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# PATRIOTIC IAS

## DAILY CURRENT AFFAIRS

### THE HINDU NEWSPAPER

## 28 MAY 2026

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PCS Special: 28 May 2026

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'डीआरसी इबोला और युद्ध की विनाशकारी टक्कर का सामना कर रहा है'

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# 'DRC facing catastrophic collision of Ebola and war'

PCS

Agence France-Presse  
GENEVA

The World Health Organization chief warned on Wednesday that conflict raging in eastern Democratic Republic of Congo was dramatically complicating efforts to rein in a deadly Ebola outbreak and urged an immediate ceasefire.

"Eastern DRC now faces a catastrophic collision of disease and conflict with the Ebola outbreak in Ituri province outpacing the response," Tedros Adhanom Ghebreyesus said on X.

The WHO has recorded 10 confirmed Ebola deaths and 220 suspected deaths in DRC since mid-May, while also recording a further 900 suspected cases since Kinshasa declared



Tedros Adhanom Ghebreyesus

the outbreak on May 15.

The United Nations' health agency said the true spread of the virus was probably much wider. Experts have said it was probably circulating for some time.

Mr. Tedros stressed that the Bundibugyo strain of Ebola that is spreading in the DRC had "no approved vaccine nor treatment".

"Stopping this Ebola transmission depends en-

tirely on humanitarian access," he said.

But insecurity is a huge obstacle in eastern DRC, which has been plagued for three decades by conflict involving a litany of armed groups.

State services in rural areas of Ituri province have been largely absent for decades.

Mr. Tedros lamented that clashes were "driving mass displacement, pushing exposed contacts into overcrowded camps and severing critical containment corridors".

"Frontline workers are risking everything, while attacks on health facilities make tracking cases and their contacts nearly impossible," he warned.

"We plea to prioritise human survival above everything else."

28M. 'DRC facing catastrophic collision of Ebola and war'

'डीआरसी इबोला और युद्ध की विनाशकारी

टक्कर का सामना कर रहा है'

• "Eastern DRC now faces a catastrophic collision of disease and conflict with the Ebola outbreak in Ituri province outpacing the response," Tedros Adhanom Ghebreyesus said on X.

टेड्रोस अधानोम घेब्रेयेसस ने X पर कहा, "पूर्वी DRC अब बीमारी और संघर्ष की विनाशकारी टक्कर का सामना कर रहा है, जहाँ इटुरी प्रांत में इबोला प्रकोप नियंत्रण प्रयासों से तेज़ी से फैल रहा है।"

• Mr. Tedros stressed that the Bundibugyo strain of Ebola that is spreading in the DRC had "no approved vaccine nor treatment".

श्री टेड्रोस ने जोर देकर कहा कि DRC में फैल रहा इबोला का बंडिबुग्यो स्ट्रेन ऐसा है जिसके लिए "कोई स्वीकृत वैक्सीन या उपचार उपलब्ध नहीं है।"

- State services in rural areas of Ituri province have been largely absent for decades. इटुरी प्रांत के ग्रामीण क्षेत्रों में राज्य सेवाएँ दशकों से लगभग अनुपस्थित रही हैं।

## Gold, World record for Esha in 25m pistol

Press Trust of India  
MUNICH

PCS

Three-time World championship medallist Esha Singh bossed the women's 25m pistol final with a World record score of 43 as she clinched the gold to open India's medal count on the second day of the ISSF World Cup here on Wednesday.

In a power-packed final, the 21-year-old Esha shot perfect fives in half of the 10 series of five shots, leaving home favourite and former World champion Doreen Vennekamp a full five shots behind for silver. Bulgarian Miroslava Mincheva won the bronze.

It was Esha's fourth individual World Cup medal.

Manu Bhaker and Rahi



Esha... phenomenal show. ISSF

Sarnobat shot 582 and 581 to finish 12th and 14th in the 98-strong field.

In the women's 50m rifle 3 positions, Ashi Chouksey missed out on a place in the finals by one point after she finished 10th effectively (12th overall), with 589 in a field of 70 shooters (including RPO).

## 28M. Gold, World record for Esha in 25m pistol 25 मीटर पिस्टल में ईशा का स्वर्ण और विश्व रिकॉर्ड

• Three-time World Championship medallist Esha Singh bossed the women's 25m pistol final with a World record score of 43 as she clinched the gold to open India's medal count on the second day of the ISSF World Cup here on Wednesday.

तीन बार की विश्व चैंपियनशिप पदक विजेता ईशा सिंह ने बुधवार को यहाँ आयोजित ISSF विश्व कप के दूसरे दिन महिलाओं की 25 मीटर पिस्टल स्पर्धा के फाइनल में 43 के विश्व रिकॉर्ड स्कोर के साथ स्वर्ण पदक जीतकर भारत का खाता खोला।

• In a power-packed final, the 21-year-old Esha shot perfect fives in half of the 10 series of five shots, leaving home favourite and former World champion Doreen Vennekamp a full five shots behind for silver.

एक बेहद रोमांचक फाइनल में 21 वर्षीय ईशा ने पाँच शॉट्स की 10 श्रृंखलाओं में

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से आधी में परफेक्ट पाँच अंक लगाए और मेजबान देश की पूर्व विश्व चैंपियन डोरीन वेन्नेकैम्प को पाँच अंकों से पीछे छोड़ते हुए रजत पदक तक सीमित कर दिया।

<b>GS Paper 1: History,</b>		<b>28 May 2026</b>
<b>TOPICS COVERED</b>		
<b>28M</b>	<b>QUIZ</b>	

GS I: History: PII

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

- Nehru served as the Prime Minister for how many years? **Ans: 16**
  - Nehru wrote many books. One of them traces the journey of India from ancient history to the final years of the British Raj. **Ans: The Discovery of India**
  - When did Nehru say this: "At the stroke of the midnight hour, when the world sleeps, India will awake to life and freedom." **Ans: On August 15, 1947, Tryst with Destiny**
  - Who, in a letter, said, "Universally you are recognised as one of the most powerful influences for peace and conciliation in the world...?" **Ans: Dwight D. Eisenhower**
  - In 1955, then British PM Winston Churchill called Nehru with a title? **Ans: The Light of Asia**
  - Nehru wrote which article of the Constitution under the Directive Principles of State Policy? **Ans: Article 44**
  - Which is the conference that is being held here in the 1955 image? **Ans: Bandung Conference**
- Early Birds: Lalchand Bhutani | Tito Shiladitya | Piyali Tuli | Parimal Das | Sudhir Thapa

28M. QUIZ

- Nehru served as the Prime Minister for how many years? (Answer: 16 years)**  
 Jawaharlal Nehru served as the **first Prime Minister of India** from 15 August 1947 until his death on 27 May 1964.
  - His tenure lasted about **16 years and 9 months**, making him the longest-serving PM in independent India.
- Nehru wrote many books. One traces India from ancient history to British Raj. (Answer: The Discovery of India)**
  - The book "**The Discovery of India**" was written by Jawaharlal Nehru during his imprisonment at Ahmednagar Fort (1942–1946).
- "At the stroke of the midnight hour..." speech date and context (Answer: 15 August 1947, Tryst with Destiny)**
- Who praised Nehru as a powerful influence for peace? (Answer: Dwight D. Eisenhower)**
  - Dwight D. Eisenhower, the **President of the United States (1953–1961)**, acknowledged Jawaharlal Nehru as a strong global advocate for peace and conciliation during the Cold War era.
- Winston Churchill's title for Nehru (Answer: The Light of Asia)**
  - Winston Churchill is often cited in historical discussions and biographies as referring to Nehru with the phrase "**The Light of Asia**," highlighting his prominence in Asian political leadership.
- Nehru and Directive Principles (Answer: Article 44)**
  - Article 44** of the Indian Constitution, part of the **Directive Principles of State Policy**, promotes a **Uniform Civil Code (UCC)** for all citizens.
- Bandung Conference (Answer: 1955 Bandung Conference)**
  - The **Bandung Conference (1955)** was held in Indonesia and attended by 29 Asian and African countries, including India under Nehru's leadership.
  - It marked a major step in **Afro-Asian solidarity** and decolonisation efforts.

<b>GS Paper 1: Society</b>		<b>28 May 2026</b>
<b>TOPICS COVERED</b>		
<b>28M</b>	<b>Women live longer but spend more of those years with illness</b> महिलाएँ अधिक समय तक जीवित रहती हैं, लेकिन अपने जीवन के अधिक वर्ष बीमारियों के साथ बिताती हैं	



# Women live longer but spend more of those years with illness

Despite decades of medical progress, the gap between how many healthy years women get and how many men get has not moved

GS I: Society

## DATA POINT

Devvanshi Bihani

That women outlive men is a long-established fact that the data on Life Expectancy (LE) at birth have repeatedly shown. However, the healthy-life advantage that should have come with a longer life has barely moved in two decades for women. The shifts that happened during the COVID-19 pandemic in LE and **Healthy Life Expectancy (HALE)** — a metric that adjusts the LE by discounting the time spent with illnesses, disability, chronic pain and poor health — partially showed why women continued to lag behind in HALE.

While the world had largely recovered from the pandemic with global LE returning almost close to pre-pandemic levels by 2023, HALE recovered to 63 years, which is 0.5 years lesser than what it was in 2019. Female life expectancy stood at 76 years, compared to 71 for men. But the gap narrowed when healthy years were considered: women's HALE was 64 years, compared to 62 for men (Chart 1). In 2000, women's LE was 4.8 years higher than men while the gap in HALE was just 2.3 years. By 2021, it had narrowed slightly, to 2.2. Despite a generation of medical progress, the gap between how many healthy years women get and how many men get has not moved. This pattern points to a deeper structural divide in global health: women survive longer, but spend more of those years living with illness, pain and untreated conditions.

Across the world, men die at significantly higher rates from cardiovascular disease, lung disease, accidents, violence and suicide. Lower mortality from ischaemic heart disease alone adds 0.63 healthy years to women's lives. Reduced deaths from stroke contribute another 0.31 years, chronic obstructive pulmonary disease

(0.26), road injuries (0.32), interpersonal violence (0.17) and suicide (0.12) (Chart 2). As per the World Health Organization, all these lower mortality factors together should have given women a 3.85-year advantage in HALE.

However, higher morbidity among women offsets 1.56 years of that advantage. Women carry a disproportionately high burden of pain disorders, gynaecological diseases and mental health conditions. Back and neck pain alone reduces women's healthy lifespan by 0.44 years; depressive disorders cost 0.21 years and anxiety 0.16. Many remain underdiagnosed. The size of the female health gap varies sharply across WHO-defined global regions (Chart 3).

COVID-19 should have widened the HALE of women over men as the latter died at substantially higher rates than women throughout the pandemic. Lower female mortality from COVID-19 and pandemic-related causes alone gave women a 0.89-year HALE advantage over men, which was bigger than the contribution from ischaemic heart disease (Chart 2). However, the advantage did not widen since the pandemic also erased two decades of progress on the mental health conditions that disproportionately erode women's healthy years.

The disadvantages could be more pronounced in India. As per the WHO Global Health Statistics Report 2026, over half of Indian women (53.7%) of reproductive age are anaemic, nearly double the global rate. One in every five partnered Indian women has faced intimate partner violence in the past year, almost double the world figure. Nearly a third of Indian households spend more than 40% of their discretionary budget on health, putting sustained treatment out of reach for most (Chart 4). These conditions may not dominate mortality charts, but they profoundly shape everyday life, limiting mobility, productivity, and financial independence.

