nearly 9.5 years older than Uttar Pradesh and its old-age dependency ratio is projected to increase from 20.6 in 2021 to 32.7 by 2036. This has two implications. The ability to repay the debt is limited, the paper argues, because a shrinking working-age population means a shrinking tax base. It also means the need for higher social expenditure as the share of elderly population goes up. The interaction between a rising debt stock and a shrinking working-age population can create condition for a debt trap which demographers call 'scissors effect' – the widening gap between revenue capacity and expenditure obligations.

The pressing problem

However, Tamil Nadu's problem today is not fiscal profligacy or corruption. The pressing problem is its model of inclusive growth itself. The real challenge thus is getting investment, generating decent jobs, improving wages, while actively renegotiating fiscal space with the Centre. The welfare architecture that the State has built is not enough.

Educated youth who rallied behind the TVK are not seeking more welfare, but decent jobs and wages. Welfare can't be a substitute for jobs and wages. It is time to get the growth fundamentals right, which require investment in education, health, and public infrastructure. Chief Minister Joseph Vijay thus has the enormous responsibility not only to put the inclusive growth model back on track, but also to reclaim fiscal autonomy from the Centre.

Kalaiyarasan A. is Associate Professor, Madras Institute of Development Studies

THE GIST

▼ The white paper lays bare the structural weaknesses facing Tamil Nadu's economy and outlines a possible course correction which, in that sense, has a lot more continuity than the earlier one submitted by the DMK.

▼ The serious concern that the report flags is not just debt but of the collapse of the revenue generation itself. While the white paper shows the account of revenue generation of the past five years, the collapse precedes this by at least a decade.

▼ Despite having the second largest economy with the size of ₹35.29 lakh crore of GSDP, its GST collection was ₹72,008 crore lower than that of Karnataka and Gujarat.

23J6. Reclaiming T.N.'s fiscal autonomy

तमिलनाडु की राजकोषीय स्वायत्तता की पुनर्प्राप्ति

- **Tamil Nadu's** problem today is not **fiscal profligacy** or **corruption**; the pressing problem is its model of **inclusive growth** itself; the real challenge is **getting investment, generating decent jobs, improving wages, while actively renegotiating fiscal space with the Centre**.

आज तमिलनाडु की समस्या राजकोषीय अपव्यय या भ्रष्टाचार नहीं है; वास्तविक और गंभीर समस्या उसके समावेशी विकास के मॉडल से जुड़ी है; असली चुनौती निवेश आकर्षित करने, सम्मानजनक रोजगार सृजित

करने, वेतनों में सुधार लाने तथा केंद्र सरकार के साथ राजकोषीय संसाधनों के दायरे पर सक्रिय रूप से पुनर्विचार एवं पुनः वार्ता करने की है।

- It indeed offers an honest account of **what went wrong with tax collection: a shrinking base and leakages embedded in both revenue collection and expenditure patterns.**

यह वास्तव में इस बात का ईमानदार विवरण प्रस्तुत करता है कि कर संग्रहण में क्या गलत हुआ — कराधान का सिकुड़ता आधार तथा राजस्व संग्रहण और व्यय संरचना दोनों में अंतर्निहित रिसाव।

Collapse of revenue generation

राजस्व सृजन का पतन

- About **70%** of its expenditure came from its own tax revenue in sharp contrast to States such as **Bihar** and **Uttar Pradesh**, which largely rely on the Centre's transfers.
इसके कुल व्यय का लगभग **70 प्रतिशत** भाग इसके स्वयं के कर राजस्व से आता था, जबकि **बिहार** और **उत्तर प्रदेश** जैसे राज्य मुख्यतः केंद्र से प्राप्त हस्तांतरणों पर निर्भर रहते हैं।
- With the introduction of the **Goods and Services Tax in 2017**, States have lost their autonomy on taxation.
वस्तु एवं सेवा कर की 2017 में शुरुआत के साथ राज्यों ने कराधान संबंधी अपनी स्वायत्तता का एक बड़ा हिस्सा खो दिया।
- Tamil Nadu** suffered the most.
इसका सर्वाधिक प्रभाव **तमिलनाडु** पर पड़ा।
- The **State's Own Tax Revenue to Gross State Domestic Product ratio**, which was **7.92%** in **2011-12**, has been steadily declining, and was down to **5.93%** in **2021-22** and further down to **5.45%** in **2025-26**.
राज्य के स्वयं के कर राजस्व और सकल राज्य घरेलू उत्पाद के अनुपात का स्तर **2011-12** में **7.92 प्रतिशत** था, जो लगातार घटते हुए **2021-22** में **5.93 प्रतिशत** और **2025-26** में **5.45 प्रतिशत** रह गया।
- While the white paper clearly shows that the decline is spread across all major tax heads — **GST, petroleum VAT, State excise, stamp duty and motor vehicle tax** — the **GST** alone accounts for about **53%** of total tax revenue.
श्वेत पत्र स्पष्ट रूप से दर्शाता है कि गिरावट वस्तु एवं सेवा कर, पेट्रोलियम मूल्य वर्धित कर, राज्य उत्पाद शुल्क, मुद्रांक शुल्क तथा मोटर वाहन कर सहित सभी प्रमुख कर स्रोतों में दिखाई देती है, जबकि अकेले वस्तु एवं सेवा कर का योगदान कुल कर राजस्व का लगभग **53 प्रतिशत** है।
- Despite having the second largest economy with a size of **₹35.29 lakh crore** of Gross State Domestic Product, its GST collection was **₹72,008 crore** lower than that of **Karnataka** and **₹80,823 crore** lower than that of **Gujarat**.
₹35.29 लाख करोड़ के सकल राज्य घरेलू उत्पाद के साथ देश की दूसरी सबसे बड़ी अर्थव्यवस्था होने के बावजूद, इसका वस्तु एवं सेवा कर संग्रह **कर्नाटक** की तुलना में **₹72,008 करोड़** तथा **गुजरात** की तुलना में **₹80,823 करोड़** कम रहा।

Revenue leakages, sectoral debt

राजस्व रिसाव और क्षेत्रीय ऋण

- Similarly, **motor vehicle tax** collection has lagged since the number of vehicles registered in the State has not kept pace.
इसी प्रकार **मोटर वाहन कर** संग्रह भी अपेक्षित स्तर तक नहीं पहुँच पाया है क्योंकि राज्य में पंजीकृत वाहनों की संख्या उसी अनुपात में नहीं बढ़ी है।
- Not to mention **stamp duties** in rent-seeking sectors such as **real estate**, which is known for undervaluation of property at registration and excessive leakages and corruption.
इसके अतिरिक्त **अचल संपत्ति क्षेत्र** जैसे लाभ-उन्मुख क्षेत्रों में **मुद्रांक शुल्क** संग्रह भी प्रभावित हुआ है, जहाँ



संपत्तियों का पंजीकरण के समय कम मूल्यांकन, अत्यधिक रिसाव और भ्रष्टाचार सामान्य समस्या मानी जाती है।

- **Even mining revenue is among the most striking examples of stagnation in non-tax income.** यहाँ तक कि **खनन राजस्व** भी गैर-कर आय में ठहराव के सबसे उल्लेखनीय उदाहरणों में से एक है।
- **Besides corruption in valuation, leakage in the assessment of minor mineral extraction also contributed to the decline.** मूल्यांकन में भ्रष्टाचार के अतिरिक्त **लघु खनिजों के उत्खनन** के आकलन में होने वाले रिसाव ने भी इस गिरावट में योगदान दिया।
- **The key sectors that drive the State into this debt trap are the power sector and transport sector.** राज्य को इस ऋण जाल में धकेलने वाले प्रमुख क्षेत्र **विद्युत क्षेत्र** और **परिवहन क्षेत्र** हैं।
- **The power sector alone carries ₹2.47 lakh crore of debt.** अकेले **विद्युत क्षेत्र** पर **₹2.47 लाख करोड़** का ऋण भार है।

Revenue leakages, sectoral debt

राजस्व रिसाव और क्षेत्रीय ऋण

- For instance, **Union tax devolution and grants-in-aid** together constituted about **34.95% of Total Revenue Receipts in 2021-22** and declined to **25.5% in 2025-26.** उदाहरण के लिए, **2021-22** में **केंद्रीय करों में हिस्सेदारी** और **अनुदान सहायता** मिलाकर कुल राजस्व प्राप्तियों का लगभग **34.95 प्रतिशत** थी, जो **2025-26** में घटकर **25.5 प्रतिशत** रह गई।
- Again, this decline precedes a decade. एक बार फिर, यह गिरावट भी पिछले एक दशक से जारी प्रवृत्ति का परिणाम है।
- **The State's share in total transfer was 5.305% in the Twelfth Finance Commission period, but it came down to 4.969% in the Thirteenth Finance Commission period and fell to 4.023% under the Sixteenth Finance Commission.** कुल केंद्रीय हस्तांतरणों में राज्य की हिस्सेदारी **बारहवें वित्त आयोग** की अवधि में **5.305 प्रतिशत** थी, जो **तेरहवें वित्त आयोग** की अवधि में घटकर **4.969 प्रतिशत** हो गई और **सोलहवें वित्त आयोग** के अंतर्गत **4.023 प्रतिशत** तक पहुँच गई।
- **This declining share is due to the formula adopted by the successive Finance Commissions.** इस घटती हिस्सेदारी का प्रमुख कारण विभिन्न **वित्त आयोगों** द्वारा अपनाया गया वितरण सूत्र है।
- **The high weightage given to the per capita income distance, combined with population, works to the State's disadvantage.** प्रति व्यक्ति आय अंतर को दिया गया अधिक महत्व तथा जनसंख्या आधारित मानदंड राज्य के प्रतिकूल कार्य करते हैं।
- Even the **weight assigned to Gross Domestic Product contribution by the Sixteenth Finance Commission** did not help as the formula remains unfavourable. यहाँ तक कि **सोलहवें वित्त आयोग** द्वारा **सकल घरेलू उत्पाद में योगदान** को दिया गया महत्व भी राज्य के लिए लाभकारी सिद्ध नहीं हुआ, क्योंकि समग्र वितरण सूत्र अभी भी प्रतिकूल बना हुआ है।
- Nor have **criteria such as area and forest cover** worked in the State's favour. इसी प्रकार **क्षेत्रफल** और **वन आच्छादन** जैसे मानदंड भी राज्य के पक्ष में नहीं गए हैं।
- In that sense, the **State is a victim of both vertical and horizontal distribution.** इस प्रकार राज्य **ऊर्ध्वाधर** तथा **क्षैतिज वित्तीय वितरण** दोनों व्यवस्थाओं का प्रभावित पक्ष बन गया है।

Debt, demography and scissors effect

ऋण, जनसांख्यिकी और कैंची प्रभाव

- The ability to repay the debt is limited, the paper argues, because **a shrinking working-age population means a shrinking tax base.**



श्वेत पत्र के अनुसार ऋण चुकाने की क्षमता सीमित होती जाएगी, क्योंकि कार्यशील आयु वर्ग की जनसंख्या में कमी का अर्थ है कराधार का सिकुड़ना।

- It also means the need for higher **social expenditure** as the share of the elderly population goes up.
इसका यह भी अर्थ है कि वृद्ध जनसंख्या के बढ़ते अनुपात के साथ सामाजिक व्यय की आवश्यकता भी बढ़ेगी।
- The interaction between a rising **debt stock** and a shrinking working-age population can create conditions for a debt trap which demographers call the '**scissors effect**'.
बढ़ते हुए ऋण भार और घटती कार्यशील आयु जनसंख्या का परस्पर प्रभाव ऐसी स्थिति उत्पन्न कर सकता है जिसे जनसांख्यिकी विशेषज्ञ 'कैंची प्रभाव' कहते हैं।
- It refers to the widening gap between **revenue capacity** and **expenditure obligations**.
यह राजस्व जुटाने की क्षमता और व्यय दायित्वों के बीच बढ़ते अंतर को दर्शाता है।

Net FDI jumped to \$6.6 bn in April, highest in nearly 5 years

GS III: Economy
T.C.A. Sharad Raghavan
NEW DELHI

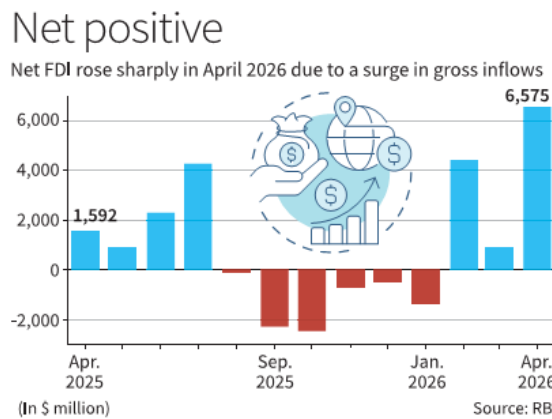
Net FDI rose to \$6.6 billion in April 2026, its highest level in nearly five years, driven by a 65% surge in gross inflows, an analysis of official data shows.

In other words, the data released by the Reserve Bank of India on Monday shows that the total amount of direct investment that entered the country in April 2026 exceeded the amount leaving it by \$6.6 billion. The corresponding figure in March 2026 was \$917 million. April's net FDI figure was the highest since May 2021.

The surge in gross inflows even overshadowed the fact that outward FDI by Indian companies also rose to a historic high in April 2026.

Nevertheless, the data for April marks a significant turnaround from just a few months ago, since net FDI had been negative for six consecutive months up to February 2026.

Gross FDI in April 2026, or the total amount of direct investment that entered the country in April 2026 exceeded the amount leaving it by \$6.6 billion.



tered the country that month, surged to \$15.3 billion – the highest since at least March 2021, the earliest month for which data is easily available.

This figure was 65% higher than in April last year, and 131% higher than in March 2026.

To further put this figure into context, the gross FDI inflows in the single month of April 2026 was more than 16% of the amount that came in the entire financial year 2025-26.

"Source wise, more than 75% of the FDI flows came from Japan, Singa-

pore and Mauritius," the RBI said in its monthly bulletin report.

Slower outflow growth

Gross outflows rose, too, but at a significantly slower pace, to \$8.7 billion in April 2026 from \$7.7 billion in April last year – a growth of 13.7%. Within this, outward FDI by Indian companies rose nearly 42% in April 2026 to \$4.8 billion, the highest level since at least March 2021.

"As regards outward FDI, around 80% of the flows were directed to the U.S. and the Cayman Islands," the RBI said.

23J6. Net FDI jumped to \$6.6 bn in April, highest in nearly 5 years

अप्रैल में शुद्ध FDI बढ़कर

6.6 अरब डॉलर हुआ, लगभग

5 वर्षों में सबसे उच्च स्तर

- Net FDI rose to \$6.6 billion in April 2026, its highest level in nearly five years, driven by a 65% surge in gross inflows, an analysis of official data shows.

आधिकारिक आंकड़ों के विश्लेषण से पता चलता है कि सकल प्रवाह में 65% की वृद्धि के कारण अप्रैल 2026 में शुद्ध FDI बढ़कर 6.6 अरब डॉलर हो गया, जो लगभग पांच वर्षों में इसका सबसे ऊँचा स्तर है।

- In other words, the data released by the Reserve Bank of India on Monday shows that the total amount of direct investment that entered the country in April 2026 exceeded the amount leaving it by \$6.6 billion.

दूसरे शब्दों में, सोमवार को भारतीय रिज़र्व बैंक द्वारा जारी आंकड़ों से पता चलता है कि अप्रैल 2026 में देश में आने वाला कुल

प्रत्यक्ष निवेश देश से बाहर जाने वाली राशि से 6.6 अरब डॉलर अधिक था।

- The corresponding figure in March 2026 was \$917 million.
मार्च 2026 में यह संबंधित आंकड़ा 917 मिलियन डॉलर था।



- April's **net FDI** figure was the highest since **May 2021**.
अप्रैल का शुद्ध FDI आंकड़ा मई 2021 के बाद सबसे अधिक था।
- The surge in **gross inflows** even overshadowed the fact that **outward FDI by Indian companies also rose to a historic high in April 2026**.
सकल निवेश प्रवाह में वृद्धि इतनी अधिक थी कि इसने इस तथ्य को भी पीछे छोड़ दिया कि भारतीय कंपनियों का बाहरी FDI भी अप्रैल 2026 में ऐतिहासिक उच्च स्तर पर पहुँच गया।
- "Source wise, more than **75% of the FDI flows came from Japan, Singapore and Mauritius**," the RBI said in its monthly bulletin report.
RBI ने अपनी मासिक बुलेटिन रिपोर्ट में कहा, "स्रोत के आधार पर FDI प्रवाह का 75% से अधिक हिस्सा

जापान, सिंगापुर और मॉरीशस से आया।"

Cred founder Kunal Shah named WhatsApp chief

GS III: Economy

Hindu Bureau
NEW DELHI

WhatsApp will be headed by Cred founder Kunal Shah, starting as early as this week, the messaging platform announced, marking elevation of the serial fintech entrepreneur to the leadership of the world's largest messaging platform.

WhatsApp parent Meta, which also owns Instagram and Facebook, will invest \$900 million (about ₹8,550 crore) in Cred as a part of this hire, enabling Cred to move forward with ESOP buybacks. As Cred's CEO, a post to be held on an interim basis by senior executive Miten Sampat, Mr. Shah oversaw the service's growth to a user base that covered over a third of India's credit card bill payments, targeting the most affluent Indians. "Meta's \$900M minority investment is a booster in our plans to build an enduring institution with an eventual public listing," Mr. Sampat said on X.

"Meta will be a passive financial investor with no access to customer data." While WhatsApp has more than three billion users globally, a plurality in India, the firm is yet to seriously monetise access. That's



Kunal Shah

where Mr. Shah comes in. In a statement, he indicated his role would be to move the platform to that stage. "While [the app has] come very far, the delta between WhatsApp today and its full potential is massive," he said. Will Cathcart, who led WhatsApp for seven years and taken vocal positions on app's commitment to end-to-end encryption and held spyware makers who target the application accountable, will stay at Meta in other roles, Meta CEO Mark Zuckerberg said.

Before founding Cred, Mr. Shah founded startups such as PaisaBack, focused on cashbacks in 2009 and FreeCharge, a mobile wallet acquired by Snapdeal in 2015. He was an angel investor on the back of the ballooning valuations of his past ventures and had taken stakes in firms across the fintech ecosystem.

Slower outflow growth निवेश बहिर्वाह की धीमी वृद्धि

- **Gross outflows** rose, too, but at a significantly slower pace, to **\$8.7 billion** in April 2026 from **\$7.7 billion** in April last year — a growth of **13.7%**.

सकल बहिर्वाह भी बढ़ा, लेकिन अपेक्षाकृत धीमी गति से। यह अप्रैल 2025 के 7.7 अरब डॉलर से बढ़कर अप्रैल 2026 में 8.7 अरब डॉलर हो गया, जो 13.7% वृद्धि दर्शाता है।

- "As regards **outward FDI**, around **80% of the flows were directed to the U.S. and the Cayman Islands**," the RBI said.

RBI ने कहा, "बाहरी FDI के संदर्भ में, लगभग 80% निवेश प्रवाह अमेरिका और केमैन द्वीप समूह की ओर निर्देशित था।"

23J6. Cred founder Kunal Shah named WhatsApp chief

क्रेड के संस्थापक कुनाल शाह बने व्हाट्सऐप प्रमुख

- **WhatsApp will be headed by Cred founder Kunal Shah**, starting as early as this week, the messaging platform announced, marking the elevation of the **serial fintech entrepreneur to the leadership of the world's largest messaging platform**.

व्हाट्सऐप का नेतृत्व अब क्रेड के संस्थापक कुनाल शाह करेंगे, और यह जिम्मेदारी इसी सप्ताह से शुरू हो सकती है। मैसेजिंग प्लेटफॉर्म ने इसकी घोषणा करते हुए कहा कि इससे इस प्रसिद्ध फिनटेक उद्यमी को दुनिया के सबसे बड़े मैसेजिंग प्लेटफॉर्म का नेतृत्व सौंपा गया है।

- **WhatsApp parent Meta, which also owns Instagram and Facebook, will invest \$900 million (about ₹8,550 crore) in Cred as a part of this hire, enabling Cred to move forward with ESOP buybacks.**

व्हाट्सऐप की मूल कंपनी मेटा, जो इंस्टाग्राम और फेसबुक की भी मालिक है, इस नियुक्ति के हिस्से के रूप में क्रेड में 900 मिलियन डॉलर (लगभग 8,550 करोड़ रुपये) का निवेश करेगी, जिससे क्रेड को ESOP बायबैक आगे बढ़ाने में मदद मिलेगी।

- As Cred's **CEO**, a post to be held on an interim basis by senior executive **Miten Sampat**, Mr. Shah oversaw the service's growth to a user base that covered over a third of India's **credit card bill payments**, targeting the most affluent Indians.
क्रेड के **CEO** के रूप में, जिसका पद फिलहाल वरिष्ठ अधिकारी **मितेन संपत** अंतरिम आधार पर संभालेंगे, श्री शाह ने इस सेवा को ऐसे उपयोगकर्ता आधार तक पहुँचाया जो भारत के **क्रेडिट कार्ड बिल भुगतान** का एक-तिहाई से अधिक हिस्सा कवर करता था और सबसे समृद्ध भारतीयों को लक्षित करता था।
- Before founding Cred, Mr. Shah founded startups such as **PaisaBack**, focused on **cashbacks** in 2009 and **FreeCharge**, a mobile wallet acquired by **Snapdeal** in 2015.
क्रेड की स्थापना से पहले, श्री शाह ने **PaisaBack** जैसे स्टार्टअप की स्थापना की थी, जो 2009 में **कैशबैक** पर केंद्रित था, और **FreeCharge**, एक मोबाइल वॉलेट, जिसे **स्नैपडील** ने 2015 में अधिग्रहित कर लिया था।
- He was an **angel investor** on the back of the ballooning valuations of his past ventures and had taken stakes in firms across the **fintech ecosystem**.
वह अपने पूर्व उपक्रमों के बढ़ते मूल्यांकन के आधार पर एक **एंगेल निवेशक** भी बने और उन्होंने **फिनटेक इकोसिस्टम** की अनेक कंपनियों में हिस्सेदारी ली।

EU courts Brazil as strategic partner in global race for critical minerals

GS III: Economy

Reuters

RIO DE JANEIRO

The European Union is turning to Brazil as a strategic partner in its push to diversify its critical mineral supplies, offering a deal that it says will be beneficial to Brazil's development goals, EU Commissioner for International Partnerships Jozef Sikela told *Reuters* on Saturday.

The commissioner visited the rare earth research and processing centre of Australian mining company Viridis Mining and Minerals, in Poços de Caldas, in Minas Gerais, one of four priority projects selected to accelerate collaboration between the EU and Brazil. Mr. Sikela said the European approach



Jozef Sikela, left, and Viridis CEO Rafael Moreno look at samples at the Viridis rare earth research centre in Brazil. REUTERS

emphasises sustainable business and local rare earth processing, aligning with Brazil's push to export higher-value processed minerals instead of raw materials from a sector in which it holds the world's second-largest critical mineral reserves.

"What is extremely im-

portant is that also Brazil moves from the like a low-margin business so basically that the value is created here in the country," he said, highlighting that Brazil is currently the EU's most strategic partner in Latin America and a growing economy.

Mr. Sikela said the part-

nership would allow the EU to secure supplies through purchase agreements while helping Brazil build refining capacity, access new tech and move up the supply chain into higher-margin production.

Viridis' pilot mining project in Minas Gerais, inaugurated in May, can process 100 kilograms of ore per hour and produce up to 2.92 kg of mixed rare earth carbonate (MREC) annually.

Viridis' progress in Brazil comes amid a global race for rare earths and critical minerals, as Europe and the U.S. seek to reduce their dependence on China – the largest producer – for materials vital to electric vehicles and defence systems.

23J6. EU courts Brazil as strategic partner in global race for critical minerals

महत्वपूर्ण खनिजों की वैश्विक दौड़ में यूरोपीय संघ ने ब्राज़ील को रणनीतिक साझेदार के रूप में चुना

- Mr. Sikela said the **European approach** emphasises **sustainable business** and local **rare earth processing**, aligning with Brazil's push to export higher-value processed minerals instead of raw materials from a sector in which it holds the **world's second-largest critical mineral reserves**.
श्री सिकेला ने कहा कि **यूरोपीय दृष्टिकोण** सतत व्यवसाय और स्थानीय दुर्लभ मृदा प्रसंस्करण पर बल देता है,



जो ब्राज़ील की उस नीति के अनुरूप है जिसके तहत वह कच्चे माल के बजाय अधिक मूल्य वाले प्रसंस्कृत खनिजों का निर्यात करना चाहता है। ब्राज़ील के पास दुनिया का दूसरा सबसे बड़ा महत्वपूर्ण खनिज भंडार है।

- Viridis' pilot mining project in Minas Gerais, inaugurated in May, can process 100 kilograms of ore per hour and produce up to 2.92 kg of mixed rare earth carbonate (MREC) annually.

मई में उद्घाटित मिनास गैरेस स्थित Viridis की पायलट खनन परियोजना प्रति घंटे 100 किलोग्राम अयस्क का प्रसंस्करण कर सकती है और प्रतिवर्ष 2.92 किलोग्राम मिश्रित दुर्लभ मृदा कार्बोनेट (MREC) का उत्पादन कर सकती है।

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TOPICS COVERED		
23J6	World is moving on from paying publishers — India should too प्रकाशकों को भुगतान करने की व्यवस्था से विश्व आगे बढ़ रहा है — भारत को भी ऐसा करना चाहिए	
23J6	Laser strums atoms in quest for better computers बेहतर कंप्यूटरों की खोज में लेज़र परमाणुओं को नियंत्रित कर रहा है	
23J6	Stay with the evidence साक्ष्यों पर आधारित रहें	
23J6	A Trojan horse has breached the IITs एक ट्रोजन हॉर्स ने आईआईटी संस्थानों में प्रवेश कर लिया है	
23J6	Explained: Reliance Communications and Telegram's 'global' blocking व्याख्या: रिलायंस कम्युनिकेशंस और टेलीग्राम की 'वैश्विक' ब्लॉकिंग	



World is moving on from paying publishers — India should too

The geopolitics of scholarly publishing has shifted more in the past 18 months than in the past two decades: China is building sovereignty, the U.S. is scrutinising costs, Australia is prioritising immediate access, Europe and Africa are building public infrastructure, but where is India?

Mounmita Koley

A number of activities are underway in the global scholarly publishing policy space. Within a span of 18 months, from late 2024 to mid-2026, the United States has placed the economics of academic publishing under Congressional scrutiny, Australia has mandated immediate open access to all publicly funded peer-reviewed research, Europe has launched a publicly owned publishing platform called Open Research Europe, and China has begun building an integrated domestic scholarly publishing ecosystem explicitly designed to redirect research prestige and publishing revenue away from foreign publishers. India, meanwhile, committed ₹6,000 crore over three years to pay those same publishers for access to knowledge — a considerable part of which was generated by its own researchers.