## Long and painful

The data for the charts were sourced from the World Health Organization's (WHO) World Health Statistics Reports for 2025 and 2026. The values for 2023 are approximate as per global health estimates for 2023 referred in the 2026 report



CHART 1: The healthy life expectancy (HALE), life expectancy (LE) and the gap between the two over the years and between genders

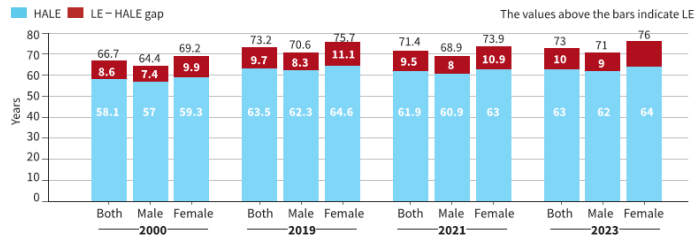


CHART 2: The chart shows the key mortality and morbidity conditions (as per 2019 data) that contribute positively and negatively to women's HALE over men

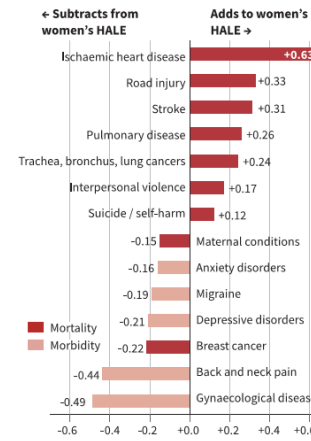


CHART 3: The chart shows the difference between the HALE of men and women in different global regions as defined by the World Health Organization

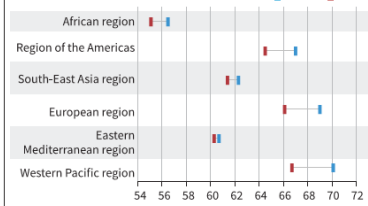
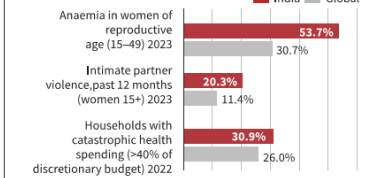


CHART 4: The chart shows three of the key indicators, where India lags behind, contributing to the gap between men and women in HALE



## 28M. Women live longer but spend more of those years with illness

महिलाएँ अधिक समय तक जीवित रहती हैं, लेकिन अपने जीवन के अधिक वर्ष बीमारियों के साथ बिताती हैं

- That women outlive men is a long-established fact that the data on **Life Expectancy (LE)** at birth have repeatedly shown. यह कि महिलाएँ पुरुषों की तुलना में अधिक समय तक जीवित रहती हैं, एक लंबे समय से स्थापित तथ्य है, जिसे जन्म के समय की **जीवन प्रत्याशा (LE)** संबंधी आँकड़ों ने बार-बार सिद्ध किया है।
- However, the healthy-life advantage that should have come with a longer life has barely moved in two decades for women. हालाँकि, लंबी आयु के साथ मिलने वाला स्वस्थ जीवन का लाभ महिलाओं के लिए पिछले दो दशकों में लगभग स्थिर ही रहा है।
- The shifts that happened during the **COVID-19 pandemic** in LE and **Healthy Life Expectancy (HALE)** — a metric that adjusts the LE by discounting the time spent with



illnesses, disability, chronic pain and poor health — partially showed why women continued to lag behind in HALE.

**COVID-19 महामारी** के दौरान LE और **स्वस्थ जीवन प्रत्याशा (HALE)** में हुए परिवर्तनों ने आंशिक रूप से यह दर्शाया कि महिलाएँ HALE में क्यों पीछे बनी रहीं। HALE एक ऐसा मापदंड है जो बीमारी, विकलांगता, दीर्घकालिक दर्द और खराब स्वास्थ्य में बिताए गए समय को घटाकर जीवन प्रत्याशा का आकलन करता है।

- **Female life expectancy stood at 76 years, compared to 71 for men.**  
महिलाओं की जीवन प्रत्याशा 76 वर्ष थी, जबकि पुरुषों की 71 वर्ष थी।
- **But the gap narrowed when healthy years were considered: women's HALE was 64 years, compared to 62 for men (Chart 1).**  
किन्तु जब स्वस्थ वर्षों को ध्यान में रखा गया, तो यह अंतर कम हो गया: महिलाओं का HALE 64 वर्ष था, जबकि पुरुषों का 62 वर्ष था।
- **Across the world, men die at significantly higher rates from cardiovascular disease, lung disease, accidents, violence and suicide.**  
विश्वभर में पुरुषों की मृत्यु दर **हृदय संबंधी रोगों**, फेफड़ों की बीमारियों, दुर्घटनाओं, हिंसा और आत्महत्या के कारण कहीं अधिक है।
- **Lower mortality from ischaemic heart disease alone adds 0.63 healthy years to women's lives.**  
केवल **इस्केमिक हृदय रोग** से कम मृत्यु दर ही महिलाओं के जीवन में 0.63 स्वस्थ वर्ष जोड़ती है।
- **Women carry a disproportionately high burden of pain disorders, gynaecological diseases and mental health conditions.**  
महिलाएँ दर्द संबंधी विकारों, स्त्रीरोग संबंधी बीमारियों और मानसिक स्वास्थ्य समस्याओं का असमान रूप से अधिक बोझ उठाती हैं।
- **As per the WHO Global Health Statistics Report 2026, over half of Indian women (53.7%) of reproductive age are anaemic, nearly double the global rate.**  
WHO ग्लोबल हेल्थ स्टैटिस्टिक्स रिपोर्ट 2026 के अनुसार, प्रजनन आयु की आधे से अधिक भारतीय महिलाएँ (53.7%) रक्ताल्पता (एनीमिया) से पीड़ित हैं, जो वैश्विक औसत से लगभग दोगुना है।
- **One in every five partnered Indian women has faced intimate partner violence in the past year, almost double the world figure.**  
प्रत्येक पाँच में से एक विवाहित या साथी के साथ रहने वाली भारतीय महिला ने पिछले वर्ष अंतरंग साथी हिंसा का सामना किया है, जो वैश्विक आँकड़े से लगभग दोगुना है।

<b>GS Paper II: Polity</b>		<b>28 May 2026</b>
<b>TOPICS COVERED</b>		
<b>28M</b>	<b>SC forwards plea on time-stamping VVPAT slips to EC</b> सुप्रीम कोर्ट ने वीवीपैट पर्चियों पर समय-मुद्रांकन संबंधी याचिका निर्वाचन आयोग को भेजी	
<b>28M</b>	<b>EC will always be with voters: CEC after SC upholds SIR</b> मतदाताओं के साथ हमेशा रहेगा चुनाव आयोग: सुप्रीम कोर्ट द्वारा SIR को बरकरार रखने के बाद मुख्य चुनाव आयुक्त	
<b>28M</b>	<b>Supreme Court Collegium recommends four HC judges, woman advocate to top court</b> सुप्रीम कोर्ट कॉलेजियम ने चार उच्च न्यायालय न्यायाधीशों और एक महिला अधिवक्ता को शीर्ष अदालत के लिए अनुशंसित किया	
<b>28M</b>	<b>Conversation on complex politics of Kashmir to be held at The Hindu Huddle</b> कश्मीर की जटिल राजनीति पर चर्चा 'द हिन्दू हडल' में आयोजित होगी	
<b>28M</b>	<b>NCW calls for legislation to codify Muslim personal law</b>	



	NCW ने मुस्लिम पर्सनल लॉ को संहिताबद्ध करने हेतु कानून बनाने की मांग की
28M	<b>Critical sectors must have quantum-safe encryption: task force</b> महत्वपूर्ण क्षेत्रों में क्वांटम-सुरक्षित एन्क्रिप्शन होना चाहिए: टास्क फोर्स

# SC forwards plea on time-stamping VVPAT slips to EC

GS II: Polity

**Krishnadas Rajagopal**  
NEW DELHI

The Supreme Court on Wednesday asked the Election Commission (EC) to consider a petitioner's representation to time-stamp Voter Verifiable Paper Audit Trail (VVPAT) slips to record the exact moment an elector cast his vote on polling day.

A three-judge Bench headed by Chief Justice of India Surya Kant directed the Supreme Court Registry to forward the petition and entire case records filed by businessman, Nalla Suresh Reddy, to the poll body. Mr. Reddy submitted that time-stamping of the VVPAT slips would be panacea for recurring controversies over "last-hour voting surges" and booth-level discrepancies. It would be a systemic addition to enhance electoral transparency.

"We have seen widespread doubts about a sudden jump in polling after 5

**A petition has sought the recording of the exact time an elector casts his or her vote to improve audit**

p.m. All that would be put to rest by time-stamping VVPAT slips," senior advocate Devadatt Kamat submitted for the petitioner.

**Audit gap**

The petition said the Conduct of Elections Rules, 1961, specifically mandate that names, serial numbers, and symbols of candidates should be displayed, but it did not call for recording the exact time of voting.

"This omission creates a significant audit gap," the court recorded the petitioner's argument in a detailed judicial order. The Bench further recorded that the petition has sought a modification of the 1961 Rules to introduce time-stamping of VVPAT slips.

displayed, but it did not call for recording the exact time of voting.

याचिका में कहा गया कि निर्वाचन संचालन नियम, 1961 में उम्मीदवारों के नाम, क्रमांक और चुनाव चिह्न प्रदर्शित करने का प्रावधान है, लेकिन मतदान के सटीक समय को दर्ज करने का कोई प्रावधान नहीं है।

**28M. SC forwards plea on time-stamping VVPAT slips to EC**

सुप्रीम कोर्ट ने वीवीपैट पर्चियों पर समय-मुद्रांकन संबंधी याचिका निर्वाचन आयोग को भेजी

- The **Supreme Court** on Wednesday asked the **Election Commission (EC)** to consider a petitioner's representation to time-stamp **Voter Verifiable Paper Audit Trail (VVPAT)** slips to record the exact moment an elector cast his vote on polling day.

सुप्रीम कोर्ट ने बुधवार को निर्वाचन आयोग (EC) से एक याचिकाकर्ता के उस अनुरोध पर विचार करने को कहा, जिसमें मतदान के दिन मतदाता द्वारा वोट डालने के सटीक समय को दर्ज करने हेतु **वोटर वेरीफाइबल पेपर ऑडिट ट्रेल (VVPAT)** पर्चियों पर समय-मुद्रांकन करने की मांग की गई है।

- Mr. Reddy submitted that **time-stamping of the VVPAT slips** would be a panacea for recurring controversies over "last-hour voting surges" and booth-level discrepancies.

श्री रेड्डी ने प्रस्तुत किया कि **VVPAT पर्चियों** पर समय-मुद्रांकन "अंतिम घंटे में मतदान वृद्धि" और बूथ स्तर की विसंगतियों से जुड़े बार-बार उत्पन्न होने वाले विवादों का समाधान हो सकता है।

- It would be a systemic addition to **enhance electoral transparency.**

यह **चुनावी पारदर्शिता** बढ़ाने के लिए एक प्रणालीगत सुधार होगा।

- "We have seen widespread doubts about a sudden jump in polling after **5 p.m.**

"हमने **शाम 5 बजे** के बाद मतदान में अचानक वृद्धि को लेकर व्यापक संदेह देखे हैं।

- The petition said the **Conduct of Elections Rules, 1961**, specifically mandate that **names, serial numbers, and symbols of candidates** should be



# Supreme Court Collegium recommends four HC judges, woman advocate to top court

GS II: Polity

**Krishnadas Rajagopal**  
NEW DELHI

The Supreme Court Collegium headed by Chief Justice of India Surya Kant, in consecutive meetings held on May 22 and 27, recommended the appointment of four High Court Chief Justices and one woman senior advocate as apex court judges. The resolution was published late on Wednesday.

The Collegium has proposed the name of senior advocate V. Mohana, a lawyer practising in the Supreme Court, as a judge of the top court. Ms. Mohana was one of the leading counsel in a series of cases highlighting structural career inequalities for women officers in the armed

forces. Currently, the Supreme Court has only one woman judge, Justice B.V. Nagarathna, who is also part of the Supreme Court Collegium.

The High Court Chief Justices recommended for the top court Bench are Justice Sheel Nagu, Chief Justice of the High Court of Punjab and Haryana; Justice Shree Chandrashekar, Chief Justice of the Bombay High Court; Justice Sanjeev Sachdeva, Chief Justice of the Madhya Pradesh High Court; and Justice Arun Palli, Chief Justice of the High Court of Jammu & Kashmir and Ladakh.

The Collegium's choice of judges reflects a focus on regional and gender representation. Justice Nagu's

parent High Court is Madhya Pradesh, Justice Chandrashekar is originally from the Jharkhand High Court, Justice Sachdeva's parent High Court is Delhi and Justice Palli is from the Punjab and Haryana High Court.

The last woman judge appointed to the apex court was in August 2021. Ms. Mohana, if appointed, would be the first after a gap of over five years. The recommendations come in the wake of a recent increase in the total strength of judges, including the Chief Justice of India, to 38 from the earlier 32.

The court would see more vacancies with the retirement of Justices J.K. Maheshwari and Justice Pankaj Mithal in June.

**28M. Supreme Court Collegium recommends four HC judges, woman advocate to top court**

**सुप्रीम कोर्ट कॉलेजियम ने चार उच्च न्यायालय न्यायाधीशों और एक महिला अधिवक्ता को शीर्ष अदालत के लिए अनुशंसित किया**

• The **Supreme Court Collegium** headed by Chief Justice of India **Surya Kant**, in consecutive meetings held on **May 22 and 27**, recommended the appointment of **four High Court Chief Justices and one woman senior advocate as apex court judges**.