The contrast is not incidental. It reflects an essential divergence in how the world's major research-producing nations are thinking about knowledge sovereignty. And it raises a question: India's science policy community has not yet answered with sufficient seriousness: what comes after 'One Nation One Subscription' — and are we really building towards it?

Building sovereignty

As Ashutosh Chikilaya, Ning Zhang, Gareth Dyke, and Yanli Wang wrote in *The Scholarly Kitchen*, China's strategy is elaborate. In its vision, the country is no longer simply a major contributor to global research output but is increasingly a central actor shaping the future of scholarly publishing.

To that end, China is changing research evaluation practices by discouraging metrics like the 'impact factor', investing in journal infrastructure, instituting a credible peer-review system, and increasing international visibility. (A journal's impact factor is meant to show its impact on the field based on how much the papers it publishes are cited.) As a result, China wishes to position its domestic journals to compete globally.

The country has also made policy choices to encourage Chinese researchers to publish in domestic journals. They include evaluating research by its quality rather than by the journal it appeared in and paying attention to whether research is addressing national needs.

As part of this upgrade, the second phase of its Journal Excellence Action Plan, China is building an integrated scholarly publishing ecosystem in which funding, publication venues, evaluation systems, editorial networks, and policy incentives reinforce one another. As a result, it plans to create more than 400 world-class Chinese-owned journals, caplure publishing revenues currently flowing to foreign publishers, and establish Chinese platforms as credible alternatives to the likes of *Nature*, *Science*, and *Cell*.

The Chinese Academy of Sciences, which has more than 50,000 researchers across 100 institutes, also announced in early 2026 that it would stop paying article processing charges (APCs) for more than 30 high-cost international journals, explicitly including *Nature Communications*, *Science Advances*, and *Cell Reports*. The APC is a fee levied by journals to publish open-access papers; the fee is supposed to 'compensate' the revenue the journal will lose since authors won't have to buy the paper to read it. Each of these three journals charges over \$5,000 per paper in APCs.

The message to publishers is clear: China will not subsidise the prestige economy of foreign publishers while building its own. The message to its researchers is equally clear: publishing in domestic journals will count for career progression and should not be treated as a second-class choice.

Checking expenses

The situation in the U.S. is more volatile and ideologically complex. A congressional hearing in April brought together lawmakers, researchers, and publishing industry representatives to examine the rise of paper mills and the costs of open-access publishing. The questions included whether the U.S. government is getting enough value for the billions it spends annually on journal subscriptions and APCs, and whether the current system serves the public interest. The Office of Management and Budget proposed curtailing the subscription and journal publication costs, including APCs and other fees, and suggested disallowing them under federal awards. While policy



The European Commission has concluded that the long-term solution is to create publicly owned publishing infrastructure and remove commercial publishers from the equation entirely. A view of the Maughan Library round reading room at King's College London. CC BY-SA

has yet to be changed, the fact remains that the U.S. government is viewing journal publishers' profits — and whose margins rival those of Big Tech — as a fiscal and transparency concern rather than solely as an open-access one. This scrutiny offers both a policy opportunity and a cautionary tale for India. If the world's two most powerful research funders are reconsidering what they are paying for scholarly publishing, the negotiating environment that has kept publisher pricing confidential and non-negotiable is beginning to shift.

A clear new mandate

As it happens, Australia has moved with the least ambiguity of any major research system. The Australian Research Council (ARC) Open Access Policy, especially the 2026 update, takes effect on July 1, 2026, and requires journal articles and conference papers arising from ARC-funded research to be made openly accessible immediately upon publication, with no exceptions. Crucially, the compliance burden falls on the organisations administering the grants — i.e. the universities and research institutes. The policy is aligned with large international funding bodies such as the U.S. National Institutes of Health and the Wellcome Trust in the U.K. This matters because it means that when Australian researchers co-author with U.S. or U.K. colleagues, a single rights-retention approach serves all funder requirements simultaneously, simplifying the transaction costs that have previously allowed publishers to exploit policy fragmentation across borders.

The ARC first introduced its policy in 2013, and the 2026 version represents the culmination of a decade-long trajectory from encouragement to hard mandate. It is also careful to mention green open access: once ready, a copy of the paper will be archived in an openly accessible repository. Aside from guaranteeing access, doing so will also allow the paper's authors to retain the rights to it.

Publicly owned infrastructure

Europe's approach is also ambitious and relevant to what India should be building towards. Instead of negotiating with existing publishers — including the 'One Nation One Subscription' scheme — or requiring researchers to publish their papers to be open access by paying an APC, the European Commission has concluded that the long-term solution is to create publicly owned publishing infrastructure that removes commercial publishers from the equation entirely.

Open Research Europe, which is the European Commission's own publishing platform, is entering a new phase backed by a nearly €7 million budget for

India's stated ambition to become more self-sufficient is inconsistent with indefinitely subsidising a small group of foreign commercial publishers to access knowledge produced by Indian researchers with Indian public funds

2026-2031, co-funded by the European Commission by up to €10 million. The operating platform will be provided by the European Organisation for Nuclear Research (better known as CERN). The platform is expected to begin operating as a collectively supported publishing service later this year. Once it is live, researchers from 11 participating national research systems — Austria, France, Germany, Italy, the Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, and Switzerland — will be able to publish without paying.

This is open access but it is also the European research ecosystem taking back the publishing function that it had outsourced to commercial publishers over the last four decades. In parallel with Open Research Europe, Europe has operationalised the diamond open access model at scale. In this paradigm, a journal publishes open access papers without levying an APC; the costs are instead borne by the funders and the research institutions. With some support from the French National Research Agency, the European Diamond Capacity Hub needs to strengthen diamond open-access publishing infrastructure across Europe.

What ONOS does and does not do India's 'One Nation One Subscription' (ONOS) scheme, which has been operational since January 2025, was a genuine step forward in addressing a real and urgent problem. ONOS provides access to more than 13,000 journals from 30 publishers to approximately 6,300 government, academic, and research institutions at a total committed budget of ₹6,000 crore over three years (2025-2027). For researchers at tier-2 and tier-3 institutions who have never had access to the journals their fields require, this is transformative.

However, while ONOS solves the research problem, it does not address the publishing problem. ONOS comes with an APC fund of ₹150 crore per year, replenished from what India allocates for research, which is already dwindling. Further, with more than half of research worldwide already being freely accessible, a significant proportion of what ONOS is paying to access is already available at

zero cost. That is, India is partly paying ₹6,000 crore to access content that is already free and partly to subsidise a subscription model whose foundations are being dismantled everywhere else in the world.

The structural problem runs deeper. ONOS is opaque on publisher pricing, protection against future cost inflation, investment in Indian journals, and a post-2027 strategy. Every future negotiation is to be conducted from a position of demonstrated dependence, with journal publishers aware that India has no credible alternative — and that the political cost of losing ONOS access is too high for any government to bear. In this sense, ONOS should be seen as a bridge, not a destination.

India's stated ambition to become more self-sufficient is inconsistent with indefinitely subsidising a small group of foreign commercial publishers to access knowledge produced by Indian researchers with Indian public funds. A better strategy would be to combine immediate green open-access mandates for publicly funded research, rights retention policies for researchers, more investments in Indian journals and publishing platforms, transparent APC expenses, and participating in international efforts to develop community-governed publishing infrastructure.

Window is now

The geopolitics of scholarly publishing has shifted more in the last 18 months than in the last two decades. China is building sovereignty. The U.S. is scrutinising costs. Australia is prioritising immediate access. Europe is building public infrastructure. Africa is also moving forward with local infrastructure, and Latin America was and still is the leader in self-reliant, community-governed local publishing infrastructure.

The direction of change across every major research system is the same: away from commercial dependencies and towards public ownership, public access, and public benefits.

In this context, India has both an opportunity and a time constraint. ONOS has established that the Government of India recognises knowledge access as a public good worth funding at scale. The Ausandhan National Research Foundation also has a mandate to reform the conditions in which Indian science reports its findings. Thus, India has the political legitimacy to push back against publishers' pricing in ways that would have seemed radical five years ago.

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23J6. World is moving on from paying publishers — India should too

प्रकाशकों को भुगतान करने की

व्यवस्था से विश्व आगे बढ़ रहा है —

भारत को भी ऐसा करना चाहिए

- Within a span of 18 months, from late 2024 to mid-2026, the **United States** has placed the economics of academic publishing under Congressional scrutiny, **Australia** has mandated immediate open access to all publicly funded peer-reviewed research, **Europe** has launched a publicly owned publishing platform called **Open Research Europe**, and **China** has begun building an integrated domestic scholarly publishing ecosystem explicitly designed to redirect research prestige and publishing revenue away from foreign publishers.

देर 2024 से मध्य-2026 तक के 18 महीनों की अवधि में, संयुक्त राज्य अमेरिका ने शैक्षणिक प्रकाशन के अर्थशास्त्र को कांग्रेस की समीक्षा के अधीन रखा है, ऑस्ट्रेलिया ने सार्वजनिक रूप से वित्तपोषित सभी सहकर्मी-समीक्षित अनुसंधानों के लिए तत्काल मुक्त पहुँच अनिवार्य कर दी है, यूरोप ने Open

Research Europe नामक एक सार्वजनिक स्वामित्व वाला प्रकाशन मंच प्रारम्भ किया है, और चीन ने एक एकीकृत घरेलू विद्वत्तापूर्ण प्रकाशन पारिस्थितिकी तंत्र का निर्माण आरम्भ किया है, जिसका स्पष्ट उद्देश्य अनुसंधान प्रतिष्ठा और प्रकाशन राजस्व को विदेशी प्रकाशकों से हटाना है।

- India**, meanwhile, committed **₹6,000 crore** over three years to pay those same publishers for access to knowledge — a considerable part of

which was generated by its own researchers.

इस बीच, भारत ने तीन वर्षों में ₹6,000 करोड़ उन ही प्रकाशकों को ज्ञान तक पहुँच के लिए भुगतान करने हेतु आवंटित किए — जबकि उस ज्ञान का एक बड़ा भाग उसके अपने शोधकर्ताओं द्वारा उत्पन्न किया गया था।

- The contrast is not incidental. यह अंतर आकस्मिक नहीं है।
- It reflects an essential divergence in how the world's major research-producing nations are thinking about **knowledge sovereignty**.

यह इस बात में एक मूलभूत भिन्नता को दर्शाता है कि विश्व के प्रमुख अनुसंधान-उत्पादक राष्ट्र ज्ञान संप्रभुता के विषय में किस प्रकार विचार कर रहे हैं।

- To that end, **China is changing research evaluation practices by discouraging metrics like the 'impact factor', investing in journal infrastructure, instituting a credible peer-review system, and increasing international visibility.**
इस उद्देश्य की प्राप्ति हेतु चीन 'इम्पैक्ट फैक्टर' जैसे मानकों को हतोत्साहित करके, जर्नल अवसंरचना में निवेश करके, एक विश्वसनीय सहकर्म-समीक्षा प्रणाली स्थापित करके तथा अंतरराष्ट्रीय दृश्यता बढ़ाकर अनुसंधान मूल्यांकन पद्धतियों में परिवर्तन कर रहा है।
- (A journal's **impact factor is meant to show its impact on the field based on how much the papers it publishes are cited.**)
(किसी जर्नल का इम्पैक्ट फैक्टर यह दर्शाने के लिए होता है कि उसके द्वारा प्रकाशित शोधपत्रों को कितनी बार उद्धृत किया गया है और उसके आधार पर उस क्षेत्र में उसका कितना प्रभाव है।)
- The country has also made policy choices to **encourage Chinese researchers to publish in domestic journals.**
देश ने चीनी शोधकर्ताओं को घरेलू जर्नलों में प्रकाशन हेतु प्रोत्साहित करने के लिए नीतिगत निर्णय भी लिए हैं।
- As a result, **it plans to create more than 400 world-class Chinese-owned journals, capture publishing revenues currently flowing to foreign publishers, and establish Chinese platforms as credible alternatives to the likes of Nature, Science, and Cell.**
इसके परिणामस्वरूप, वह 400 से अधिक विश्वस्तरीय चीनी-स्वामित्व वाले जर्नलों का निर्माण करने, वर्तमान में विदेशी प्रकाशकों को प्राप्त हो रहे प्रकाशन राजस्व को अपने नियंत्रण में लेने तथा चीनी मंचों को Nature, Science, और Cell जैसे प्रतिष्ठित प्रकाशनों के विश्वसनीय विकल्प के रूप में स्थापित करने की योजना बना रहा है।
- The Chinese Academy of Sciences, which has more than 50,000 researchers across 100 institutes, also announced in early 2026 that it would stop paying **article processing charges (APCs)** for more than 30 high-cost international journals, explicitly including Nature Communications, Science Advances, and Cell Reports.
चीनी विज्ञान अकादमी, जिसके 100 संस्थानों में 50,000 से अधिक शोधकर्ता कार्यरत हैं, ने 2026 की शुरुआत में यह भी घोषणा की कि वह 30 से अधिक उच्च-लागत वाली अंतरराष्ट्रीय पत्रिकाओं के लिए आर्टिकल प्रोसेसिंग चार्ज (APCs) का भुगतान बंद कर देगी, जिनमें विशेष रूप से Nature Communications, Science Advances, और Cell Reports शामिल हैं।
- The **APC is a fee levied by journals to publish open-access papers; the fee is supposed to 'compensate' the revenue the journal will lose since others won't have to buy the paper to read it.**
APC वह शुल्क है जो पत्रिकाएँ ओपन-एक्सेस शोधपत्रों को प्रकाशित करने के लिए लेती हैं; यह शुल्क उस संभावित आय की 'भरपाई' करने के लिए माना जाता है जो पत्रिका को इसलिए नहीं मिलेगी क्योंकि अन्य लोगों को शोधपत्र पढ़ने के लिए उसे खरीदना नहीं पड़ेगा।

A clear new mandate एक स्पष्ट नया अधिदेश

- As it happens, **Australia** has moved with the least ambiguity of any major research system. वास्तव में, प्रमुख अनुसंधान व्यवस्थाओं में ऑस्ट्रेलिया ने सबसे कम अस्पष्टता के साथ कदम उठाया है।
- The **Australian Research Council (ARC) Open Access Policy, especially the v2026.1 update, takes effect on July 1, 2026, and requires journal articles and conference papers arising from ARC-funded research to be made openly accessible immediately upon publication, with no exceptions.**
ऑस्ट्रेलियन रिसर्च काउंसिल (ARC) ओपन एक्सेस नीति, विशेषकर इसका v2026.1 अद्यतन, 1 जुलाई 2026 से प्रभावी होगा और यह अनिवार्य करता है कि ARC-वित्तपोषित अनुसंधान से उत्पन्न पत्रिका लेख तथा सम्मेलन शोधपत्र प्रकाशन के तुरंत बाद बिना किसी अपवाद के सार्वजनिक रूप से सुलभ बनाए जाएँ।

- It is also careful to mention **green open access**: once ready, a copy of the paper will be archived in an openly accessible repository.
इसमें ग्रीन ओपन एक्सेस का भी सावधानीपूर्वक उल्लेख किया गया है: शोधपत्र तैयार होने के बाद उसकी एक प्रति एक सार्वजनिक रूप से सुलभ भंडार (repository) में संग्रहीत की जाएगी।

Publicly owned infrastructure

सार्वजनिक स्वामित्व वाला अवसंरचना तंत्र

- Europe's** approach is also ambitious and relevant to what **India** should be building towards.
यूरोप का दृष्टिकोण भी महत्वाकांक्षी है और उस दिशा से संबंधित है जिसकी ओर **भारत** को आगे बढ़ना चाहिए।
- Instead of negotiating with existing publishers — including the **'One Nation One Subscription'** scheme — or requiring researchers to publish their papers to be open access by paying an **APC**, the **European Commission** has concluded that the long-term solution is to create publicly owned publishing infrastructure that removes commercial publishers from the equation entirely.
मौजूदा प्रकाशकों के साथ वार्ता करने — जिसमें **'One Nation One Subscription'** योजना भी शामिल है — अथवा शोधकर्ताओं को **APC** का भुगतान करके अपने शोधपत्रों को ओपन एक्सेस बनाने के लिए बाध्य करने के बजाय, **यूरोपीय आयोग** इस निष्कर्ष पर पहुँचा है कि दीर्घकालिक समाधान ऐसा सार्वजनिक स्वामित्व वाला प्रकाशन अवसंरचना तंत्र विकसित करना है जो वाणिज्यिक प्रकाशकों को पूरी तरह इस व्यवस्था से बाहर कर दे।
- Open Research Europe**, which is the **European Commission's** own publishing platform, is entering a new phase backed by a nearly **€17 million budget** for **2026–2031**, co-funded by the **European Commission** by up to **€10 million**.
Open Research Europe, जो **यूरोपीय आयोग** का स्वयं का प्रकाशन मंच है, **2026–2031** के लिए लगभग **17 मिलियन यूरो के बजट** द्वारा समर्थित एक नए चरण में प्रवेश कर रहा है, जिसमें **यूरोपीय आयोग** द्वारा **10 मिलियन यूरो तक** का सह-वित्तपोषण किया जाएगा।
- The operating platform will be provided by the **European Organisation for Nuclear Research (CERN)**.
इस मंच का संचालन **यूरोपीय परमाणु अनुसंधान संगठन (CERN)** द्वारा किया जाएगा।
- The platform is expected to begin operating as a collectively supported publishing service later this year.
यह मंच इस वर्ष के अंत तक सामूहिक रूप से समर्थित प्रकाशन सेवा के रूप में कार्य करना प्रारम्भ कर सकता है।
- Once it is live, researchers from **11 participating national research systems — Austria, France, Germany, Italy, the Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, and Switzerland —** will be able to publish without paying.
एक बार इसके सक्रिय हो जाने पर, **11 सहभागी राष्ट्रीय अनुसंधान प्रणालियों — ऑस्ट्रिया, फ्रांस, जर्मनी, इटली, नीदरलैंड्स, नॉर्वे, पुर्तगाल, स्लोवेनिया, स्पेन, स्वीडन और स्विट्ज़रलैंड —** के शोधकर्ता बिना किसी शुल्क के प्रकाशन कर सकेंगे।
- In parallel with **Open Research Europe**, Europe has operationalised the **diamond open access model** at scale.
Open Research Europe के समानांतर, यूरोप ने बड़े पैमाने पर **डायमंड ओपन एक्सेस मॉडल** को क्रियान्वित किया है।
- In this paradigm, a journal publishes open access papers without levying an **APC**; the costs are instead borne by the funders and the research institutions.
इस मॉडल में कोई पत्रिका **APC** लगाए बिना ओपन एक्सेस शोधपत्र प्रकाशित करती है; इसके व्यय का वहन वित्तपोषकों और अनुसंधान संस्थानों द्वारा किया जाता है।

What ONOS does and does not do ONOS क्या करता है और क्या नहीं करता

- India's '**One Nation One Subscription**' (**ONOS**) scheme, which has been operational since **January 2025**, was a genuine step forward in addressing a real and urgent problem.
भारत की 'वन नेशन वन सब्सक्रिप्शन' (ONOS) योजना, जो जनवरी 2025 से क्रियाशील है, एक वास्तविक और अत्यावश्यक समस्या के समाधान की दिशा में उठाया गया एक महत्वपूर्ण कदम था।
- ONOS provides access to more than **13,000 journals** from **30 publishers** to approximately **6,300 government, academic, and research institutions** at a total committed budget of **₹6,000 crore** over three years (**2025–2027**).
ONOS के अंतर्गत 30 प्रकाशकों की 13,000 से अधिक पत्रिकाओं तक पहुँच लगभग 6,300 सरकारी, शैक्षणिक तथा अनुसंधान संस्थानों को उपलब्ध कराई जाती है, जिसके लिए 2025–2027 की तीन वर्षीय अवधि में ₹6,000 करोड़ का कुल बजट निर्धारित किया गया है।
- For researchers at **tier-2 and tier-3 institutions** who have never had access to the journals their fields require, this is transformative.
टियर-2 और टियर-3 संस्थानों के उन शोधकर्ताओं के लिए, जिन्हें पहले अपने अध्ययन क्षेत्र की आवश्यक पत्रिकाओं तक पहुँच कभी प्राप्त नहीं हुई थी, यह व्यवस्था परिवर्तनकारी सिद्ध हुई है।
- However, while **ONOS** solves the reading problem, it does not address the publishing problem.
हालाँकि ONOS पढ़ने की समस्या का समाधान करता है, लेकिन यह प्रकाशन संबंधी समस्या का समाधान नहीं करता।
- ONOS comes with an **APC fund of ₹150 crore per year**, replenished from what India allocates for research, which is already dwindling.
ONOS के साथ प्रति वर्ष ₹150 करोड़ का APC कोष भी जुड़ा हुआ है, जिसकी पूर्ति भारत द्वारा अनुसंधान के लिए आवंटित निधि से की जाती है, जो पहले से ही घट रही है।
- Further, with more than half of research worldwide already being freely accessible, a significant proportion of what **ONOS** is paying to access is already available at zero cost.
इसके अतिरिक्त, विश्वभर के आधे से अधिक अनुसंधान पहले से ही निःशुल्क उपलब्ध हैं, इसलिए ONOS जिन सामग्रियों तक पहुँच के लिए भुगतान कर रहा है, उनका एक बड़ा हिस्सा पहले से ही बिना किसी लागत के उपलब्ध है।
- That is, **India** is partly paying **₹6,000 crore** to access content that is already free and partly to subsidise a subscription model whose foundations are being dismantled everywhere else in the world.
अर्थात् भारत आंशिक रूप से ऐसे विषय-वस्तु तक पहुँच के लिए ₹6,000 करोड़ का भुगतान कर रहा है जो पहले से ही निःशुल्क उपलब्ध है, और आंशिक रूप से ऐसी सदस्यता-आधारित व्यवस्था को अनुदान दे रहा है जिसकी नींव विश्व के अन्य भागों में समाप्त की जा रही है।
- ONOS is opaque on **publisher pricing**, protection against future cost inflation, investment in Indian journals, and a **post-2027 strategy**.
ONOS में प्रकाशकों के मूल्य निर्धारण, भविष्य में लागत वृद्धि से सुरक्षा, भारतीय पत्रिकाओं में निवेश तथा 2027 के बाद की रणनीति के संबंध में पर्याप्त पारदर्शिता नहीं है।
- India's stated ambition to become more self-sufficient is inconsistent with indefinitely subsidising a small group of foreign commercial publishers to access knowledge produced by Indian researchers with Indian public funds.
अधिक आत्मनिर्भर बनने की भारत की घोषित महत्वाकांक्षा इस बात से मेल नहीं खाती कि भारतीय सार्वजनिक धन से भारतीय शोधकर्ताओं द्वारा उत्पन्न ज्ञान तक पहुँच प्राप्त करने के लिए विदेशी वाणिज्यिक प्रकाशकों के एक छोटे समूह को अनिश्चित काल तक अनुदान दिया जाता रहे।
- A better strategy would be to combine immediate **green open-access mandates** for publicly funded research, **rights retention policies** for researchers, more investments in Indian journals and publishing platforms, transparent **APC expenses**, and participating in

international efforts to develop **community-governed publishing infrastructure**.

एक बेहतर रणनीति यह होगी कि सार्वजनिक रूप से वित्तपोषित अनुसंधान के लिए तत्काल **ग्रीन ओपन एक्सेस अनिवार्यता**, शोधकर्ताओं के लिए **अधिकार-संरक्षण नीतियाँ**, भारतीय पत्रिकाओं एवं प्रकाशन मंचों में अधिक निवेश, **APC व्ययों में पारदर्शिता**, तथा **समुदाय-शासित प्रकाशन अवसंरचना** विकसित करने के अंतरराष्ट्रीय प्रयासों में सहभागिता को संयुक्त रूप से अपनाया जाए।

Window is now

अवसर की खिड़की अभी खुली है

- The direction of change across every major research system is the same: away from **commercial dependencies** and towards **public ownership, public access, and public benefits**.

सभी प्रमुख अनुसंधान प्रणालियों में परिवर्तन की दिशा समान है: **वाणिज्यिक निर्भरताओं से दूर और सार्वजनिक स्वामित्व, सार्वजनिक पहुँच तथा सार्वजनिक लाभ की ओर।**

- ONOS has established that the **Government of India** recognises knowledge access as a **public good** worth funding at scale.

ONOS ने यह स्थापित किया है कि **भारत सरकार** ज्ञान तक पहुँच को एक ऐसे **सार्वजनिक**

“That surprised us”

A new study by researchers from France, Germany, and Sweden, published in *Nature Communications*, has reported a way to use laser pulses to induce THz waves. The researchers used a superlattice: atoms of platinum and copper atoms arranged in alternating layers, each just a few nanometres thick. They chose these metals because of their contrasting electronic properties: platinum can hold a large amount of electronic energy while copper allows electrons to move quickly.

Using ultrafast X-ray diffraction, the team observed the atoms moving in real-time following a laser pulse. And they found that they could set the atoms vibrating in a coherent way at a frequency of 1 THz with a strain amplitude of 1%. That is, the atoms were displaced by 1% on average from their original positions. This is considered large.

Crucially, the team found that electron pressure, rather than heat, to be the driving force. When the laser hit the platinum layers, the electrons gained energy and immediately exerted a physical pressure against the atomic lattice. “That surprised us. The oscillation is not caused by the pressure of the heated lattice, but by electron pressure, particularly in the platinum layers,” Jan-Etienne Pudell of European XFEL, the facility that provided the ultrafast X-ray diffraction, said in a press note.

The study showed that electron pressure is a dominant and engineerable mechanism that can be used to rapidly ‘kick’ atoms into motion.

Nanostructured materials

The discovery is an advance in the broader field of thermoacoustic metamaterials. These are nanostructured materials designed to manipulate sound and heat in ways that do not occur in nature.

The study also demonstrated that these effects can be achieved in materials created by sputtering. Sputtering is a standard industrial process used to coat everything from microchips to glass. That thermoacoustic metamaterials can be produced using cost-effective, scalable manufacturing suggests the technology could move from the laboratory to the factory floor relatively quickly.

हितकारी संसाधन के रूप में मान्यता देती है, जिस पर बड़े पैमाने पर निवेश किया जाना उचित है।

- The **Anusandhan National Research Foundation** also has a mandate to reform the conditions in which Indian science reports its findings.

अनुसंधान नेशनल रिसर्च फाउंडेशन को भी उन परिस्थितियों में सुधार करने का दायित्व सौंपा गया है जिनके अंतर्गत भारतीय विज्ञान अपने निष्कर्षों को प्रस्तुत करता है।

23J6. Laser strums atoms in quest for better computers

बेहतर कंप्यूटरों की खोज में लेज़र परमाणुओं को नियंत्रित कर रहा है

- The **world is constantly looking for faster and more efficient computers**.