भारत के मुख्य न्यायाधीश सूर्यकांत की अध्यक्षता वाले

सुप्रीम कोर्ट कॉलेजियम ने 22 और 27 मई को आयोजित लगातार बैठकों में चार उच्च न्यायालयों के मुख्य न्यायाधीशों और एक महिला वरिष्ठ अधिवक्ता को सर्वोच्च न्यायालय के न्यायाधीश के रूप में नियुक्त करने की सिफारिश की।

- Currently, the **Supreme Court** has **only one woman judge, Justice B.V. Nagarathna**, who is also part of the **Supreme Court Collegium**
- वर्तमान में सुप्रीम कोर्ट में केवल एक महिला न्यायाधीश, न्यायमूर्ति **बी.वी. नागरत्ना**, हैं, जो सुप्रीम कोर्ट कॉलेजियम का भी हिस्सा हैं।

GS II: Polity

## Centre seeks transfer of Transgender Act cases to SC

The Centre urged the Supreme Court on Wednesday to transfer petitions challenging the constitutionality of the Transgender Persons (Protection of Rights) Amendment Act, 2026 from about four different High Courts to the apex court. The Supreme Court is already seized of several petitions challenging the 2026 Act, but it is only partially working during June. The petitions in the SC have criticised the controversial 2026 law of removing the right to self-identity. The 2026 Act requires a government-appointed medical board's favourable recommendation for a District Magistrate to certify someone as a transperson.

- The last woman judge appointed to the apex court was in **August 2021**.

सर्वोच्च न्यायालय में अंतिम महिला न्यायाधीश की नियुक्ति अगस्त 2021 में हुई थी।

- The recommendations come in the wake of a recent increase in the total strength of judges, including the **Chief Justice of India, to 38 from the earlier 32**.

ये सिफारिशें हाल ही में मुख्य न्यायाधीश सहित न्यायाधीशों की कुल संख्या 32 से बढ़ाकर 38 किए जाने के बाद आई हैं।

- The court would see more vacancies with the retirement of Justices **J.K. Maheshwari** and Justice **Pankaj Mithal** in June.



जून में न्यायमूर्ति जे.के. महेश्वरी और न्यायमूर्ति पंकज मिथल के सेवानिवृत्त होने से अदालत में और रिक्तियाँ उत्पन्न होंगी।

## 28M. Centre seeks transfer of Transgender Act cases to SC

### केंद्र ने ट्रांसजेंडर अधिनियम मामलों को सुप्रीम कोर्ट में स्थानांतरित करने की मांग की

- The **Centre** urged the **Supreme Court** on Wednesday to transfer petitions challenging the constitutionality of the **Transgender Persons (Protection of Rights) Amendment Act, 2026** from about four different **High Courts** to the apex court.  
केंद्र सरकार ने बुधवार को सुप्रीम कोर्ट से अनुरोध किया कि ट्रांसजेंडर पर्सन्स (अधिकारों का संरक्षण) संशोधन अधिनियम, 2026 की संवैधानिक वैधता को चुनौती देने वाली याचिकाओं को लगभग चार अलग-अलग उच्च न्यायालयों से शीर्ष अदालत में स्थानांतरित किया जाए।
- The **2026 Act** requires a **government-appointed medical board's favourable recommendation for a District Magistrate to certify someone as a transperson.**  
2026 अधिनियम के अनुसार किसी व्यक्ति को ट्रांसपर्सन के रूप में प्रमाणित करने के लिए सरकार द्वारा नियुक्त मेडिकल बोर्ड की अनुकूल सिफारिश आवश्यक होगी, जिसके आधार पर जिला मजिस्ट्रेट प्रमाणन करेंगे।

#### GS II: Polity

### NCW calls for legislation to codify Muslim personal law

The National Commission for Women (NCW) has submitted a report on the rights of Muslim women in India to key central Ministries. The report recommends a comprehensive legislation to codify Muslim personal law related to marriage, divorce, maintenance, custody, and inheritance, strengthening provisions for maintenance during and after marriage, and mandatory registration of marriages. It also sought the establishment of gender-sensitive dispute resolution mechanisms with adequate representation for women and accountability to civil courts, expansion of legal aid systems, helplines, and targeted awareness campaigns.

बनाने की सिफारिश की गई है।

- The **report also recommends strengthening provisions for maintenance during and after marriage.**  
रिपोर्ट में विवाह के दौरान और विवाह के बाद भरण-पोषण से संबंधित प्रावधानों को मजबूत करने की भी सिफारिश की गई है।
- It further called for mandatory registration of marriages.**  
इसमें विवाहों का अनिवार्य पंजीकरण करने की भी मांग की गई है।
- It also sought the establishment of gender-sensitive dispute resolution mechanisms with adequate representation for women and accountability to civil courts.**  
रिपोर्ट में महिलाओं के पर्याप्त प्रतिनिधित्व और सिविल न्यायालयों के प्रति जवाबदेही के साथ लैंगिक-संवेदनशील विवाद समाधान तंत्र स्थापित करने की मांग की गई है।
- The **report recommended expansion of legal aid systems, helplines, and targeted awareness campaigns.**

## 28M. NCW calls for legislation to codify Muslim personal law

### NCW ने मुस्लिम पर्सनल लॉ को संहिताबद्ध करने हेतु कानून बनाने की मांग की

- The **National Commission for Women (NCW)** has submitted a report on the rights of **Muslim women** in India to key central Ministries.  
राष्ट्रीय महिला आयोग (NCW) ने भारत में मुस्लिम महिलाओं के अधिकारों पर एक रिपोर्ट प्रमुख केंद्रीय मंत्रालयों को सौंपी है।
- The **report recommends a comprehensive legislation to codify Muslim personal law related to marriage, divorce, maintenance, custody, and inheritance.**  
रिपोर्ट में विवाह, तलाक, भरण-पोषण, अभिरक्षा तथा उत्तराधिकार से संबंधित मुस्लिम पर्सनल लॉ को संहिताबद्ध करने के लिए व्यापक कानून



रिपोर्ट में कानूनी सहायता प्रणालियों, हेल्पलाइन सेवाओं तथा लक्षित जागरूकता अभियानों के विस्तार की भी सिफारिश की गई है।

GS Paper II: Governance		28 May 2026
TOPICS COVERED		
28M	Home Secretary-led panel to draw up plan to clean Yamuna गृह सचिव की अध्यक्षता वाला पैनल यमुना को स्वच्छ बनाने की योजना तैयार करेगा	
28M	Centre to revamp ED, boost cadre strength to 3,256 केंद्र सरकार ईडी का पुनर्गठन करेगी, कैडर क्षमता बढ़ाकर 3,256 करेगी	
28M	Company used for CBSE on-screen marking linked to controversies, alleges Rahul CBSE की ऑन-स्क्रीन मूल्यांकन कंपनी विवादों से जुड़ी, राहुल का आरोप	
28M	Govt. approves new SARTHAK PDS scheme to strengthen food security खाद्य सुरक्षा को सुदृढ़ करने हेतु सरकार ने नई SARTHAK PDS योजना को मंजूरी दी	

## Home Secretary-led panel to draw up plan to clean Yamuna

GS II: Governance

Krishnadas Rajagopal  
NEW DELHI

The Supreme Court has constituted a committee headed by Union Home Secretary Govind Mohan, and comprising the Chief Secretaries of all the States and Union Territories through which the Yamuna river flows, and given them eight weeks to come up with a comprehensive plan to clean up the river, which is considered a lifeline for over 57 million people in the national capital.

A Bench of Justices Ma-

noj Misra and Manmohan issued the direction to the committee to prepare a Yamuna Action Plan while conveying "profound grief" that the river has been reduced to "little more than a sewage canal". "This court has repeatedly emphasised the absence of a single, comprehensive action plan for the rejuvenation of the Yamuna. A river is greater than the sum of its parts. Its revival requires a long-term, integrated strategy akin to the Namami Gange programme," the apex



At work: Fishermen near Sur Ghat in New Delhi on Monday. PTI

court observed in its May 21 order that was published on Wednesday.

The court said the action plan for the Yamuna must clearly state the objectives, implementation

strategy, roles and responsibilities of each agency, budgetary allocations, as well as timelines. Coordination and monitoring must be entrusted to a single authority, it said.

The Centre had previously suggested that the Union Home Secretary could act as the nodal officer to coordinate efforts between States, UTs and the Centre. The court's *amicus curiae*, senior advocate K. Parameashwar, had recommended that the action plan must contain details of the cities and towns discharging effluents into the river; the kinds of industries polluting its waters; geotagging of sewage treatment plants, and drains, etc. on its banks; uploading of the river's water quality

data, among other measures. "Rivers are the lifeblood of civilisation. They provide fresh drinking water, sustain ecosystems and drive economic growth through agriculture, fisheries, and tourism," observed the two-judge Bench.

It added that multiple agencies worked in silos to achieve nothing. Instead of curbing pollution, they had aggravated it, said the court, adding that the time had come for "hard decisions". The court listed the case next on August 8.

### 28M. Home Secretary-led panel to draw up plan to clean Yamuna

गृह सचिव की अध्यक्षता वाला पैनल यमुना को स्वच्छ बनाने की योजना तैयार करेगा

- The Supreme Court has constituted a committee headed by Union Home Secretary Govind Mohan, and comprising the Chief Secretaries of all the States and Union Territories through which the Yamuna river flows, and given them eight weeks to come up with a comprehensive plan to clean up the river, which is considered a lifeline for over 57 million people in the national capital.

सुप्रीम कोर्ट ने केंद्रीय गृह सचिव गोविंद मोहन की अध्यक्षता में एक समिति का गठन किया है, जिसमें उन सभी राज्यों और केंद्रशासित प्रदेशों के मुख्य सचिव शामिल हैं जिनसे होकर यमुना नदी बहती है, और उन्हें आठ सप्ताह के भीतर नदी को स्वच्छ बनाने के लिए एक व्यापक योजना तैयार करने का निर्देश दिया है। यह नदी राष्ट्रीय राजधानी में 5.7 करोड़ से अधिक लोगों के लिए जीवनरेखा मानी जाती है।

- It should provide for geotagging of sewage treatment plants, and drains, etc. on its banks. इसमें तटों पर स्थित सीवेज शोधन संयंत्रों और नालों आदि की जियोटैगिंग का प्रावधान होना चाहिए।



# Centre to revamp ED, boost cadre strength to 3,256

GS II: Governance

The Hindu Bureau  
NEW DELHI

The Union Finance Ministry sanctioned a sweeping cadre restructuring of the Enforcement Directorate on Wednesday, expanding its current strength by almost 60% from 2,029 to 3,256 posts.

The agency's executive cadre will nearly double from 1,229 to 2,288 posts.

The most dramatic changes have been approved in the executive cadre, which forms the operational backbone of the ED. While special directors remain unchanged at seven, additional directors have increased from 10 to 24; joint directors from 28 to 49; and deputy directors from 148 to 267.

The sanctioned strength of assistant directors has been revised from 255 to 531; enforcement officers from 355 to 606; and assistant enforcement officers from 425 to 803.

The ED's legal cadre, has also been strengthened. The additional directors (prosecution) have been increased from one



to seven; deputy legal advisers from 7 to 18; and assistant legal advisers from 18 to 36.

An adjudication wing, which earlier had only one special director-level officer, has been created afresh. The newly sanctioned posts include two additional directors; three joint directors; five deputy directors; and 10 assistant directors.

The systems cadre, which includes one system analyst and 11 scientific technical assistants, has seen revisions in pay levels. In the ministerial cadre, a new post of Internal Financial Adviser has been created and assistant directors increased from three to six; superintendents from 20 to 30; and assistants increased from 57 to 65.

**28M. Centre to revamp ED, boost cadre strength to 3,256**

**केंद्र सरकार ईडी का पुनर्गठन करेगी, कैडर क्षमता बढ़ाकर 3,256 करेगी**

The Union Finance Ministry sanctioned a sweeping cadre restructuring of the Enforcement Directorate (ED) on Wednesday, expanding its current strength by almost 60% from 2,029 to 3,256 posts. केंद्रीय वित्त मंत्रालय ने बुधवार को प्रवर्तन निदेशालय (ED) के व्यापक कैडर पुनर्गठन को मंजूरी दी, जिसके तहत इसकी वर्तमान क्षमता को लगभग 60% बढ़ाकर 2,029 से 3,256 पद कर दिया गया है।

The agency's executive cadre will nearly double from 1,229 to 2,288 posts. एजेंसी के कार्यकारी कैडर की संख्या लगभग दोगुनी होकर 1,229 से 2,288 पद हो जाएगी।

The most dramatic changes have been approved in the executive cadre, which forms the operational backbone of the ED.

सबसे बड़े परिवर्तन कार्यकारी कैडर में स्वीकृत किए गए हैं, जो ईडी के संचालन का मुख्य आधार है।

While special directors remain unchanged at seven, additional directors have increased from 10 to 24.