विश्व निरंतर अधिक तेज़ और अधिक कुशल संगणकों की खोज में लगा हुआ है।

• **Since the technologies of today have nearly maximised the use of electric currents for this purpose**, scientists are looking beyond. चूँकि वर्तमान प्रौद्योगिकियाँ इस उद्देश्य के लिए **विद्युत धाराओं** के उपयोग को लगभग अधिकतम सीमा तक पहुँचा चुकी हैं, इसलिए वैज्ञानिक अब नए विकल्पों की तलाश कर रहे हैं।

- One critical area that may fit our needs is called **strain engineering**.

Laser strums atoms in quest for better computers

GS III: S&T
Vasudevan Mukunth

The world is constantly looking for faster and more efficient computers. Since the technologies of today have nearly maximised the use of electric currents for this purpose, scientists are looking beyond.

One critical area that may fit our needs is called strain engineering: it uses mechanical pressure at the atomic level to alter a material's properties. That is, by physically squeezing or stretching the grid of atoms – called the lattice – scientists can change how a material conducts electricity or stores magnetic information.

To reach the speeds required for next-generation technology, however, these mechanical changes must happen trillions of times per second, or at terahertz (THz) frequencies.

The main challenge to high-frequency strain engineering in metals is the behaviour of free electrons. When a metal is struck by a fast laser pulse, the electrons absorb the energy. In most metals, these electrons move so quickly that they spread the energy across the material before the pulse can exert a localised mechanical force. This delocalisation prevents the formation of high-frequency strain waves.

In particular, THz-frequency vibrations are needed for advanced applications like spintronics – a field that uses the magnetic spin of electrons rather than their charge to store and move data.



ऐसा ही एक महत्वपूर्ण क्षेत्र स्ट्रेन अभियांत्रिकी कहलाता है।

- It uses **mechanical pressure** at the atomic level to alter a material's properties.
यह किसी पदार्थ के गुणों को बदलने के लिए परमाणु स्तर पर **यांत्रिक दबाव** का उपयोग करता है।
- That is, by **physically squeezing or stretching the grid of atoms — called the lattice — scientists can change how a material conducts electricity or stores magnetic information.**
अर्थात् परमाणुओं के जाल, जिसे **जालिका** कहा जाता है, को भौतिक रूप से संपीड़ित या विस्तारित करके वैज्ञानिक यह बदल सकते हैं कि कोई पदार्थ विद्युत का संचालन कैसे करता है या चुंबकीय सूचना को कैसे संग्रहीत करता है।
- To reach the speeds required for **next-generation technology**, however, these mechanical changes must happen trillions of times per second, or at **terahertz frequencies**.
हालाँकि **अगली पीढ़ी की प्रौद्योगिकी** के लिए आवश्यक गति प्राप्त करने हेतु ये यांत्रिक परिवर्तन प्रति सेकंड खरबों बार, अर्थात् **टेराहर्ट्ज आवृत्तियों** पर होने चाहिए।
- The main challenge to high-frequency strain engineering in metals is the behaviour of **free electrons**.
धातुओं में उच्च आवृत्ति वाली स्ट्रेन अभियांत्रिकी के समक्ष मुख्य चुनौती **मुक्त इलेक्ट्रॉनों** का व्यवहार है।
- When a metal is struck by a fast **laser pulse**, the electrons absorb the energy.
जब किसी धातु पर तीव्र **लेज़र स्पंद** डाला जाता है, तब इलेक्ट्रॉन उस ऊर्जा को अवशोषित कर लेते हैं।
- In most metals, these electrons move so quickly that they spread the energy across the material before the pulse can exert a localised mechanical force.
अधिकांश धातुओं में ये इलेक्ट्रॉन इतनी तेजी से गति करते हैं कि लेज़र स्पंद स्थानीय यांत्रिक बल उत्पन्न करने से पहले ही ऊर्जा पूरे पदार्थ में फैल जाती है।
- This **delocalisation** prevents the formation of high-frequency strain waves.
यह **विस्थानीकरण** उच्च आवृत्ति वाली स्ट्रेन तरंगों के निर्माण को रोक देता है।
- In particular, **terahertz-frequency vibrations** are needed for advanced applications like **spintronics**.
विशेष रूप से **टेराहर्ट्ज आवृत्ति वाले कंपन स्पिन्ट्रॉनिक्स** जैसे उन्नत अनुप्रयोगों के लिए आवश्यक हैं।
- Spintronics is a field that uses the **magnetic spin of electrons** rather than their charge to store and move data.
स्पिन्ट्रॉनिक्स वह क्षेत्र है जिसमें आँकड़ों के भंडारण और संचरण के लिए इलेक्ट्रॉनों के आवेश के बजाय उनके **चुंबकीय स्पिन** का उपयोग किया जाता है।

‘That surprised us’

‘इसने हमें आश्चर्यचकित कर दिया’

- The researchers used a **superlattice**: atoms of **platinum** and **copper** arranged in alternating layers, each just a few nanometres thick.
शोधकर्ताओं ने एक **सुपरलैटिस** का उपयोग किया, जिसमें **प्लैटिनम** और **ताँबे** के परमाणुओं को वैकल्पिक परतों में व्यवस्थित किया गया था और प्रत्येक परत केवल कुछ नैनोमीटर मोटी थी।
- They chose these metals because of their contrasting **electronic properties**.
इन धातुओं का चयन उनके भिन्न **इलेक्ट्रॉनिक गुणों** के कारण किया गया।
- **Platinum can hold a large amount of electronic energy while copper allows electrons to move quickly.**
प्लैटिनम बड़ी मात्रा में इलेक्ट्रॉनिक ऊर्जा को धारण कर सकता है, जबकि **ताँबा** इलेक्ट्रॉनों को तीव्र गति से संचालित होने देता है।
- Using **ultrafast X-ray diffraction**, the team observed the atoms moving in real time following a laser pulse.
अतितीव्र एक्स-किरण विवर्तन तकनीक का उपयोग करके शोध दल ने लेज़र स्पंद के बाद परमाणुओं की वास्तविक समय में गति का अवलोकन किया।



- Crucially, the team found **electron pressure**, rather than heat, to be the driving force.
महत्वपूर्ण रूप से शोध दल ने पाया कि प्रेरक शक्ति ऊष्मा नहीं बल्कि **इलेक्ट्रॉन दाब** था।
- When the laser hit the platinum layers, the electrons gained energy and immediately exerted a physical pressure against the atomic lattice.
जब लेज़र ने प्लैटिनम की परतों पर प्रहार किया, तब इलेक्ट्रॉनों ने ऊर्जा प्राप्त की और तुरंत परमाणु जालिका पर भौतिक दाब उत्पन्न किया।
- The study showed that **electron pressure is a dominant and engineerable mechanism that can be used to rapidly 'kick' atoms into motion**.
अध्ययन से स्पष्ट हुआ कि **इलेक्ट्रॉन दाब** एक प्रमुख और अभियांत्रिकीय रूप से नियंत्रित किया जा सकने वाला तंत्र है, जिसका उपयोग परमाणुओं को तीव्रता से गति प्रदान करने के लिए किया जा सकता है।

Nanostructured materials

नैनो-संरचित पदार्थ

- The **discovery is an advance in the broader field of thermoacoustic metamaterials**.
यह खोज **ताप-ध्वनिक मेटामटेरियल्स** के व्यापक क्षेत्र में एक महत्वपूर्ण प्रगति है।
- These are nanostructured materials designed to manipulate **sound and heat** in ways that do not occur in nature.
ये ऐसे नैनो-संरचित पदार्थ हैं जिन्हें **ध्वनि** और **ऊष्मा** को उन तरीकों से नियंत्रित करने के लिए बनाया जाता है जो प्राकृतिक रूप से संभव नहीं होते।
- The study also demonstrated that these effects can be achieved in materials created by **sputtering**.
अध्ययन ने यह भी प्रदर्शित किया कि ये प्रभाव **स्पटरिंग** द्वारा निर्मित पदार्थों में भी प्राप्त किए जा सकते हैं।
- Sputtering is a standard industrial process used to coat everything from microchips to glass**.
स्पटरिंग एक मानक औद्योगिक प्रक्रिया है जिसका उपयोग **सूक्ष्म चिपों** से लेकर **काँच** तक विभिन्न वस्तुओं पर परत चढ़ाने के लिए किया जाता है।
- That **thermoacoustic metamaterials can be produced using cost-effective and scalable manufacturing** suggests the technology could move from the laboratory to the factory floor relatively quickly.
यह तथ्य कि **ताप-ध्वनिक मेटामटेरियल्स** का उत्पादन **लागत-प्रभावी और विस्तार योग्य विनिर्माण** प्रक्रियाओं द्वारा किया जा सकता है, संकेत देता है कि यह प्रौद्योगिकी अपेक्षाकृत शीघ्र ही प्रयोगशाला से औद्योगिक उत्पादन तक पहुँच सकती है।

Strain Engineering

- Strain engineering** means changing the properties of a material by **stretching, compressing, bending, or twisting its atomic lattice**.
- A **lattice** is the regular arrangement of atoms inside a solid material.
- When this lattice is slightly squeezed or stretched, the distance between atoms changes.
- This can change how the material conducts electricity, carries heat, stores magnetic information, or reacts chemically.
- In simple words, strain engineering is like tuning a guitar string.
- When the string is stretched, its sound changes.
- Similarly, when the atomic lattice is stretched or compressed, the material's behaviour changes.

Why Strain Engineering is Important

- Modern technologies such as **semiconductors, memory devices, sensors, quantum materials, and nanoelectronics** need materials whose properties can be controlled very precisely.
- Strain engineering is useful because it can alter material properties without changing the chemical composition of the material**.



- It is important for **next-generation computing**, where devices may need to work at extremely high speeds.

Terahertz Frequency and Laser Pulse

- **Terahertz frequency** means vibrations occurring around **one trillion times per second**.
- For future high-speed electronics, scientists want to control atomic motion at such ultrafast speeds.
- A **laser pulse** is a very short burst of light energy.
- In recent experiments, ultrashort laser pulses were used to make layered metals vibrate at terahertz speed.
- The platinum-copper lattice was excited by laser pulses of about **10^{-15} second**, and then examined using ultrafast X-ray pulses.

Superlattice

- A **superlattice** is an artificial structure made by arranging very thin layers of different materials one above another.
- Atoms of **platinum and copper** were arranged in alternating layers, each only a few nanometres thick.

Ultrafast X-ray Diffraction

- **X-ray diffraction** is a technique used to study the arrangement of atoms in crystals.
- **Ultrafast X-ray diffraction** uses extremely short X-ray pulses to observe how atoms move after being disturbed by light, heat, or pressure.
- It is useful because atomic motion happens very quickly, often within femtoseconds or picoseconds.
- Research shows that ultrafast X-ray diffraction can directly track lattice responses and structural changes in materials at very short timescales.

Thermoacoustic Metamaterials

- **Thermoacoustic metamaterials** are specially designed materials that control sound and heat-related waves in unusual ways.
- A **metamaterial** is not special mainly because of its chemical composition, but because of its designed internal structure.
- Acoustic metamaterials can control, guide, reflect, or absorb sound waves in ways that normal materials cannot.
- In simple words, these materials act like “traffic controllers” for sound and heat waves.

Sputtering

- **Sputtering** is a common industrial process used to deposit a thin film of material on another surface.
- In this process, energetic ions strike a target material and knock atoms out of it.
- These atoms then settle on another surface and form a thin coating.
- It is widely used in **microchips, solar cells, glass coatings, optical devices, and electronic components**.
- Thin-film deposition is an important part of semiconductor manufacturing, where very thin layers are deposited on wafers.

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Stay with the evidence

Better monitoring of sale of banned drugs is essential

The character of science leans to openness: to new evidence and emerging facts. Its ability to be agile to pivot and shift to newer guidelines is therefore absolutely crucial. The Health Ministry's recent ban on 16 Fixed Dose Combination (FDC) drugs comes on the evidence that these drug combinations lack therapeutic justification, are 'deemed irrational or unsafe' and might pose risks to patients. The drugs include dermatological drugs, analgesics and antispasmodics, and antibiotic-based formulations. An FDC is a drug containing two or more active pharmacological ingredients, combined in a fixed ratio in a single dosage. These were meant to improve treatment compliance in chronic conditions (such as Tuberculosis) by reducing the pill burden and, sometimes, by improved therapeutic effectiveness. However, irrational combinations, besides being ineffective, can also be counter-productive and harmful. As per the latest order, all State Drug Controllers, regulatory authorities, and enforcement agencies are to ensure strict implementation and compliance with the recent notification. Instructions must also be sent to manufacturers, importers, distributors, and even individual pharmacies, to stop stocking and selling the banned FDCs.

This is not the first time that the Health Ministry is cracking down on FDCs. A detailed scientific review is undertaken before these decisions to ban FDCs are taken. In March 2016, the government banned a whopping number of over 330 FDC drugs, on the ground that they were irrational, with immediate effect. While FDCs offer the advantage of a reduction in the number of pills, of certain benefit to certain categories of patients, there are some innate issues as well: patients might need different titrations of doses, impossible with FDCs; patients might develop allergies, but it will not be clear what particular pharmaceutical ingredient they are reacting to. It is also clear that all patients may not actually need all the drugs in the combination, exposing them to unnecessary side effects. A further potential harm exists with FDCs of antibiotics: In 2016, 19% of the 330 FDCs banned were antibiotics; There is enough evidence to show that irrational antibiotic FDC drug usage leads to or exacerbates the growing antimicrobial resistance problem in the country. While the government has taken a positive step with banning these FDCs, its work has just begun. In many instances in the past, stocks of banned drugs were still being sold in pharmacies, because the message had not percolated down. While staying solidly on the side of evidence-based medicine, the government must also activate its monitoring and supervision arm in order to ensure that the benefits from the ban reach the last mile.

- While staying solidly on the side of **evidence-based medicine**, the government must also activate its monitoring and supervision arm in order to ensure that the benefits from the ban reach the last mile.

साक्ष्य-आधारित चिकित्सा (Evidence-Based Medicine) के पक्ष में दृढ़ता से खड़े रहते हुए सरकार को अपनी निगरानी एवं पर्यवेक्षण प्रणाली को भी सक्रिय करना होगा, ताकि इस प्रतिबंध के लाभ समाज के अंतिम व्यक्ति तक पहुँच सकें।

23J6. Stay with the evidence

साक्ष्यों पर आधारित रहें

- The **Health Ministry's** recent ban on **16 Fixed Dose Combination (FDC) drugs** comes on the evidence that these drug combinations lack therapeutic justification, are '**deemed irrational or unsafe**' and might pose risks to patients.

स्वास्थ्य मंत्रालय द्वारा हाल ही में **16 फिक्स्ड डोज कॉम्बिनेशन (FDC)** दवाओं पर लगाया गया प्रतिबंध इस साक्ष्य पर आधारित है कि इन दवा-संयोजनों का कोई उचित चिकित्सीय औचित्य नहीं है, इन्हें '**अतार्किक या असुरक्षित**' माना गया है तथा ये रोगियों के लिए जोखिम उत्पन्न कर सकती हैं।

- The **drugs include dermatological drugs, analgesics and antispasmodics, and antibiotic-based formulations.**

इन दवाओं में त्वचा रोग संबंधी दवाएँ, दर्दनाशक एवं ऐंठन-रोधी दवाएँ तथा एंटीबायोटिक आधारित संयोजन शामिल हैं।

- An **FDC** is a drug containing two or more active pharmacological ingredients, combined in a fixed ratio in a single dosage.

FDC ऐसी दवा होती है जिसमें दो या दो से अधिक सक्रिय औषधीय घटक एक निश्चित अनुपात में एक ही खुराक के रूप में सम्मिलित किए जाते हैं।

- These were meant to improve treatment compliance in chronic conditions (such as **Tuberculosis**) by reducing the pill burden and, sometimes, by improved therapeutic effectiveness.

इनका उद्देश्य **क्षय रोग (Tuberculosis)** जैसी दीर्घकालिक बीमारियों में दवाओं की संख्या कम करके तथा कभी-कभी उपचार की प्रभावशीलता बढ़ाकर उपचार अनुपालन को बेहतर बनाना था।

- Instructions must also be sent to **manufacturers, importers, distributors, and even individual pharmacies**, to stop stocking and selling the banned FDCs.

प्रतिबंधित FDC दवाओं का भंडारण और विक्रय रोकने के लिए **निर्माताओं, आयातकों, वितरकों तथा व्यक्तिगत औषधि विक्रेताओं** को भी निर्देश जारी किए जाने चाहिए।

- There is enough evidence to show that **irrational antibiotic FDC drug usage leads to or exacerbates the growing antimicrobial resistance** problem in the country.

पर्याप्त साक्ष्य उपलब्ध हैं जो दर्शाते हैं कि अतार्किक एंटीबायोटिक FDC दवाओं का उपयोग देश में बढ़ती हुई **रोगाणुरोधी प्रतिरोधकता (Antimicrobial Resistance - AMR)** की समस्या को जन्म देता है या उसे और गंभीर बनाता है।



A Trojan horse has breached the IITs

GS III: S&T

For a few decades now, a project called the 'Indian Knowledge System' (IKS) has sought to integrate traditional Indian wisdom into modern educational curricula. There is a legitimate quest to reclaim India's indigenous intellectual history and to elevate an informal cultural aspiration into a part of education – but the IKS of today is not it.

The real IKS might focus on the linguistics of Panini, the Nyaya school of logic, the Kerala school of mathematics, the development of Wootz steel, and so on. But the IKS being institutionalised, including under IIT-Mandi director Laxmidhar Behera, is concerned with "Puranic science", mythology as history, ritual as technology, and an open contempt for verifiability.

The more aggressive avatar of IKS was formalised by the National Education Policy (NEP), 2020. It began by documenting breakthroughs in metallurgy and ancient mathematics before increasingly blurring the lines between historical scholarship and theological revivalism. There are now IKS hubs at IIT-Kharagpur, IIT-Gandhinagar, IIT-Bombay, and IIT-Kanpur. Those at Kanpur and Mandi in particular have emerged as 'leaders' in the "research" of "consciousness", reincarnation, and "Vedic" biology. These words are within quote marks because, as with the IKS, what they claim to stand for in name is not what they stand for in substance.

Proponents of pseudoscience
The IKS centres' proponents say they endeavour to "decolonise" the Indian mind. This is farcical. The Bengal renaissance of the 19th century, including figures such as Jagadish Chandra Bose and Prafulla Chandra Ray, synthesised Indian identity with rigorous scientific study and proved that decolonisation does not have to open the door to pseudoscience. The IKS centres intend to embed myth-based inquiries in the framework of the IITs, leveraging



Vasudevan
Mukunth

The Indian Knowledge System centres intend to embed myth-based inquiries in the framework of the IITs

the institutes' prestige to acquire for their politico-religious dogma a veneer of scientific legitimacy.

Recently, IIT-Mandi and IIT-Kanpur hosted a "special session" dedicated to the "science" of reincarnation. The programme proposed using EEG data and astrological birth charts to track "past life memories" in children. The event was attended by speakers from the University of Virginia's Department of Perceptual Studies (DOPS), itself a controversial entity.

The event was a crisis in higher education. Pseudoscience is now well and truly institutionalised, and the participating IITs have signalled their willingness to trade their academic credentials for theological dogma. The "researchers" at the event discussed building a "systematic methodology" for a universal metaphysical claim based on one six-year-old in north India. This is normally called an anecdote.

To suggest one child's neural response could 'validate' the concept of reincarnation does a disservice to the best traditions of Indian philosophy. They remain excellent not as peculiar products of their times but because their exponents thought sincerely and carefully about what facts they had. To have the facts we do today and still believe a 'study' with a cohort size of one or using a physicalist entity (EEG) to prove a dualist theory (reincarnation) to be credible is silly.

The 'researchers' proposed to show the child their "past-life-related stimuli", such as photos of a spouse from a 'previous life', and record the brain's reaction. Given that the group's own protocol involved "developing familiarity" with the child and collecting photos from the "claimed previous-life family" before the test, the 'researchers' are fundamentally creating the very stimuli they claim to be 'discovering'. This is called confirmation bias. Including astrology in this mix is nonsense. The IKS centres partnered with

DOPS for "Western" credibility but the work at DOPS has been notorious for its methodological looseness. Critics have pointed out that in the interval between a death and a supposed rebirth, the 'previous family' and the 'current family' seem to have ample opportunity to meet, communicate, and line up their stories to fit a cultural narrative of reincarnation. The 'researchers' also did not examine the fact that "past life memories" are almost exclusively reported in cultures that already believe in reincarnation.

Forceful approach

After years of trying to change academia from the outside-in using student violence and by revising textbooks, it seems the Hindutva programme has finished shifting its strategy to an inside-out approach with top-down force. Doctoral students were required to attend the "special session". The centres have used IIT funds and research fellows to 'hunt' ghosts as fieldwork. The University Grants Commission's 2023 guidelines require all students of higher education to take IKS courses for credit. The IITs' administrators know they are compromising the institutions' reputation, but they are willing to risk that because their goal is not scientific leadership. It is domestic ideological consolidation.

The spreading rot of pseudoscience at the IITs will encourage top-tier Indian talent to move to universities abroad that still see the line between decolonising and science. Good international scientists beginning to look down on IIT degrees because of these "special sessions" will also serve the "atmanirbhar" narrative by separating an elite Indian education from global standards of rationalism. Ultimately, the loop will be closed to leave Indian scholars to be judged only by their loyalty to a specific civilisational project.

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23J6. A Trojan horse has breached the IITs

एक ट्रोजन हॉर्स ने आईआईटी संस्थानों में प्रवेश कर लिया है

• For a few decades now, a project called the 'Indian Knowledge System' (IKS) has sought to integrate traditional Indian wisdom into modern educational curricula.

पिछले कुछ दशकों से 'भारतीय ज्ञान प्रणाली' (आईकेएस) नामक एक परियोजना पारंपरिक भारतीय ज्ञान को आधुनिक शैक्षिक पाठ्यक्रमों में समाहित करने का प्रयास कर रही है।

• There is a legitimate quest to reclaim India's indigenous

intellectual history and to elevate an informal cultural aspiration into a part of education — but the IKS of today is not it.

भारत की स्वदेशी बौद्धिक विरासत को पुनः प्राप्त करने और एक अनौपचारिक सांस्कृतिक आकांक्षा को शिक्षा का हिस्सा बनाने की एक वैध खोज अवश्य है — किन्तु वर्तमान आईकेएस उस उद्देश्य का प्रतिनिधित्व नहीं करता।

- The real IKS might focus on the linguistics of Panini, the Nyaya school of logic, the Kerala school of mathematics, the development of Wootz steel, and so on.

वास्तविक आईकेएस का केंद्र पाणिनि के भाषाविज्ञान, न्याय दर्शन की तर्कशास्त्रीय परंपरा, केरल गणित परंपरा, वूटज़ इस्पात के विकास तथा अन्य ऐतिहासिक बौद्धिक उपलब्धियों पर हो सकता है।

- But the IKS being institutionalised, including under IIT-Mandi Director Laxmidhar Behera, is concerned with "Puranic science", mythology as history, ritual as technology, and an open contempt for verifiability.

किन्तु जिस आईकेएस का संस्थानीकरण किया जा रहा है, जिसमें आईआईटी मंडी के निदेशक लक्ष्मीधर बेहरा

की भूमिका भी शामिल है, वह “पुराणिक विज्ञान”, मिथकों को इतिहास के रूप में प्रस्तुत करने, अनुष्ठानों को प्रौद्योगिकी के रूप में स्थापित करने तथा सत्यापनयोग्यता के प्रति खुले उपेक्षाभाव से संबंधित है।

- The more aggressive avatar of IKS was formalised by the National Education Policy (NEP), 2020.

आईकेएस के अधिक आक्रामक स्वरूप को राष्ट्रीय शिक्षा नीति, 2020 के माध्यम से औपचारिक रूप दिया गया।

- It began by documenting breakthroughs in metallurgy and ancient mathematics before increasingly blurring the lines between historical scholarship and theological revivalism. इसकी शुरुआत धातुकर्म और प्राचीन गणित की उपलब्धियों के दस्तावेजीकरण से हुई, लेकिन बाद में इसने ऐतिहासिक शोध और धार्मिक पुनरुत्थानवाद के बीच की सीमाओं को धुंधला करना शुरू कर दिया।
- The Bengal Renaissance of the 19th century, including figures such as Jagadish Chandra Bose and Prafulla Chandra Ray, synthesised Indian identity with rigorous scientific study and proved that decolonisation does not have to open the door to pseudoscience. उन्नीसवीं शताब्दी के बंगाल पुनर्जागरण में जगदीश चन्द्र बोस और प्रफुल्ल चन्द्र राय जैसे व्यक्तित्वों ने भारतीय पहचान को कठोर वैज्ञानिक अध्ययन के साथ जोड़ा तथा यह सिद्ध किया कि औपनिवेशिक प्रभाव से मुक्ति का अर्थ छद्मविज्ञान को बढ़ावा देना नहीं है।
- The IKS centres intend to embed myth-based inquiries in the framework of the IITs, leveraging the institutes' prestige to acquire for their politico-religious dogma a veneer of scientific legitimacy.

आईकेएस केंद्र मिथकों पर आधारित अवधारणाओं को भारतीय प्रौद्योगिकी संस्थानों की संस्थागत संरचना में समाहित करना चाहते हैं और इन प्रतिष्ठित संस्थानों की साख का उपयोग अपने राजनीतिक-धार्मिक मतों को वैज्ञानिक वैधता का आवरण प्रदान करने के लिए करना चाहते हैं।

- Recently, IIT-Mandi and IIT-Kanpur hosted a “special session” dedicated to the “science of reincarnation.

हाल ही में आईआईटी मंडी और आईआईटी कानपुर ने पुनर्जन्म के “विज्ञान” पर केंद्रित एक “विशेष सत्र” आयोजित किया।

- The programme proposed using EEG data and astrological birth charts to track “past life memories” in children. इस कार्यक्रम में बच्चों की “पूर्व जन्म की स्मृतियों” का अध्ययन करने के लिए मस्तिष्कीय विद्युत संकेतों से प्राप्त आँकड़ों तथा ज्योतिषीय जन्म कुंडलियों के उपयोग का प्रस्ताव रखा गया।
- The ‘researchers’ proposed to show the child their “past-life-related stimuli”, such as photos of a spouse from a ‘previous life’, and record the brain’s reaction. ‘शोधकर्ताओं’ ने प्रस्ताव रखा कि बच्चे को “पूर्व जन्म से संबंधित उद्दीपक” दिखाए जाएँ, जैसे किसी ‘पिछले जन्म’ के जीवनसाथी के चित्र, और उसके मस्तिष्क की प्रतिक्रिया दर्ज की जाए।
- The University Grants Commission’s 2023 guidelines require all students of higher education to take IKS courses for credit.