जहाँ विशेष निदेशकों की संख्या सात पर यथावत रखी गई है, वहीं अतिरिक्त निदेशकों की संख्या 10 से बढ़ाकर 24 कर दी गई है।

Joint directors have increased from 28 to 49.

संयुक्त निदेशकों की संख्या 28 से बढ़ाकर 49 कर दी गई है।

Deputy directors have increased from 148 to 267.

उप निदेशकों की संख्या 148 से बढ़ाकर 267 कर दी गई है।

The sanctioned strength of assistant directors has been revised from 255 to 531.

सहायक निदेशकों की स्वीकृत संख्या 255 से बढ़ाकर 531 कर दी गई है।

गई है।

- Enforcement officers have increased from 355 to 606. प्रवर्तन अधिकारियों की संख्या 355 से बढ़ाकर 606 कर दी गई है।
- Assistant enforcement officers have increased from 425 to 803. सहायक प्रवर्तन अधिकारियों की संख्या 425 से बढ़ाकर 803 कर दी गई है।
- The ED's legal cadre has also been strengthened. ईडी के विधिक कैडर को भी मजबूत किया गया है।
- The additional directors (prosecution) have been increased from one to seven. अतिरिक्त निदेशक (अभियोजन) की संख्या एक से बढ़ाकर सात कर दी गई है।
- Deputy legal advisers have increased from 7 to 18. उप विधिक सलाहकारों की संख्या 7 से बढ़ाकर 18 कर दी गई है।
- Assistant legal advisers have increased from 18 to 36. सहायक विधिक सलाहकारों की संख्या 18 से बढ़ाकर 36 कर दी गई है।



- An **adjudication wing**, which earlier had only one special director-level officer, has been created afresh.  
एक नया न्यायनिर्णयन प्रकोष्ठ (adjudication wing) भी स्थापित किया गया है, जिसमें पहले केवल एक विशेष निदेशक स्तर का अधिकारी था।
- The newly sanctioned posts include two **additional directors**, three **joint directors**, five **deputy directors**, and 10 **assistant directors**.  
नव स्वीकृत पदों में दो अतिरिक्त निदेशक, तीन संयुक्त निदेशक, पाँच उप निदेशक और 10 सहायक निदेशक शामिल हैं।
- The **systems cadre**, which includes one **system analyst** and 11 **scientific technical assistants**, has seen revisions in pay levels.  
सिस्टम कैडर, जिसमें एक सिस्टम विश्लेषक और 11 वैज्ञानिक तकनीकी सहायक शामिल हैं, के वेतन स्तरों में भी संशोधन किया गया है।
- In the **ministerial cadre**, a new post of **Internal Financial Adviser** has been created.

## Company used for CBSE on-screen marking linked to controversies, alleges Rahul

GS II: Governance

The Hindu Bureau  
NEW DELHI

Leader of the Opposition in the Lok Sabha Rahul Gandhi on Wednesday alleged that the company, COEMPT, which carried out the on-screen marking (OSM) exercise for students of the Central Board of Secondary Education (CBSE), was earlier known as Globarena and had figured in controversies linked to Telangana Board exams in 2019 and 2023.

Mr. Gandhi has demanded a judicial inquiry and a Special Investigation Team (SIT) probe into the alleged scam.

“The company that did the OSM for your exams was actually called Globarena. And Globarena has carried out this scam twice before in Telangana, once in the Board exam in Telangana in 2019 and after that again in 2023,” Mr. Gandhi said in a video statement addressing students.



Rahul Gandhi

“The same OSM-based errors were responsible for death by suicides of 23 young Indians in Telangana,” he added.

### ‘Question selection’

Mr. Gandhi posted the video on his X handle and raised questions about the company’s selection. He also asked what, precisely, was the nature of the relationship between COEMPT’s management and the Union government. He alleged that the company’s track record was publicly known and yet, for “some hidden” rea-

son, the CBSE chose it for the assignment. “It took us 30 seconds to figure out this company was earlier called something else. I am absolutely certain that the people in CBSE and the Government of India were aware of this company,” Mr. Gandhi said, urging students and parents to share the video and seek answers.

“Why and by whom was COEMPT given this CBSE contract? Which procedures were circumvented to give this contract?” the Congress leader asked.

Congress communications chief Jairam Ramesh, citing a media report claiming that the CBSE ignored the advice of its governing council to first implement OSM as a pilot project, demanded the resignation of Union Education Minister Dharmendra Pradhan. “If it [the CBSE] had listened, the unnecessary suffering of lakhs of students would have been prevented,” he said.

मंत्रालयी कैडर में आंतरिक वित्तीय सलाहकार का नया पद सृजित किया गया है।

• The number of **assistant directors** has increased from three to six.

सहायक निदेशकों की संख्या तीन से बढ़ाकर छह कर दी गई है।

• The number of **superintendents** has increased from 20 to 30.

अधीक्षकों की संख्या 20 से बढ़ाकर 30 कर दी गई है।

• The number of **assistants** has increased from 57 to 65.

सहायकों की संख्या 57 से बढ़ाकर 65 कर दी गई है।

**28M. Company used for CBSE on-screen marking linked to controversies, alleges Rahul**

**CBSE की ऑन-स्क्रीन मूल्यांकन कंपनी विवादों से जुड़ी, राहुल का आरोप**



- Leader of the Opposition in the **Lok Sabha Rahul Gandhi** on Wednesday alleged that the company, **COEMPT**, which carried out the **on-screen marking (OSM)** exercise for students of the **Central Board of Secondary Education (CBSE)**, was earlier known as **Globarena** and had figured in controversies linked to **Telangana Board exams** in **2019** and **2023**.  
लोकसभा में विपक्ष के नेता **राहुल गांधी** ने बुधवार को आरोप लगाया कि **केंद्रीय माध्यमिक शिक्षा बोर्ड (CBSE)** के छात्रों के लिए **ऑन-स्क्रीन मार्किंग (OSM)** प्रक्रिया संचालित करने वाली कंपनी **COEMPT** पहले **Globarena** के नाम से जानी जाती थी और उसका नाम **2019** तथा **2023** के तेलंगाना बोर्ड परीक्षाओं से जुड़े विवादों में सामने आ चुका है।
- “The company that did the **OSM** for your exams was actually called **Globarena**. And **Globarena** has carried out this scam twice before in **Telangana**, once in the Board exam in **Telangana** in **2019** and after that again in **2023**,” Mr. Gandhi said in a video statement addressing students.  
“आपकी परीक्षाओं के लिए **OSM** करने वाली कंपनी का वास्तविक नाम **Globarena** था। और **Globarena** इससे पहले **तेलंगाना** में दो बार यह घोटाला कर चुकी है, एक बार **2019** में तेलंगाना बोर्ड परीक्षा में और उसके बाद फिर **2023** में,” छात्रों को संबोधित करते हुए वीडियो संदेश में श्री गांधी ने कहा।
- “The same **OSM-based errors** were responsible for death by suicides of **23 young Indians in Telangana**,” he added.  
उन्होंने आगे कहा, “इन्हीं **OSM आधारित त्रुटियों** के कारण तेलंगाना में **23 युवा भारतीयों** ने आत्महत्या की थी।”
- “Why and by whom was **COEMPT** given this **CBSE** contract? Which procedures were circumvented to give this contract?” the Congress leader asked.  
“**COEMPT** को यह **CBSE** अनुबंध क्यों और किसके द्वारा दिया गया? यह अनुबंध देने के लिए किन प्रक्रियाओं को दरकिनार किया गया?” कांग्रेस नेता ने प्रश्न किया।

## Govt. approves new SARTHAK PDS scheme to strengthen food security

GS II: Governance

The Hindu Bureau  
NEW DELHI

The Cabinet Committee on Economic Affairs chaired by Prime Minister Narendra Modi on Wednesday approved the SARTHAK Public Distribution System (PDS) scheme for a period of five years at a cost of ₹25,530 crore to improve food security.

The scheme will use advanced technologies for “transparency, security and sustainability” in PDS operations across India.

The approval covers the entire PDS value chain, Union Minister Ashwini Vaishnav told presspersons after the Cabinet meeting.

“Right from the selection of beneficiaries to the movement of foodgrains, to getting proactive feedback from citizens, to reducing transportation distance – all those activities have been approved with



**Modern boost:** The scheme envisages taking feedback from beneficiaries to ensure structural reform. FILE PHOTO

an outlay of ₹25,530 crore for five years,” he said.

“**Not replacement**” SARTHAK-PDS does not replace the existing PDS system but will ensure structural reform across the delivery of foodgrains, logistics, transportation, material handling, and grievance redressal, Mr. Vaishnav said.

It is conceived as an um-

brella scheme which integrates the ongoing ‘Assistance to State Agencies for intra-State movement of foodgrains and FPS dealers’ margin under NFSA (National Food Security Act)’ and the ‘Scheme for Modernisation and Reforms through Technology in Public Distribution System (SMART PDS)’, an official statement said.

The merger is expected

to strengthen the NFSA’s implementation under a single administrative framework.

The merged scheme is slated operate up to March 31, 2031.

### Financial support

The scheme will provide financial support for intra-State movement and handling of PDS goods, and the fair price shops’ dealers’ margin. It also envisages a citizen-centric, interoperable PDS architecture for last-mile service delivery, and minimising leakages.

Advanced technologies, including AI, machine learning, blockchain, and natural language processing will enable real-time monitoring, grievance and analytics systems, data-driven oversight by State Command Control Centres, and ISO-certified process frameworks for security and transparency.

**28M. Govt. approves new SARTHAK PDS scheme to strengthen food security**  
**खाद्य सुरक्षा को सुदृढ़ करने हेतु सरकार ने नई SARTHAK PDS योजना को मंजूरी दी**

• The **Cabinet Committee on Economic Affairs** chaired by Prime Minister **Narendra Modi** on Wednesday approved the **SARTHAK Public Distribution System (PDS)**

scheme for a period of **five years** at a cost of **₹25,530 crore** to improve **food security**.



प्रधानमंत्री नरेंद्र मोदी की अध्यक्षता वाली आर्थिक मामलों की मंत्रिमंडलीय समिति ने बुधवार को खाद्य सुरक्षा को सुदृढ़ करने के लिए ₹25,530 करोड़ की लागत से पाँच वर्षों की अवधि हेतु SARTHAK सार्वजनिक वितरण प्रणाली (PDS) योजना को मंजूरी दी।

- The scheme will use **advanced technologies** for “**transparency, security and sustainability**” in **PDS operations** across India.  
यह योजना पूरे भारत में PDS संचालन में “**पारदर्शिता, सुरक्षा और स्थिरता**” सुनिश्चित करने के लिए उन्नत तकनीकों का उपयोग करेगी।
- The **approval covers the entire PDS value chain**, Union Minister **Ashwini Vaishnaw** told presspersons after the Cabinet meeting.  
कैबिनेट बैठक के बाद केंद्रीय मंत्री **अश्विनी वैष्णव** ने पत्रकारों को बताया कि यह मंजूरी संपूर्ण PDS मूल्य श्रृंखला को कवर करती है।
- “**Right from the selection of beneficiaries to the movement of foodgrains, to getting proactive feedback from citizens, to reducing transportation distance — all those activities have been approved with an outlay of ₹25,530 crore for five years,**” he said.  
उन्होंने कहा, “**लाभार्थियों के चयन से लेकर खाद्यान्नों की आवाजाही, नागरिकों से सक्रिय प्रतिक्रिया प्राप्त करने और परिवहन दूरी कम करने तक — इन सभी गतिविधियों को पाँच वर्षों के लिए ₹25,530 करोड़ के प्रावधान के साथ मंजूरी दी गई है।**”

### ‘Not replacement’

#### ‘प्रतिस्थापन नहीं’

- **SARTHAK-PDS does not replace the existing PDS system** but will ensure structural reform across the delivery of foodgrains, logistics, transportation, material handling, and grievance redressal, Mr. Vaishnaw said.  
श्री वैष्णव ने कहा कि **SARTHAK-PDS** वर्तमान PDS प्रणाली का प्रतिस्थापन नहीं है, बल्कि यह खाद्यान्न वितरण, लॉजिस्टिक्स, परिवहन, सामग्री प्रबंधन और शिकायत निवारण में संरचनात्मक सुधार सुनिश्चित करेगा।
- It is conceived as an umbrella scheme which integrates the ongoing ‘**Assistance to State Agencies for intra-State movement of foodgrains and FPS dealers’ margin under NFSA (National Food Security Act)**’ and the ‘**Scheme for Modernisation and Reforms through Technology in Public Distribution System (SMART PDS)**’, an official statement said.  
एक आधिकारिक बयान के अनुसार, इसे एक व्यापक योजना के रूप में तैयार किया गया है, जो ‘**राष्ट्रीय खाद्य सुरक्षा अधिनियम (NFSA)** के अंतर्गत राज्य एजेंसियों को खाद्यान्नों की राज्य के भीतर आवाजाही और FPS डीलरों के मार्जिन हेतु सहायता’ तथा ‘**सार्वजनिक वितरण प्रणाली में प्रौद्योगिकी के माध्यम से आधुनिकीकरण और सुधार योजना (SMART PDS)**’ को एकीकृत करती है।
- The merger is expected to strengthen the **NFSA’s implementation** under a single administrative framework.  
इस एकीकरण से एकल प्रशासनिक ढांचे के अंतर्गत **NFSA के क्रियान्वयन** को सुदृढ़ करने की अपेक्षा है।
- The **merged scheme is slated operate up to March 31, 2031.**  
यह एकीकृत योजना **31 मार्च, 2031** तक संचालित होने वाली है।

### Financial support

#### वित्तीय सहायता

- The scheme will provide **financial support** for intra-State movement and handling of **PDS goods, and the fair price shops’ dealers’ margin.**  
यह योजना PDS वस्तुओं की राज्य के भीतर आवाजाही एवं प्रबंधन तथा उचित मूल्य दुकानों के डीलरों के मार्जिन के लिए **वित्तीय सहायता** प्रदान करेगी।



- It also envisages a **citizen-centric, interoperable PDS architecture** for last-mile service delivery, and minimising leakages.  
यह अंतिम छोर तक सेवा वितरण तथा रिसाव को न्यूनतम करने के लिए **नागरिक-केंद्रित एवं इंटरऑपरेबल PDS संरचना** की भी परिकल्पना करती है।
- Advanced technologies, including **AI, machine learning, blockchain, and natural language processing** will enable **real-time monitoring, grievance and analytics systems, data-driven oversight by State Command Control Centres, and ISO-certified process frameworks** for security and transparency.  
**AI, मशीन लर्निंग, ब्लॉकचेन और नेचुरल लैंग्वेज प्रोसेसिंग** सहित उन्नत तकनीकें **रीयल-टाइम मॉनिटरिंग, शिकायत एवं विश्लेषण प्रणाली, राज्य कमांड कंट्रोल केंद्रों द्वारा डेटा-आधारित निगरानी तथा ISO-प्रमाणित प्रक्रिया ढांचे** को सक्षम बनाएंगी, जिससे सुरक्षा और पारदर्शिता सुनिश्चित होगी।

<b>GS Paper II: International Relations</b>		<b>28 May 2026</b>
<b>TOPICS COVERED</b>		
<b>28M</b>	<b>Hungary's Parliament votes to remain a member of the ICC</b> हंगरी की संसद ने ICC का सदस्य बने रहने के पक्ष में मतदान किया	
<b>28M</b>	<b>Quad says ports for Fiji; Ditoka says no specific project yet, talks ongoing</b> क्वाड ने फिजी के लिए बंदरगाहों की घोषणा की; डिटोका ने कहा अभी कोई विशिष्ट परियोजना नहीं, वार्ता जारी	

**BUDAPEST**

**Hungary's Parliament votes to remain a member of the ICC**



**GS II: IR**  
Hungary's Parliament voted on Wednesday to remain a member of the International Criminal Court, reversing a decision by the previous government of Viktor Orban to withdraw from the global tribunal. The Bill was passed largely along party lines, with 133 voting to approve, 37 votes against and five abstentions. AP

**28M. Hungary's Parliament votes to remain a member of the ICC**

हंगरी की संसद ने ICC का सदस्य बने रहने के पक्ष में मतदान किया

- Hungary's Parliament** voted on Wednesday to remain a member of the **International Criminal Court (ICC)**, reversing a decision by the previous government of **Viktor Orban** to withdraw from the global tribunal.  
हंगरी की संसद ने बुधवार को अंतरराष्ट्रीय आपराधिक न्यायालय (ICC) का सदस्य बने रहने के पक्ष में मतदान किया, जिससे पूर्व प्रधानमंत्री **विक्टर ओर्बान** की सरकार द्वारा वैश्विक न्यायाधिकरण से बाहर होने के निर्णय को पलट दिया गया।

**Quad says ports for Fiji; Ditoka says no specific project yet, talks ongoing**

**GS II: IR**  
Kallot Bhattacharjee  
NEW DELHI

A day after the 11th Quad Foreign Ministers' meeting here declared that the grouping would build port infrastructure in the Pacific island of Fiji, Fijian Foreign Minister Sakiasi Ditoka said that no relevant port project has been "agreed" at the moment, though Fiji is in talks with the Millennium Challenge Corporation (MCC) Compact of the United States regarding port infrastructure. In response to questions from *The Hindu*, Mr. Ditoka said in a written response that Fiji's approach to developing its infrastructure is driven by plans to create better facilities that will support its



Sakiasi Ditoka

commercial ambitions. "No specific port project has been identified or agreed at this stage. The process is at the Root Cause Analysis phase, which will then move into Concept Notes and, subject to agreement, potentially to more detailed feasibility and design work," said Mr. Ditoka, indicating

that the declaration of a port project made here by Australian Foreign Minister Penny Wong as well as U.S. Secretary of State Marco Rubio requires considerable paperwork before it can materialise. The announcement on Fijian port development by the Quad Foreign Ministers' meeting has drawn attention to the broad-spectrum relations that China has built with several southwest Pacific island nations, most importantly Fiji, which will mark fifty-one years of diplomatic relations with China this year. China's ambassador to Fiji, Zhou Jian, said in 2025 that his country had emerged as the third-largest trading partner for Fi-

ji. The government of Prime Minister Sitiveni Rabuka has broadened conversation on Chinese investments in infrastructure across Fiji's major islands, and China has developed at least twenty projects in Fiji in the recent past. Fiji has maintained the "One-China" policy, which has helped further ties with Beijing. On March 2, the U.S. Department of State announced that Fiji was set to receive a grant of \$12 million from the MCC for feasibility studies of projects before further consideration. Referring to that, Foreign Minister Ditoka said, "The focus areas identified are ports and the business regulatory environment."

**28M. Quad says ports for Fiji; Ditoka says no specific project yet, talks ongoing**

क्वाड ने फिजी के लिए बंदरगाहों की घोषणा की; डिटोका ने कहा अभी कोई विशिष्ट परियोजना नहीं, वार्ता जारी

- A day after the **11th Quad Foreign Ministers' meeting** here declared that the grouping would build port infrastructure in the Pacific island of **Fiji**, Fijian Foreign Minister **Sakiasi Ditoka** said that no relevant port project has been "agreed" at the moment, though Fiji is in talks with the **Millennium Challenge Corporation (MCC) Compact of the United**



**States** regarding port infrastructure.

यहाँ आयोजित 11वीं क्वाड विदेश मंत्रियों की बैठक द्वारा प्रशांत द्वीपीय देश फिजी में बंदरगाह अवसंरचना निर्माण की घोषणा के एक दिन बाद, फिजी के विदेश मंत्री साकियासी डिटोका ने कहा कि अभी तक किसी विशेष बंदरगाह परियोजना पर "सहमति" नहीं बनी है, हालांकि फिजी बंदरगाह अवसंरचना को लेकर संयुक्त राज्य अमेरिका की मिलेनियम चैलेंज कॉर्पोरेशन (MCC) कॉम्पैक्ट के साथ बातचीत कर रहा है।

- The announcement on Fijian port development by the **Quad Foreign Ministers' meeting** has drawn attention to the broad-spectrum relations that **China** has built with several southwest Pacific island nations, most importantly Fiji, which will mark fifty-one years of diplomatic relations with China this year.

क्वाड विदेश मंत्रियों की बैठक द्वारा फिजी बंदरगाह विकास की घोषणा ने उन व्यापक संबंधों की ओर ध्यान आकर्षित किया है जो चीन ने दक्षिण-पश्चिम प्रशांत के कई द्वीपीय देशों, विशेषकर फिजी, के साथ स्थापित किए हैं। इस वर्ष फिजी और चीन के बीच राजनयिक संबंधों के 51 वर्ष पूरे होंगे।

- China's ambassador to Fiji, **Zhou Jian**, said in 2025 that his country had emerged as the third-largest trading partner for Fiji.  
फिजी में चीन के राजदूत झो जियान ने 2025 में कहा था कि उनका देश फिजी का तीसरा सबसे बड़ा व्यापारिक साझेदार बन गया है।
- Fiji has maintained the **"One-China"** policy, which has helped further ties with **Beijing**.  
फिजी ने "वन-चाइना" नीति बनाए रखी है, जिससे बीजिंग के साथ उसके संबंध और मजबूत हुए हैं।

GS Paper III: Economy		28 May 2026
<b>TOPICS COVERED</b>		
28M	Organised online gaming comes under GST regime, states SC संगठित ऑनलाइन गेमिंग GST व्यवस्था के अंतर्गत आता है, सुप्रीम कोर्ट ने कहा	
28M	Nvidia to spend \$150 bn annually in Taiwan: CEO एनवीडिया ताइवान में प्रतिवर्ष 150 अरब डॉलर खर्च करेगा: CEO	



# Organised online gaming comes under GST regime, states SC

Bench declines challenges against levy on actionable claims arising from organised online gaming and fantasy sports under betting and gambling

GS III: Economy

Krishnadas Rajagopal  
NEW DELHI

The Supreme Court on Wednesday confirmed the constitutional validity of bringing organised online gaming activities with money stakes under the Goods and Services Tax (GST) regime.

A Bench of Justices J.B. Pardiwala and R. Mahadevan, in a judgment, declined challenges raised against the levy of GST on actionable claims arising from organised online gaming activities and fantasy sports under the betting and gambling head.

The court reasoned that even if online gaming involves skill, there was substantial money involved and an uncertainty at stake on the outcome.

"Online gaming activities, including fantasy sports and other games played on digital platforms, involving staking upon uncertain outcomes, constitute betting and gambling for the purpose of GST framework," Justice Mahadevan pronounced for the Bench.

The Bench also upheld the statutory ban on games like Rummy and Poker, played online for a wager, bet, money or other stakes. The court said the States had a duty to maintain public tranquillity and



**No game:** Even if online gaming involves skill, there is substantial money involved and an uncertainty at stake on the outcome. AP

public health, considering the growing problems of addiction and deaths due to financial losses suffered online. The court said the Tamil Nadu law was based on empirical data collected through a panel chaired by a former Madras High Court judge.

The court rejected the online gaming companies' argument comparing online games of "skill" with horse-racing. They had argued that the apex court had categorised horse-racing as a game of skill.

Justice Pardiwala responded in the judgment that horse-races and wagers upon them were heavily regulated by the State, and there cannot be a comparison between the two.

"In the present case, betting on online games of skill is posing a threat to the State and wellbeing of the masses. Such betting would not enjoy immunity merely because it is taking

place in a game of skill," the court said.

The court said that while it may be true that games of skill may not be covered by the expression 'gambling', it was wrong to say that betting on games of skill would be out of the competence of the State legislature.

"The earlier decision on horse-racing has no relevance to the case at hand. The entire process of horse racing and wagering was highly regulated and organised, which is very different from the uncertainty and veil of invisibility associated with online gaming activities, whether of skill or chance," the court said. The court allowed the appeals filed by the Governments of Tamil Nadu and Karnataka while setting aside the decisions of the Madras and Karnataka HCs striking down the laws banning online gaming activities.

**28M. Organised online gaming comes under GST regime, states SC**

संगठित ऑनलाइन गेमिंग GST व्यवस्था के अंतर्गत आता है, सुप्रीम कोर्ट ने कहा

- Bench declines challenges against levy on actionable claims arising from organised online gaming and fantasy sports under betting and gambling.

संगठित ऑनलाइन गेमिंग और फैंटेसी स्पोर्ट्स से उत्पन्न एकशनएबल क्लेमस पर सट्टेबाजी और जुए के अंतर्गत लगाए गए कर को चुनौती देने वाली याचिकाओं को पीठ ने खारिज किया।

- The **Supreme Court** on Wednesday confirmed the constitutional validity of bringing organised online gaming activities with money stakes under the **Goods and Services Tax (GST)** regime.

सुप्रीम कोर्ट ने बुधवार को धनराशि दांव पर लगाने वाली संगठित ऑनलाइन गेमिंग गतिविधियों को वस्तु एवं सेवा कर (GST) व्यवस्था के अंतर्गत लाने की संवैधानिक वैधता को बरकरार रखा।

- A Bench of Justices **J.B. Pardiwala** and **R. Mahadevan**, in a judgment, declined challenges raised against the levy of **GST** on actionable claims arising from organised online gaming activities and fantasy sports under the betting and gambling head.