विश्वविद्यालय अनुदान आयोग के 2023 के दिशा-निर्देशों के अनुसार उच्च शिक्षा के सभी विद्यार्थियों के लिए आईकेएस पाठ्यक्रमों का अध्ययन क्रेडिट अर्जित करने हेतु आवश्यक है।



Explained: Reliance Communications and Telegram's 'global' blocking

What is Border Gateway Protocol (BGP)? How did it lead to an accidental blocking of Telegram in other countries? Why did this not happen everywhere? How did Reliance Communications handle and fix the problem? What was the impact of this issue on the social media platform/users?

OS III: S&T

NEWS ANALYSIS

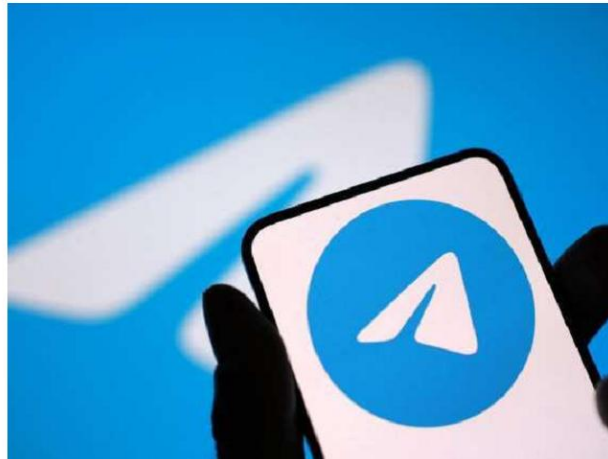
Aroon Deep
NEW DELHI

Late June 16, Telegram CEO Pavel Durov alleged on X, formerly Twitter, that "Indian telecom Reliance is sabotaging access to Telegram for millions of users OUTSIDE India (including the UAE) via a rogue method called BGP hijacking," and that this "sabotage seems intentional, as Reliance has ignored multiple reports".

What had happened was in fact a result of an accidental misconfiguration by Reliance Communications, the once-large telecom operator under the Anil Dhirubhai Ambani Group. That misconfiguration briefly caused Telegram outages in different countries, following an India-only ban ordered by the government to stop the spread of exam-related misinformation. While Telegram had challenged the ban in the Delhi High Court, the court upheld the Centre's ban as legal.

BGP mishap

Reliance Communications largely does not exist anymore, and is under an insolvency process, as a part of which some of its assets were acquired by Reliance Jio. However, it continues to hold on to a few assets, including datacentres in



Centre of controversy: Telegram app logo is seen in this illustration. REUTERS

Mumbai, and some Internet traffic routes. As such, it is required to continue to comply with blocking orders for websites, so that networks that rely on its bandwidth are in turn compliant.

Jio categorically denied being involved with this incident; Telegram CEO Durov appeared to mistakenly refer to the Reliance Industries subsidiary in his post. "Recent posts on X have led to speculation regarding Reliance Jio Infocomm Limited (AS55836) and a BGP route misconfiguration," Jio said, using the acronym for autonomous systems, a networking term that dis-



Jio categorically denied being involved with this incident; Telegram CEO Durov appeared to mistakenly refer to the Reliance Industries subsidiary in his post

tinguishes large networks by assigning a number to them. "We categorically clarify that Jio has not been involved in any such incident. Jio continues to operate its network in accordance with global Internet routing best practices and

the highest standards of reliability, security, and transparency."

But instead of applying this blocking order locally, Reliance Communications "hijacked" Border Gateway Protocol (BGP) routes globally that corresponded with Telegram. BGP is a protocol used by networks to map out efficient routes to other networks, and propagating incorrect information through BGP to external networks can disrupt access to services whose routing information is contained within such information.

Flag, a subsea cable network that was once owned

by Reliance Communications and was later spun out as a separate company, likely maintains "open filters," with the latter, Anurag Bhatia, an Internet networking expert said. "It's common for networks to open filters completely for large customers with the hope and assumption that those customers will not hijack random prefixes," Mr. Bhatia said. "There is technology available for filtering, but it's not widely deployed."

BGP prefixes are, roughly speaking, IP address blocks that assist in routing. Essentially, Reliance Communications' announcement was trusted by the next network in line, and led to a situation where any network that trusted Reliance Communications' BGP announcements carried by Flag would lead people trying to reach Telegram's servers into Reliance Communication servers, where the connection would end with no result.

Impact, mitigation

The event was resolved in the early hours of June 17, as Reliance Communications appeared to have fixed its configuration. However, by then, Mr. Durov complained that Du, a telecom operator in the United Arab Emirates, where Telegram is headquartered, had ingested the incorrect BGP information, and led

to disruptions to the service.

Doug Madory, director of Internet analysis at Kentik, a network intelligence firm, said on X that a similar incident took place when an Iraqi international Internet gateway similarly hijacked Telegram routes.

The workaround to that incident, Mr. Madory said, also prevented even wider damage to Telegram access in other countries this time around. Resource Public Key Infrastructure Route Origin Validation (RPKI ROV), a technology used by large networks to ensure that BGP announcements they receive are legitimate, was able to prevent Reliance's misconfiguration in time. That is the technology Mr. Bhatia was referring to.

Mr. Madory said that further IP addresses announced by Telegram were also hijacked throughout the night, worsening the issue. Overall, Mr. Madory said, "Only a small share of traffic to Telegram was misdirected but it came from all over the world."

BGP hijacks have been seen occasionally before. In 2008, Pakistan's state-owned telecom operator, PTCL, hijacked routes belonging to YouTube, leading to worldwide disruptions, due to this announcement being carried to an international transit provider based in Hong Kong.

23J6. Explained: Reliance Communications and Telegram's 'global' blocking

व्याख्या: रिलायंस कम्युनिकेशंस और टेलीग्राम की 'वैश्विक' ब्लॉकिंग

- What is the **Border Gateway Protocol (BGP)**?
बॉर्डर गेटवे प्रोटोकॉल (BGP) क्या है?
- How did it lead to an **accidental blocking of Telegram in other countries**?
इसने अन्य देशों में टेलीग्राम के आकस्मिक अवरोधन का कारण कैसे बनाया?
- Late June 16, **Telegram CEO Pavel Durov** alleged on X, formerly Twitter, that "**Indian telecom Reliance is sabotaging access to Telegram for millions of users OUTSIDE India (including the UAE) via a rogue method called BGP hijacking**," and that this "sabotage seems intentional, as Reliance has ignored multiple reports".
16 जून की देर रात, **टेलीग्राम के CEO पावेल दुरोव** ने X (पूर्व में ट्विटर) पर आरोप लगाया कि "भारतीय टेलीकॉम रिलायंस **BGP हाइजैकिंग** नामक एक गलत तरीके से भारत के बाहर (जिसमें **UAE** भी शामिल है) लाखों उपयोगकर्ताओं के लिए टेलीग्राम की पहुँच को बाधित कर रहा है," और यह "जानबूझकर किया गया प्रतीत होता है क्योंकि रिलायंस ने कई रिपोर्टों को अनदेखा किया है।"

BGP mishap BGP की गड़बड़ी

- **Reliance Communications** largely does not exist anymore, and is under an **insolvency process**, as a part of which some of its assets were acquired by **Reliance Jio**.
रिलायंस कम्युनिकेशंस अब लगभग अस्तित्व में नहीं है और दिवालियापन प्रक्रिया के अधीन है, जिसके तहत उसकी कुछ परिसंपत्तियाँ रिलायंस जियो ने अधिग्रहित की हैं।
- **BGP** is a protocol used by networks to map out efficient routes to other networks, and propagating incorrect information through BGP to external networks can disrupt access to services whose routing information is contained within such information.
BGP एक ऐसा प्रोटोकॉल है जिसका उपयोग नेटवर्क अन्य नेटवर्कों तक पहुँचने के लिए कुशल मार्ग निर्धारित करने हेतु करते हैं, और इसके माध्यम से गलत जानकारी प्रसारित होने पर संबंधित सेवाओं की पहुँच बाधित हो सकती है।
- **Flag**, a subsea cable network that was once owned by Reliance Communications and was later spun out as a separate company, likely maintains “open filters,” with the latter, **Anurag Bhatia**, an Internet networking expert said.
Flag, जो एक समय रिलायंस कम्युनिकेशंस के स्वामित्व वाला समुद्री केबल नेटवर्क था और बाद में अलग कंपनी बन गया, संभवतः “ओपन फ़िल्टर” बनाए रखता है, ऐसा इंटरनेट नेटवर्किंग विशेषज्ञ अनुराग भाटिया ने कहा।
- “It’s common for networks to open filters completely for large customers with the hope and assumption that those customers will not hijack random prefixes,” Mr. Bhatia said.
श्री भाटिया ने कहा, “बड़े ग्राहकों के लिए फ़िल्टर पूरी तरह खोल देना सामान्य बात है, इस उम्मीद में कि वे मनमाने प्रीफिक्स को हाइजैक नहीं करेंगे।”
- **BGP prefixes** are, roughly speaking, **IP address blocks** that assist in routing.
BGP प्रीफिक्स मोटे तौर पर IP एड्रेस ब्लॉक होते हैं जो रूटिंग में सहायता करते हैं।
- Essentially, Reliance Communications’ announcement was trusted by the next network in line, and led to a situation where any network that trusted Reliance Communications’ BGP announcements carried by Flag would lead people trying to reach Telegram’s servers into Reliance Communication servers, where the connection would end with no result.
मूल रूप से, रिलायंस कम्युनिकेशंस की घोषणा पर अगले नेटवर्क ने भरोसा कर लिया, जिससे ऐसी स्थिति बनी कि जो भी नेटवर्क फ़्लैग द्वारा प्रसारित BGP घोषणाओं पर विश्वास करता था, वह टेलीग्राम सर्वर तक पहुँचने वाले उपयोगकर्ताओं को रिलायंस कम्युनिकेशंस के सर्वरों की ओर भेज देता था, जहाँ कनेक्शन बिना किसी परिणाम के समाप्त हो जाता था।

Impact, mitigation प्रभाव और समाधान

- However, by then, Mr. Durov complained that **Du**, a telecom operator in the **United Arab Emirates**, where Telegram is headquartered, had ingested the incorrect BGP information, and led to disruptions to the service.
हालाँकि तब तक श्री दुरोव ने शिकायत की कि **संयुक्त अरब अमीरात** की टेलीकॉम कंपनी Du, जहाँ टेलीग्राम का मुख्यालय है, ने गलत BGP जानकारी स्वीकार कर ली थी, जिससे सेवा बाधित हुई।
- **Resource Public Key Infrastructure Route Origin Validation (RPKI ROV)**, a technology used by large networks to ensure that BGP announcements they receive are legitimate, was able to prevent Reliance’s misconfiguration in time.
Resource Public Key Infrastructure Route Origin Validation (RPKI ROV), जिसका उपयोग बड़े नेटवर्क BGP घोषणाओं की वैधता सुनिश्चित करने के लिए करते हैं, समय रहते रिलायंस की गलत कॉन्फ़िगरेशन को रोकने में सक्षम रहा।



- Mr. Madory said that further **IP addresses** announced by Telegram were also hijacked throughout the night, worsening the issue.
श्री मैडोरी ने कहा कि रात भर टेलीग्राम द्वारा घोषित अतिरिक्त **IP एड्रेस** भी हाइजैक किए गए, जिससे समस्या और बढ़ गई।

GS Paper III: Environment	23 June 2026
TOPICS COVERED	
23J6	Citizens interests and conservation नागरिकों के हित और संरक्षण

Citizens interests and conservation

Efforts to preserve the **Pallikaranai wetland** should not overlook legal landowners

GS III: Environment

STATE OF PLAY

Kalaiselvan Periyasamy

Environmental protection has rightly become a major public policy priority. The **Pallikaranai Marshland in Chennai**, one of south India's last surviving natural wetlands and a designated **Ramsar Site**, deserves protection for its role in flood mitigation, groundwater recharge, and biodiversity conservation. However, restrictions associated with the marshland and its proposed 'Influence Zone' have raised concerns among thousands of lawful landowners, creating a broader public policy challenge involving environmental governance, property rights, and public confidence in regulatory institutions.

The proceedings before the National Green Tribunal (NGT) and the restrictions of the Chennai Metropolitan Development Authority (CMDA) on the new one-kilometre 'Influence Zone' of the marshland raise important concerns. For instance, approximately 85% to 90% of the 8,537-acre 'Influence Zone' had already been designated as a "development area" under CMDA's Second Master Plan (2008) for the promotion of residential, institutional, commercial, and industrial activities. Multiple government agencies informed the NGT that key aspects of the wetland boundary, 'Influence Zone', and long-term regulatory framework remained under study.

The consequences of these restrictions are already visible. Across Pallikaranai, Perumbakkam, Sholinganallur, Karapakkam, Perungudi, Semmancheri, and adjoining neighbourhoods, thousands



of families have invested their life savings in residential plots and housing projects. Many are salaried employees, retirees, first-generation homeowners, small entrepreneurs, and middle-class families who purchased property legally after years of financial sacrifice. For such families, land is more than a financial asset, and uncertainty affects not only financial planning but also their emotional well-being.

Consider the case of a citizen who purchased a modest residential plot 20 years ago after complying with every legal requirement. Registration charges were paid, property taxes were regularly remitted, and bank loans were serviced diligently. Today, that individual is unsure whether future development permissions will be available because his land falls within a yet-to-be-understood "Influence Zone" whose regulatory contours are still being formulated.