न्यायमूर्ति **जे.बी. पारदीवाला** और **आर. महादेवन** की पीठ ने अपने निर्णय में संगठित ऑनलाइन गेमिंग गतिविधियों और फैंटेसी स्पोर्ट्स से उत्पन्न एकशनएबल क्लेमस पर

सट्टेबाजी और जुए की श्रेणी में लगाए गए **GST** को चुनौती देने वाली याचिकाओं को खारिज कर दिया।

- The court reasoned that even if online gaming involves skill, there was substantial money involved and an uncertainty at stake on the outcome.

न्यायालय ने कहा कि भले ही ऑनलाइन गेमिंग में कौशल शामिल हो, किन्तु उसमें बड़ी धनराशि दांव पर लगती है तथा परिणाम को लेकर अनिश्चितता बनी रहती है।

- "Online gaming activities, including fantasy sports and other games played on digital platforms, involving staking upon uncertain outcomes, constitute betting and gambling for the purpose of **GST** framework," Justice **Mahadevan** pronounced for the Bench.

पीठ की ओर से न्यायमूर्ति **महादेवन** ने कहा, "डिजिटल प्लेटफॉर्म पर खेले जाने वाले फैंटेसी स्पोर्ट्स और अन्य



खेल, जिनमें अनिश्चित परिणामों पर दांव लगाया जाता है, GST ढांचे के उद्देश्य से सट्टेबाजी और जुए की श्रेणी में आते हैं।”

- The Bench also upheld the statutory ban on games like **Rummy** and **Poker**, played online for a wager, bet, money or other stakes.  
पीठ ने ऑनलाइन माध्यम से दांव, शर्त, धनराशि अथवा अन्य दांव पर खेले जाने वाले रम्मी और पोकर जैसे खेलों पर वैधानिक प्रतिबंध को भी बरकरार रखा।
- The court said the States had a duty to maintain public tranquillity and public health, considering the growing problems of addiction and deaths due to financial losses suffered online.  
न्यायालय ने कहा कि ऑनलाइन वित्तीय हानि के कारण बढ़ती लत और मौतों की समस्या को देखते हुए राज्यों का दायित्व है कि वे सार्वजनिक शांति और जनस्वास्थ्य बनाए रखें।
- The court said the **Tamil Nadu** law was based on empirical data collected through a panel chaired by a former **Madras High Court** judge.  
न्यायालय ने कहा कि तमिलनाडु का कानून मद्रास उच्च न्यायालय के पूर्व न्यायाधीश की अध्यक्षता वाले पैनल द्वारा संकलित अनुभवजन्य आंकड़ों पर आधारित था।
- The court rejected the online gaming companies' argument comparing online games of “skill” with **horse-racing**.  
न्यायालय ने ऑनलाइन गेमिंग कंपनियों द्वारा “कौशल” आधारित ऑनलाइन खेलों की तुलना घुड़दौड़ से करने वाले तर्क को अस्वीकार कर दिया।
- They had argued that the apex court had categorised horse-racing as a game of skill.  
उन्होंने तर्क दिया था कि शीर्ष न्यायालय ने घुड़दौड़ को कौशल का खेल माना था।
- Justice **Pardiwala** responded in the judgment that horse-races and wagers upon them were heavily regulated by the State, and there cannot be a comparison between the two.  
न्यायमूर्ति पारदीवाला ने निर्णय में कहा कि घुड़दौड़ और उस पर लगाए जाने वाले दांव राज्य द्वारा कड़े नियमन के अधीन होते हैं, इसलिए दोनों की तुलना नहीं की जा सकती।
- “In the present case, betting on online games of skill is posing a threat to the State and wellbeing of the masses. Such betting would not enjoy immunity merely because it is taking place in a game of skill,” the court said.  
न्यायालय ने कहा, “वर्तमान मामले में कौशल आधारित ऑनलाइन खेलों पर सट्टेबाजी राज्य और आम जनता के कल्याण के लिए खतरा उत्पन्न कर रही है। केवल इसलिए कि यह कौशल के खेल में हो रही है, इसे प्रतिरक्षा प्राप्त नहीं हो सकती।”
- The court said that while it may be true that games of skill may not be covered by the expression ‘gambling’, it was wrong to say that betting on games of skill would be out of the competence of the State legislature.  
न्यायालय ने कहा कि यह सही हो सकता है कि कौशल के खेल ‘जुआ’ की परिभाषा में न आते हों, किन्तु यह कहना गलत होगा कि कौशल के खेलों पर सट्टेबाजी राज्य विधानमंडल के अधिकार क्षेत्र से बाहर है।
- “The earlier decision on horse-racing has no relevance to the case at hand. The entire process of horse racing and wagering was highly regulated and organised, which is very different from the uncertainty and veil of invisibility associated with online gaming activities, whether of skill or chance,” the court said.  
न्यायालय ने कहा, “घुड़दौड़ पर पूर्व निर्णय का वर्तमान मामले से कोई संबंध नहीं है। घुड़दौड़ और उस पर सट्टेबाजी की पूरी प्रक्रिया अत्यधिक विनियमित और संगठित होती है, जो कौशल या संयोग आधारित ऑनलाइन गेमिंग गतिविधियों से जुड़ी अनिश्चितता और अदृश्यता से पूरी तरह भिन्न है।”
- The court allowed the appeals filed by the Governments of **Tamil Nadu** and **Karnataka** while setting aside the decisions of the **Madras** and **Karnataka High Courts** striking down the laws banning online gaming activities.  
न्यायालय ने ऑनलाइन गेमिंग गतिविधियों पर प्रतिबंध लगाने वाले कानूनों को निरस्त करने वाले मद्रास और कर्नाटक उच्च न्यायालयों के निर्णयों को रद्द करते हुए तमिलनाडु और कर्नाटक सरकारों द्वारा दायर अपीलों को स्वीकार कर लिया।



## Nvidia to spend \$150 bn annually in Taiwan: CEO



Big plans: Nvidia CEO Jensen Huang speaks at the company-wide convention in Taipei. AFP

CS III: Economy

Reuters

TAIPEI

Nvidia's chief executive said on Wednesday the chip company plans to invest around \$150 billion a year in Taiwan, terming it the "epicentre" of the AI revolution and predicting it will be the world's tech manufacturing hub for a long time.

"Four years ago, five years ago, Nvidia was spending about 10, 15 billion dollars a year in Taiwan. Now we're spending 100, going to 150 billion dollars in Taiwan each year," CEO Jensen Huang said at a launch celebration in Taipei for the \$5 trillion chipmaker's planned Taiwan headquarters.

### Getting closer to TSMC

The project will break ground this year and aims to be operational in 2030, Huang said. He did not provide a timeframe for the number of years the company plans to invest \$150 billion. The Taiwan headquarters will bring Nvidia closer to TSMC, the world's largest contract chipmaker, which makes many of the advanced semiconductors powering the trend towards AI and is a major supplier to the U.S. tech giant.

It will also help the world's most valuable company boost its alliances with other manufacturing partners, including Foxconn, Wistron and Quanta Computer, which all play key roles in the build-out of AI servers and infrastructure. "Taiwan is booming," Huang said on stage to a crowd, including his family, around 1,000 employees and Taipei Mayor Chiang Wan-an. He said Nvidia planned to employ 4,000 people at the new site.

"Taiwan is the epicentre of the AI revolution. This is where the chips come, packaging comes, this is where the systems are made, this is where AI supercomputers were created.

"The number of partners we work here in Taiwan, incredible."

Huang was born in the southern city of Tainan, Taiwan's historic capital, and Wednesday's launch was attended by his parents, and his wife, daughter and son.

He emigrated to the United States at the age of 9 and has somewhat of a rockstar status in Taiwan, where his every move is followed closely.

Earlier this month Huang was part of the delegation that accompanied U.S. President Donald Trump on a trip to Beijing for a summit with Chinese President Xi Jinping.

Taiwan plays a pivotal role in the global AI supply chain for companies including Nvidia and Apple, and its position is anchored by TSMC.

Underscoring the significance of Taiwan, Advanced Micro Devices said last week it would invest more than \$10 billion in Taiwan's AI sector to deepen strategic partnerships and expand its capacity to build and assemble advanced AI chips.

Nvidia made history late last year when it became the first company to reach \$5 trillion in market value, cementing its place at the centre of the global AI boom, and Huang said Wednesday it will be worth even more in three to five years.

## 28M. Nvidia to spend \$150 bn annually in Taiwan: CEO एनवीडिया ताइवान में प्रतिवर्ष 150 अरब डॉलर खर्च करेगा: CEO

• Nvidia's chief executive said on Wednesday the chip company plans to invest around \$150 billion a year in Taiwan, terming it the "epicentre" of the AI revolution and predicting it will be the world's tech manufacturing hub for a long time.

एनवीडिया के मुख्य कार्यकारी अधिकारी ने बुधवार को कहा कि चिप कंपनी ताइवान में प्रतिवर्ष लगभग 150 अरब डॉलर निवेश करने की योजना बना रही है। उन्होंने इसे AI क्रांति का "केंद्र" बताया और कहा कि यह लंबे समय तक विश्व का तकनीकी विनिर्माण केंद्र बना रहेगा।

• "Four years ago, five years ago, Nvidia was spending about 10, 15 billion dollars a year in Taiwan. Now we're spending 100, going to 150 billion dollars in Taiwan each year," CEO Jensen Huang said at a launch celebration in Taipei for the \$5 trillion chipmaker's planned Taiwan headquarters.

CEO जेनसन हुआंग ने ताइपेई में 5 ट्रिलियन डॉलर मूल्य वाली चिप निर्माता कंपनी के प्रस्तावित ताइवान मुख्यालय के उद्घाटन समारोह में कहा, "चार या पाँच वर्ष पहले एनवीडिया ताइवान में प्रतिवर्ष लगभग 10 से 15 अरब डॉलर खर्च कर रही थी। अब हम 100 अरब डॉलर खर्च कर रहे हैं और इसे बढ़ाकर 150 अरब डॉलर प्रतिवर्ष करने जा रहे हैं।"

### Getting closer to TSMC TSMC के और निकट पहुँचना

• The project will break ground this year and aims to be operational in 2030, Huang said.

हुआंग ने कहा कि इस परियोजना का निर्माण कार्य इस वर्ष प्रारंभ होगा और इसे 2030 तक चालू करने का लक्ष्य है।

• He did not provide a timeframe for the number of years the company plans to invest \$150 billion.

उन्होंने यह नहीं बताया कि कंपनी कितने वर्षों तक 150 अरब डॉलर का निवेश करेगी।

• The Taiwan headquarters will bring Nvidia closer to TSMC, the world's largest contract chipmaker, which makes many of the advanced semiconductors powering the trend towards AI and is a major supplier to the U.S. tech giant.

ताइवान मुख्यालय एनवीडिया को विश्व की सबसे बड़ी कॉन्ट्रैक्ट चिप निर्माता कंपनी TSMC के और निकट ले आएगा, जो AI प्रवृत्ति को शक्ति देने वाले कई उन्नत सेमीकंडक्टर्स बनाती है और अमेरिकी तकनीकी दिग्गज की प्रमुख आपूर्तिकर्ता है।

• It will also help the world's most valuable company boost its alliances with other manufacturing partners, including Foxconn, Wistron and Quanta Computer, which all play key roles in the build-out of AI servers and infrastructure.

यह विश्व की सबसे मूल्यवान कंपनी को Foxconn, Wistron और Quanta Computer जैसे अन्य विनिर्माण साझेदारों के साथ अपने गठबंधनों को मजबूत करने में भी सहायता करेगा, जो AI सर्वर और अवसंरचना निर्माण में महत्वपूर्ण भूमिका निभाते हैं।

• "Taiwan is booming," Huang said on stage to a crowd, including his family, around 1,000 employees and Taipei Mayor Chiang Wan-an.

हुआंग ने मंच से अपने परिवार, लगभग 1,000 कर्मचारियों और ताइपेई के मेयर चियांग वान-आन सहित उपस्थित लोगों से कहा, "ताइवान तेज़ी से प्रगति कर रहा है।"

• He said Nvidia planned to employ 4,000 people at the new site.

उन्होंने कहा कि एनवीडिया नई साइट पर 4,000 लोगों को रोजगार देने की योजना बना रही है।



- “Taiwan is the epicentre of the **AI revolution**. This is where the chips come, packaging comes, this is where the systems are made, this is where AI supercomputers were created.”  
“ताइवान **AI क्रांति** का केंद्र है। यहीं चिप्स बनते हैं, पैकेजिंग होती है, यहीं प्रणालियाँ तैयार होती हैं और यहीं AI सुपरकंप्यूटर बनाए गए हैं।”
- “The number of partners we work here in Taiwan, incredible.”  
“ताइवान में हमारे साथ कार्य करने वाले साझेदारों की संख्या अद्भुत है।”
- Huang was born in the southern city of **Tainan**, Taiwan's historic capital, and Wednesday's launch was attended by his parents, and his wife, daughter and son.  
हुआंग का जन्म ताइवान की ऐतिहासिक राजधानी दक्षिणी शहर **ताइनान** में हुआ था और बुधवार के कार्यक्रम में उनके माता-पिता, पत्नी, पुत्री और पुत्र उपस्थित थे।
- He emigrated to the **United States** at the age of 9 and has somewhat of a rockstar status in Taiwan, where his every move is followed closely.  
वे 9 वर्ष की आयु में **संयुक्त राज्य अमेरिका** चले गए थे और ताइवान में उन्हें एक रॉकस्टार जैसी लोकप्रियता प्राप्त है, जहाँ उनकी हर गतिविधि पर करीबी नज़र रखी जाती है।
- Earlier this month Huang was part of the delegation that accompanied U.S. President **Donald Trump** on a trip to **Beijing** for a summit with Chinese President **Xi Jinping**.  
इस महीने की शुरुआत में हुआंग उस प्रतिनिधिमंडल का हिस्सा थे जो अमेरिकी राष्ट्रपति **डोनाल्ड ट्रंप** के साथ चीनी राष्ट्रपति **शी जिनपिंग** से शिखर वार्ता हेतु **बीजिंग** गया था।
- Taiwan plays a pivotal role in the global **AI supply chain** for companies including **Nvidia** and **Apple**, and its position is anchored by **TSMC**.  
ताइवान **एनवीडिया** और **एप्पल** जैसी कंपनियों की वैश्विक **AI आपूर्ति श्रृंखला** में महत्वपूर्ण भूमिका निभाता है, और इसकी स्थिति को **TSMC** मजबूत आधार प्रदान करती है।
- Underscoring the significance of Taiwan, **Advanced Micro Devices** said last week it would invest more than **\$10 billion** in Taiwan's AI sector to deepen strategic partnerships and expand its capacity to build and assemble advanced AI chips.  
ताइवान के महत्व को रेखांकित करते हुए **Advanced Micro Devices** ने पिछले सप्ताह कहा कि वह रणनीतिक साझेदारियों को मजबूत करने और उन्नत AI चिप्स के निर्माण एवं संयोजन क्षमता बढ़ाने हेतु ताइवान के AI क्षेत्र में **10 अरब डॉलर** से अधिक का निवेश करेगी।
- **Nvidia** made history late last year when it became the first company to reach **\$5 trillion** in market value, cementing its place at the centre of the global AI boom, and Huang said Wednesday it will be worth even more in three to five years.  
पिछले वर्ष के अंत में **एनवीडिया** ने इतिहास रचते हुए **5 ट्रिलियन डॉलर** के बाजार मूल्य तक पहुँचने वाली पहली कंपनी बनने का गौरव प्राप्त किया, जिससे वैश्विक AI उछाल के केंद्र में उसकी स्थिति और मजबूत हुई।  
बुधवार को हुआंग ने कहा कि आने वाले तीन से पाँच वर्षों में इसका मूल्य और अधिक बढ़ेगा।

<b>GS Paper III: Science and Technology</b>		<b>28 May 2026</b>
<b>TOPICS COVERED</b>		
<b>28M</b>	<b>Bengaluru passenger tests negative for Ebola</b> बेंगलुरु के यात्री की इबोला जांच रिपोर्ट नेगेटिव आई	
<b>28M</b>	<b>Critical sectors must have quantum-safe encryption: task force</b> महत्वपूर्ण क्षेत्रों में क्वांटम-सुरक्षित एन्क्रिप्शन होना चाहिए: टास्क फोर्स	
<b>28M</b>	<b>Whole body scans: why investors love them but doctors hate them</b> संपूर्ण शरीर स्कैन: निवेशकों को क्यों पसंद हैं लेकिन डॉक्टर इन्हें क्यों नापसंद करते हैं	
<b>28M</b>	<b>Why does gold never rust? Its surface may have the clue</b> सोना कभी जंग क्यों नहीं खाता? इसका सतही भाग इसका संकेत दे सकता है	
<b>28M</b>	<b>QUIZ</b>	
<b>28M</b>	<b>The Ebola species with no vaccine</b>	



## Critical sectors must have quantum-safe encryption: task force

GS III: S&T  
Jacob Koshy  
NEW DELHI

A task force constituted by the Department of Science & Technology (DST) has recommended that India's critical sectors – government, defence, power, telecom, transport, and banking and finance – begin a phased switch to post-quantum cryptography (PQC), warning that the encryption now protecting the country's most sensitive data could one day be broken by quantum computers.

Failure to act within the current window, the report warns, "may result in irreversible compromise of confidential data, erosion of trust in digital governance, exposure of financial systems, and forced emergency migration under crisis conditions".

PQC refers to a new generation of encryption algorithms designed to run on ordinary computers but engineered to withstand attacks from future quantum machines, which are expected to be able to crack the public-key cryptography that today secures everything from bank transactions to government communications. Quantum computers, unconstrained by the binary logic underlying conventional computers,

**Failure to act within current window may result in compromise of confidential data, says report**

can in theory, perform demanding tasks in a fraction of the time. However, they have yet to prove themselves in practice.

The task force is chaired by Rajkumar Upadhyay, chief executive of the Centre for Development of Telematics (C-DOT), with Manindra Agrawal, Director of IIT Kanpur, as co-chair. Its report was prepared under the National Quantum Mission (NQM).

The NQM, approved by the Union Cabinet in April 2023, carries a ₹6,003.65-crore outlay through 2030-31 and operates four thematic hubs at the IISc and the IITs to advance quantum computing, communication, sensing and materials.

The report sets out a tiered migration calendar. Critical Information Infrastructure (CII) sectors are placed on an accelerated track: laying foundations by 2027, migrating high-priority systems by 2028, and achieving full PQC adoption by 2029. Other enterprises are given a slightly more relaxed schedule.

**PQC** एन्क्रिप्शन एल्गोरिद्म की नई पीढ़ी को संदर्भित करता है, जिसे सामान्य कंप्यूटरों पर चलने हेतु बनाया गया है, किन्तु इसे भविष्य की क्वांटम मशीनों के हमलों का सामना करने योग्य भी बनाया गया है। माना जाता है कि ये क्वांटम मशीनें वर्तमान में बैंक लेन-देन से लेकर सरकारी संचार तक की सुरक्षा करने वाली सार्वजनिक-कुंजी क्रिप्टोग्राफी को तोड़ सकती हैं।

- Quantum computers, unconstrained by the binary logic underlying conventional computers, can in theory, perform demanding tasks in a fraction of the time.  
क्वांटम कंप्यूटर, पारंपरिक कंप्यूटरों की द्विआधारी तर्क प्रणाली की सीमाओं से मुक्त होकर, सिद्धांततः अत्यंत जटिल कार्य बहुत कम समय में कर सकते हैं।

**28M. Bengaluru passenger tests negative for Ebola**  
बंगलुरु के यात्री की इबोला जांच रिपोर्ट नेगेटिव आई

**28M. Critical sectors must have quantum-safe encryption: task force**

**महत्वपूर्ण क्षेत्रों में क्वांटम-सुरक्षित एन्क्रिप्शन होना चाहिए: टास्क फोर्स**

- A task force constituted by the **Department of Science & Technology (DST)** has recommended that India's critical sectors — **government, defence, power, telecom, transport, and banking and finance** — begin a phased switch to **post-quantum cryptography (PQC)**, warning that the encryption now protecting the country's most sensitive data could one day be broken by **quantum computers**.

**विज्ञान एवं प्रौद्योगिकी विभाग (DST)** द्वारा गठित एक टास्क फोर्स ने सिफारिश की है कि भारत के महत्वपूर्ण क्षेत्र — **सरकार, रक्षा, ऊर्जा, दूरसंचार, परिवहन तथा बैंकिंग एवं वित्त** — चरणबद्ध तरीके से **पोस्ट-क्वांटम क्रिप्टोग्राफी (PQC)** अपनाना प्रारम्भ करें। टास्क फोर्स ने चेतावनी दी कि वर्तमान में देश के अत्यंत संवेदनशील डेटा की सुरक्षा करने वाला एन्क्रिप्शन भविष्य में **क्वांटम कंप्यूटरों** द्वारा तोड़ा जा सकता है।

- Failure to act within the current window, the report warns, "may result in irreversible compromise of confidential data, erosion of trust in digital governance, exposure of financial systems, and forced emergency migration under crisis conditions".

रिपोर्ट ने चेतावनी दी कि वर्तमान समय-सीमा के भीतर कार्रवाई न करने पर "गोपनीय डेटा की अपरिवर्तनीय क्षति, डिजिटल शासन में विश्वास का हास, वित्तीय प्रणालियों की असुरक्षा तथा संकट की स्थिति में मजबूरन आपातकालीन परिवर्तन" जैसी परिस्थितियाँ उत्पन्न हो सकती हैं।

- PQC** refers to a new generation of encryption algorithms designed to run on ordinary computers but engineered to withstand attacks from future quantum machines, which are expected to be able to crack the public-key cryptography that today secures everything from bank transactions to government communications.



- However, they have yet to prove themselves in practice.  
हालाँकि, व्यावहारिक रूप से उन्हें अभी अपनी क्षमता सिद्ध करनी बाकी है।
- The task force is chaired by **Rajkumar Upadhyay**, chief executive of the **Centre for Development of Telematics (C-DOT)**, with **Manindra Agrawal**, Director of IIT Kanpur, as co-chair.  
इस टास्क फोर्स की अध्यक्षता **सेंटर फॉर डेवलपमेंट ऑफ टेलीमैटिक्स (C-DOT)** के मुख्य कार्यकारी अधिकारी **राजकुमार उपाध्याय** कर रहे हैं, जबकि **IIT कानपुर** के निदेशक **मनीन्द्र अग्रवाल** इसके सह-अध्यक्ष हैं।
- Its report was prepared under the **National Quantum Mission (NQM)**.  
इसकी रिपोर्ट **राष्ट्रीय क्वांटम मिशन (NQM)** के अंतर्गत तैयार की गई है।
- The **NQM**, approved by the Union Cabinet in **April 2023**, carries a **₹6,003.65-crore** outlay through **2030–31** and operates four thematic hubs at the **IISc** and the **IITs** to advance quantum computing, communication, sensing and materials.  
**NQM**, जिसे **अप्रैल 2023** में केंद्रीय मंत्रिमंडल ने स्वीकृति दी थी, के लिए **2030–31** तक **₹6,003.65 करोड़** का प्रावधान किया गया है। यह **IISc** और विभिन्न **IITs** में चार थीमैटिक हब संचालित करता है, जिनका उद्देश्य क्वांटम कंप्यूटिंग, संचार, सेंसिंग और सामग्री विज्ञान को आगे बढ़ाना है।
- The report sets out a tiered migration calendar.  
रिपोर्ट में चरणबद्ध परिवर्तन की समय-सारणी निर्धारित की गई है।
- **Critical Information Infrastructure (CII)** sectors are placed on an accelerated track: laying foundations by **2027**, migrating high-priority systems by **2028**, and achieving full **PQC** adoption by **2029**.  
**महत्वपूर्ण सूचना अवसंरचना (CII)** क्षेत्रों को त्वरित समय-सीमा पर रखा गया है: **2027** तक आधारभूत तैयारी, **2028** तक उच्च-प्राथमिकता प्रणालियों का स्थानांतरण, तथा **2029** तक पूर्ण **PQC** अपनाने का लक्ष्य निर्धारित किया गया है।
- Other enterprises are given a slightly more relaxed schedule.  
अन्य उद्यमों को अपेक्षाकृत अधिक लचीली समय-सारणी दी गई है।



# Whole body scans: why investors love them but doctors hate them

Elective whole-body MRI screening lacks evidence of mortality or quality-of-life benefit and may cause harm through overdiagnosis, unnecessary procedures, and psychological distress; no major medical society recommends it for the general public, but the commercial sector has only grown

CS III, S&T  
Narayana Subramaniam

**W**hen doctors express scepticism about whole-body scanning, a predictable counter-argument surfaces on social media within hours. Physicians, the theory goes, have a vested interest in keeping you undiagnosed. Healthy patients do not fill hospital beds. Early detection threatens the treatment economy and the doctor is the last person you should trust to tell you whether to scan. It is a compelling narrative.