The need for balance

Though real and significant, social costs associated with deferred home ownership seldom enter technical reports or planning documents. Delayed housing decisions affect retirement planning, educational investments, family security, and long-term financial stability. Moreover, regulatory uncertainty erodes confidence across the business chain. The resulting disruption

can have ripple effects that may take a toll on construction, engineering, architecture, transportation, material supply, and numerous small business sectors that depend on housing and infrastructure development.

The OMR Information Technology (IT) Corridor, stretching from Kottivakkam to Semmancheri, covers approximately 4,800 acres. As per preliminary estimates, about 60% (2,850 acres) of this overlaps with the 'Influence Zone'. Thanks to the present restrictions, a substantial portion of one of Chennai's most important and employment-generating corridors now faces uncertainty in obtaining new development approvals. Yet another dimension of the Pallikaranai debate remains largely unexplored. There are claims of lawfully acquired private lands existing within the Ramsar Site boundary delineated by the CMDA. If verified, such claims could raise questions about historical land administration, registrations, and approvals. The answers may reveal a governance challenge far more complex than the current debate on the buffer zone.

Environmental protection should not become an exclusionary or punitive process. The protection of the Pallikaranai Marsh is unquestionably important. Equally important are the legitimate expectations of citizens who acquired property lawfully. A mature democracy must be capable of protecting both. As the Integrated Management Plan for the Pallikaranai wetland moves toward completion, regulations, public consultation, and fair transitional measures can help balance conservation with citizen welfare.

The writer is an environmental and social expert.

23J6. Citizens interests and conservation

नागरिकों के हित और संरक्षण

- The **Pallikaranai Marshland in Chennai**, one of south India's last surviving natural wetlands and a designated **Ramsar Site**, deserves protection for its role in flood mitigation, groundwater recharge, and biodiversity conservation.

चेन्नई स्थित **पल्लीकरणई दलदली क्षेत्र**, जो दक्षिण भारत के अंतिम शेष प्राकृतिक आर्द्रभूमि क्षेत्रों में से एक है तथा एक अधिसूचित **रामसर स्थल** है, बाढ़ नियंत्रण, भूजल पुनर्भरण और जैव विविधता संरक्षण में अपनी महत्वपूर्ण भूमिका के कारण संरक्षण का पात्र है।

- Environmental protection should not become an exclusionary or punitive process.**

पर्यावरण संरक्षण को बहिष्करणकारी अथवा दंडात्मक प्रक्रिया का रूप नहीं लेना चाहिए।

- The **protection of the Pallikaranai Marsh is unquestionably important.**

पल्लीकरणई आर्द्रभूमि का संरक्षण निस्संदेह अत्यंत महत्वपूर्ण है।

- Equally important are the legitimate expectations of citizens who acquired property lawfully.**

उतने ही महत्वपूर्ण उन नागरिकों की वैध अपेक्षाएँ भी हैं जिन्होंने विधिसम्मत रूप से संपत्ति अर्जित की है।

- A mature democracy must be capable of protecting both.**

एक परिपक्व लोकतंत्र को इन दोनों हितों की रक्षा करने में सक्षम होना चाहिए।



- As the **Integrated Management Plan** for the **Pallikaranai Wetland** moves toward completion, regulations, public consultation, and fair transitional measures can help balance conservation with citizen welfare.

जैसे-जैसे **पल्लीकरणई आर्द्रभूमि** के लिए **एकीकृत प्रबंधन योजना** पूर्णता की ओर बढ़ रही है, वैसे-वैसे उपयुक्त विनियम, जनपरामर्श और न्यायसंगत संक्रमणकालीन उपाय संरक्षण तथा नागरिक कल्याण के बीच संतुलन स्थापित करने में सहायक हो सकते हैं।

GS Paper III: Disaster Management	01 June 2026
TOPICS COVERED	
23J6	Deadly fumes
	घातक धुँएँ

GS III: Disaster Management

Deadly fumes

Strict enforcement of safety norms is absent in many industrial units

Tamil Nadu has witnessed its deadliest industrial ammonia gas leak tragedy, which has so far claimed the lives of eight migrant women workers at a private seafood processing unit in Tiruvallur district. Some of the 68 hospitalised workers are in intensive care on oxygen support. Since the 1980s, the State has battled ammonia leaks in factories every few years, mostly in and around Chennai. Other than in Thoothukudi in 2024, where one worker died, such accidents have at worst led to the hospitalisation of large numbers of people with eye irritation and breathing difficulties. There were no casualties even when an estimated 67.638 tonnes of ammonia leaked from the undersea pipeline of a private company in Ennore during Cyclone Michaung in 2023. The scale of the tragedy at St. Peter & Paul Seafood Exports Pvt. Ltd., Tiruvallur, indicates that the colourless pungent gas may have accumulated in the atmosphere at fatal concentrations. The leak occurred when workers were resting in factory accommodation, on Sunday. Had the incident occurred on a working day, the number of people exposed to the leak from the ammonia pipeline to the ice-flake machinery could have been significantly higher.

While a committee comprising the Director of Industrial Safety and Health (DISH), the Member Secretary of the TN Pollution Control Board, and the Additional Director of Public Health is conducting an inquiry, disturbing facts have emerged. The factory reportedly failed to rectify serious deficiencies, pointed out during an earlier DISH inspection, including the absence of a suitable alarm system and fire hydrant. It had also not obtained a revised plan approval for installing an ice-flaking machine. That matter is sub judice. Investigations will reveal whether these shortcomings had any bearing in this tragedy. What is clear, however, is that had the recommendations made by DISH in the Ennore case been universally enforced in factories using ammonia, the scale of the current tragedy could have been contained. DISH had recommended the provision of adequate ammonia sensors in the plant and surrounding areas for early warning, along with water-curtain systems linked to ammonia alarms and fire-water nozzles for ammonia feed pumps to reduce the impact of leaks. The government has now decided to form a committee to inspect all 6,669 hazardous industries. However, numerous checks and balances exist under the Tamil Nadu Control of Industrial Major Accident Hazards Rules, 1994. What is required is strict enforcement through a coordinated approach, stronger penalties for violators, and the political will to act decisively against them.

23J6. Deadly fumes

घातक धुँएँ

- Tamil Nadu has witnessed its deadliest industrial **ammonia gas** leak tragedy, which has so far claimed the lives of **eight migrant women workers** at a private seafood processing unit in **Tiruvallur district**.

तमिलनाडु ने अपने इतिहास की सबसे घातक औद्योगिक **अमोनिया गैस** रिसाव त्रासदी देखी है, जिसमें अब तक **आठ प्रवासी महिला श्रमिकों** की मृत्यु **तिरुवल्लुर जिले** स्थित एक निजी समुद्री खाद्य प्रसंस्करण इकाई में हो चुकी है।

- Had the incident occurred on a working day, the number of people exposed to the leak from the **ammonia pipeline to the ice-flake machinery** could have been significantly higher.

यदि यह घटना कार्य दिवस पर हुई होती, तो अमोनिया पाइपलाइन से **आइस-फ्लेक मशीनरी** तक के रिसाव से प्रभावित लोगों की संख्या कहीं अधिक हो सकती थी।

- While a committee comprising the **Director of Industrial Safety and Health (DISH)**, the **Member Secretary of the TN Pollution Control Board**, and the **Additional Director of Public Health** is conducting an inquiry, disturbing facts have emerged.

यद्यपि **औद्योगिक सुरक्षा एवं स्वास्थ्य निदेशक (DISH)**, **तमिलनाडु प्रदूषण नियंत्रण बोर्ड के सदस्य सचिव**, तथा **लोक स्वास्थ्य के अतिरिक्त निदेशक** की समिति जांच कर रही है, फिर भी कुछ चिंताजनक तथ्य सामने आए हैं।

- The factory reportedly failed to rectify serious deficiencies, pointed out during an earlier **DISH inspection**, including the absence of a suitable **alarm system and fire hydrant**.

रिपोर्टों के अनुसार, कारखाना पूर्व **DISH निरीक्षण** के दौरान इंगित की गई गंभीर कमियों को दूर करने में विफल रहा, जिनमें उपयुक्त **अलार्म प्रणाली** और **फायर हाइड्रेंट** का अभाव शामिल था।

- DISH had recommended the provision of **adequate ammonia sensors** in the plant and surrounding areas for early warning, along with **water-curtain systems** linked to ammonia alarms and **fire-water nozzles** for ammonia feed pumps to reduce the impact of leaks.

DISH ने शीघ्र चेतावनी के लिए संयंत्र एवं उसके आसपास पर्याप्त **अमोनिया सेंसर** लगाने, **अमोनिया अलार्म से जुड़े जल-पर्दा (Water-Curtain) सिस्टम** स्थापित करने तथा रिसाव

के प्रभाव को कम करने हेतु **अमोनिया फीड पंपों पर फायर-वॉटर नोज़ल** लगाने की सिफारिश की थी।



GS Paper III: Internal Security	23 June 2026
TOPICS COVERED	
23J6	UAE in talks with India to purchase BrahMos missiles, Akashteer air-defence units यूएई भारत से ब्रह्मोस मिसाइलों और आकाशतीर वायु-रक्षा प्रणालियों की खरीद के लिए वार्ता कर रहा है

UAE in talks with India to purchase BrahMos missiles, Akashteer air-defence units

GS III: Internal Security
Reuters
NEW DELHI

The Indian government is in talks with the United Arab Emirates to sell some of its flagship defence systems, including the supersonic cruise missile BrahMos, four Indian sources said, as the Gulf nation steps up arms procurement following the war in West Asia.

The discussions include the potential sale of India's air defence system Akashteer, sources told Reuters. "The UAE has shown interest for a number of our weapon systems, including BrahMos and Akashteer. The talks between India and UAE are at initial stages and are progressing fast," said another source.

BrahMos, jointly developed by India and Russia, is among the world's fastest cruise missiles while Akashteer is a fully automated air-defence system developed by the state-run



BrahMos, jointly developed by India and Russia, is among the world's fastest cruise missiles. FILE PHOTO

Bharat Electronics Ltd. and the Indian Army.

The UAE is considering buying defence equipment from India and other sources after the Gulf nation was heavily attacked by Iran during the conflict in West Asia, and as it enhances its ability to respond to emerging threats. It also needs to protect the Strait of Hormuz, a crucial conduit for its energy exports.

"A diversified supplier base gives the UAE more strategic autonomy, and

closer ties with India have the added benefit of not antagonising the U.S. as the countries remain allies," said Pearl Pandya, South Asia senior analyst at Armed Conflict Location and Event Data, a conflict monitoring group.

Before clinching any BrahMos sale to the UAE, India would require Russia's approval, as the 290-km-range missile is jointly developed. One source said this is unlikely to pose a hurdle given Moscow's close ties with Abu Dhabi.

23J6. UAE in talks with India to purchase BrahMos missiles, Akashteer air-defence units

यूएई भारत से ब्रह्मोस मिसाइलों और आकाशतीर वायु-रक्षा प्रणालियों की खरीद के लिए वार्ता कर रहा है

- The Indian government is in talks with the United Arab Emirates to sell some of its flagship defence systems, including the supersonic cruise missile BrahMos, four Indian sources said, as the Gulf nation steps up arms procurement following the war in West Asia.

चार भारतीय सूत्रों के अनुसार, भारतीय सरकार अपने प्रमुख रक्षा प्रणालियों, जिनमें सुपरसोनिक क्रूज मिसाइल ब्रह्मोस भी शामिल है, की बिक्री के लिए संयुक्त अरब अमीरात के साथ वार्ता कर रही है, क्योंकि पश्चिम एशिया में युद्ध के बाद खाड़ी देश ने हथियारों की खरीद बढ़ा दी है।

- The discussions include the potential sale of India's air defence system Akashteer, sources told Reuters.

सूत्रों ने बताया कि इन चर्चाओं में भारत की वायु रक्षा प्रणाली आकाशतीर की संभावित

बिक्री भी शामिल है।

- BrahMos, jointly developed by India and Russia, is among the world's fastest cruise missiles while Akashteer is a fully automated air-defence system developed by the state-run Bharat Electronics Limited and the Indian Army.

ब्रह्मोस, जिसे भारत और रूस ने संयुक्त रूप से विकसित किया है, विश्व की सबसे तेज़ क्रूज मिसाइलों में से एक है, जबकि आकाशतीर एक पूर्णतः स्वचालित वायु रक्षा प्रणाली है जिसे सरकारी उपक्रम भारत इलेक्ट्रॉनिक्स लिमिटेड और भारतीय सेना ने विकसित किया है।

- Before clinching any BrahMos sale to the UAE, India would require Russia's approval, as the 290-km-range missile is jointly developed.

संयुक्त अरब अमीरात को किसी भी ब्रह्मोस बिक्री को अंतिम रूप देने से पहले भारत को रूस की स्वीकृति प्राप्त करनी होगी, क्योंकि यह 290 किलोमीटर मारक क्षमता वाली मिसाइल संयुक्त रूप से विकसित की गई है।



TELEGRAM CHANNEL: <https://t.me/patrioticIAS>
YOUTUBE CHANNEL: <https://www.youtube.com/@PatrioticIAS>
CONTACT: 9971932488



- One source said this is unlikely to pose a hurdle given **Moscow's** close ties with **Abu Dhabi**.
एक सूत्र ने कहा कि **मॉस्को** और **अबू धाबी** के घनिष्ठ संबंधों को देखते हुए यह कोई बड़ी बाधा बनने की संभावना नहीं है।

PATRIOTIC IAS