It is also precisely backwards. India now has a rapidly growing market for direct-to-consumer body scanning. Providers offer packages combining ultra-low-dose CT, full-body MRI, DEXA scans, blood biomarkers, and AI-generated health scores – all without a clinical referral, all marketed to urban professionals who want to know if something is wrong before a health calamity hits. The incentive structure is not to keep you healthy and out of the system. It is to bring you into a parallel one, charge you at the door, and generate findings that justify further investigation.

The metric these companies report is the number of abnormalities identified – not disease states confirmed, not findings that were clinically actionable, not conditions that required treatment. No company publishes outcome data showing their customers live longer. Yet all are growing rapidly.

The public conspiracy theory gets the incentives wrong in another way, too. When a scan returns an ambiguous finding – a nodule, a cyst, or a vascular irregularity, say – the patient does not stay home. They see specialists, undergo follow-up imaging, possibly biopsies, occasionally surgery. Every step generates clinical revenue. The scanning industry does not threaten the treatment economy; it feeds it.

## What the evidence says

Earlier this month, two radiologists from leading American universities published an editorial in *JAMA* making the profession's collective unease plain. Elective whole-body MRI screening lacks evidence of mortality or quality-of-life benefit and may cause harm through overdiagnosis, unnecessary procedures, and psychological distress. No major medical society recommends it for the general population.

But despite a similar warning three years prior, the commercial sector has only grown. Roughly three in ten people who undergo these scans will require follow-ups, most of which will resolve in a finding that needs no treatment.

Patients who enter the scanner feeling well leave feeling like patients, anchored to findings of uncertain significance that may shadow them for years. In effect, the scan has not caught a disease. It has manufactured a worry. This is the paradox at the heart of the industry.

Medicine has always known that oversimplification provides only temporary relief. It does not resolve



India now has a rapidly growing market for direct-to-consumer body scanning. Representative image. ACCURAY/UNSPLASH

uncertainty. Anxiety rooted in the complexity of the body cannot be treated with a protocol that flattens that complexity into a single report.

## Double-edged sword

The standard criticism of whole-body scanning is overdiagnosis, i.e. detecting conditions that would never have caused harm. But there is an opposite failure as well. Covering the entire body in a clinically acceptable scan time requires compromises. Sequences are chosen for breadth, not precision. A dedicated brain MRI with sequences tuned for cerebral arteries is a fundamentally different investigation from the neurological portion of a whole-body scan. One is optimised for what it is looking at. The other is optimised for coverage.

There is currently an active malpractice case in which a patient received a clean whole-body MRI report and suffered a deadly stroke months later. Independent neurologists have alleged that significant narrowing of a major cerebral artery was present but undocumented – i.e. it was treatable but the scan had missed it. The defendants deny the allegations. Whatever the case's legal outcome, it raises a question the industry has not answered: when a whole-body scan tells you nothing is wrong, what exactly has been excluded, and with what confidence?

Any test's usefulness depends almost entirely on whom it is applied to. A test

that is 95% sensitive and 95% specific applied to a population of 10,000, where true disease prevalence is 1%, will generate roughly five false positives for every genuine finding. This is the pre-test probability: the likelihood that disease is present before any test is ordered, estimated from symptoms, history, and risk factors. In a healthy, self-selected population, that probability is lower for nearly everything the scanner is looking for. An industry built on scanning the well is, by definition, built on this gap.

## Overdiagnosis trap

There is a third failure: finding conditions that are real, accurately identified, and still best left undiscovered. Not all diseases require treatment. Not all papillary thyroid cancers in up to 36% of adults who died of entirely unrelated causes – tumours that would never have surfaced clinically. In South Korea, fee-for-service providers began offering thyroid ultrasound as a cheap add-on to government cancer screening visits, though it was never part of official policy.

Thyroid cancer diagnoses rose fifteen-fold between 1993 and 2011. Surgical rates followed. Yet mortality did not budge. Tens of thousands underwent thyroidectomies and acquired lifelong hypothyroidism for a disease that was never going to shorten their lives. The pattern recurs in prostate and kidney cancer. Detecting subclinical disease and

treating it is not always medicine – sometimes it is the harm.

## Where the evidence points

The U.S. National Lung Screening Trial showed that annual low-dose CT reduced lung cancer deaths by roughly 20% compared with chest X-ray in a tightly defined population of heavy smokers. The Dutch-Belgian NELSON trial found a similar benefit against no screening at all. Cardiac calcium scoring carries guideline endorsement from major cardiology societies for adults at intermediate cardiovascular risk, where it resolves genuine uncertainty about whether to start statin therapy.

What all these checks share is specificity: a well-defined disease, a well-defined population, and a protocol built to answer a particular clinical question.

Scanning everyone for everything simultaneously answers no question well. The doctors raising concerns are not protecting a treatment monopoly. They are asking for the same standard applied to any other medical intervention:

evidence that the thing being sold actually helps the people buying it. That is not a conflict of interest. It's the job. (Narayana Subramaniam is Lead Consultant, Head and Neck Surgery and Oncology, Aster Hospitals, and Adjunct Faculty, Indian Institute of Science, Bengaluru. [narayana.subramaniam@gmail.com](mailto:narayana.subramaniam@gmail.com))

**28M. Whole body scans: why investors love them but doctors hate them**  
संपूर्ण शरीर स्कैन: निवेशकों को क्यों पसंद हैं लेकिन डॉक्टर इन्हें क्यों नापसंद करते हैं



- Providers offer packages combining **ultra-low-dose CT, full-body MRI, DEXA scans, blood biomarkers, and AI-generated health scores** — all without a clinical referral, all marketed to urban professionals who want to know if something is wrong before a health calamity hits. सेवा प्रदाता अल्ट्रा-लो-डोज़ CT, फुल-बॉडी MRI, DEXA स्कैन, रक्त बायोमार्कर और AI-निर्मित स्वास्थ्य स्कोर को सम्मिलित करते हुए पैकेज प्रदान करते हैं — यह सब बिना किसी चिकित्सकीय रेफरल के, और मुख्यतः उन शहरी पेशेवरों के लिए प्रचारित किया जाता है जो किसी स्वास्थ्य संकट से पहले संभावित समस्या जानना चाहते हैं।
- The incentive structure is not to keep you healthy and out of the system. इस व्यवस्था का उद्देश्य आपको स्वस्थ रखकर चिकित्सा प्रणाली से बाहर बनाए रखना नहीं है।
- It is to bring you into a parallel one, charge you at the door, and generate findings that justify further investigation. इसका उद्देश्य आपको एक समानांतर व्यवस्था में लाना, प्रारम्भिक शुल्क लेना और ऐसे निष्कर्ष उत्पन्न करना है जो आगे की जाँच को उचित ठहराएँ।
- When a scan returns an ambiguous finding — a nodule, a cyst, or a vascular irregularity, say — the patient does not stay home. जब किसी स्कैन में कोई अस्पष्ट निष्कर्ष — जैसे गांठ, सिस्ट या रक्तवाहिका संबंधी अनियमितता — सामने आती है, तब रोगी घर पर नहीं रहता।
- They see specialists, undergo follow-up imaging, possibly biopsies, occasionally surgery. वे विशेषज्ञ चिकित्सकों से परामर्श लेते हैं, अनुवर्ती इमेजिंग कराते हैं, संभवतः बायोप्सी और कभी-कभी शल्यचिकित्सा भी करवाते हैं।
- The scanning industry does not threaten the treatment economy; it feeds it. स्कैनिंग उद्योग उपचार-आधारित अर्थव्यवस्था के लिए खतरा नहीं है; बल्कि वह उसे पोषित करता है।

### What the evidence says

#### साक्ष्य क्या बताते हैं

- Elective whole-body MRI screening lacks evidence of mortality or quality-of-life benefit and may cause harm through overdiagnosis, unnecessary procedures, and psychological distress. वैकल्पिक पूर्ण-शरीर MRI स्क्रीनिंग के संबंध में मृत्यु-दर कम करने या जीवन-गुणवत्ता सुधारने का पर्याप्त साक्ष्य उपलब्ध नहीं है, और यह अति-निदान, अनावश्यक प्रक्रियाओं तथा मानसिक तनाव के माध्यम से हानि पहुँचा सकती है।
- Roughly three in ten people who undergo these scans will require follow-ups, most of which will resolve in a finding that needs no treatment. इन स्कैनों से गुजरने वाले लगभग प्रत्येक दस में से तीन लोगों को अनुवर्ती जाँच की आवश्यकता पड़ती है, जिनमें से अधिकांश मामलों में ऐसा निष्कर्ष निकलता है जिसके लिए किसी उपचार की आवश्यकता नहीं होती।

### Double-edged sword

#### दोधारी तलवार

- The standard criticism of **whole-body scanning** is **overdiagnosis**, i.e. detecting conditions that would never have caused harm. पूर्ण-शरीर स्कैनिंग की सामान्य आलोचना **अति-निदान (Overdiagnosis)** है, अर्थात् ऐसी स्थितियों का पता लगाना जो कभी हानि नहीं पहुँचातीं।
- A dedicated brain MRI with sequences tuned for cerebral arteries is a fundamentally different investigation from the neurological portion of a whole-body scan. मस्तिष्कीय धमनियों के लिए विशेष रूप से समायोजित अनुक्रमों वाला समर्पित ब्रेन MRI, पूर्ण-शरीर स्कैन के न्यूरोलॉजिकल भाग से मूलतः भिन्न जाँच है।
- There is currently an active malpractice case in which a patient received a clean whole-body MRI report and suffered a deadly stroke months later.



वर्तमान में एक चिकित्सकीय लापरवाही का मामला सक्रिय है, जिसमें एक रोगी को पूर्णतः सामान्य पूर्ण-शरीर MRI रिपोर्ट मिली, किन्तु कुछ महीनों बाद उसे घातक स्ट्रोक हुआ।

- Independent neurologists have alleged that significant narrowing of a major cerebral artery was present but undocumented — i.e. it was treatable but the scan had missed it.  
स्वतंत्र न्यूरोलॉजिस्टों ने आरोप लगाया है कि एक प्रमुख मस्तिष्कीय धमनी में गंभीर संकुचन उपस्थित था, किन्तु उसका उल्लेख नहीं किया गया — अर्थात् उसका उपचार संभव था, परन्तु स्कैन उसे पहचान नहीं पाया।
- This is the **pre-test probability**: the likelihood that disease is present before any test is ordered, estimated from symptoms, history, and risk factors.  
इसे **प्री-टेस्ट प्रॉबेबिलिटी** कहा जाता है: अर्थात् किसी परीक्षण के आदेश से पहले रोग की उपस्थिति की संभावना, जिसका अनुमान लक्षणों, चिकित्सा इतिहास और जोखिम कारकों के आधार पर लगाया जाता है।
- In a healthy, self-selected population, that probability is lower for nearly everything the scanner is looking for.  
स्वस्थ और स्वयं-चयनित जनसंख्या में स्कैनर जिन अधिकांश स्थितियों की खोज करता है, उनके लिए यह संभावना बहुत कम होती है।

### Overdiagnosis trap

#### अति-निदान का जाल

- Autopsy studies from Finland found occult papillary thyroid cancers in up to 36% of adults who died of entirely unrelated causes — tumours that would never have surfaced clinically.  
Finland में किए गए शव-परीक्षण अध्ययनों में पाया गया कि पूर्णतः असंबंधित कारणों से मृत वयस्कों में से 36% तक में छिपे हुए पैपिलरी थायरॉयड कैंसर मौजूद थे — ऐसे ट्यूमर जो कभी चिकित्सकीय रूप से प्रकट नहीं होते।
- In South Korea, fee-for-service providers began offering thyroid ultrasound as a cheap add-on to government cancer screening visits, though it was never part of official policy.  
South Korea में शुल्क-आधारित सेवा प्रदाताओं ने सरकारी कैंसर स्क्रीनिंग के साथ कम लागत वाले अतिरिक्त परीक्षण के रूप में थायरॉयड अल्ट्रासाउंड प्रदान करना प्रारम्भ किया, जबकि यह कभी भी आधिकारिक नीति का भाग नहीं था।



## Why does gold never rust? Its surface may have the clue

CS III, S&T

Vasudevan Mukunth

Gold is one of the least reactive metals. It neither rusts like iron nor tarnishes like silver. In fact, this property has made gold the symbol of permanence worldwide. At the same time, chemists have used gold as a catalyst, including in reactions that involve oxygen. But if gold can accelerate oxidation reactions, why does it not react with oxygen to rust? In a new study in *Physical Review Letters*, Santu Biswas and Matthew Montemore of Tulane University in the U.S. have an answer: its surface.

When an oxidation reaction begins, oxygen molecules must split up into atoms. Gold struggles to make this happen. The researchers examined gold surfaces with two different arrangements of atoms, called Au(100) and Au(110). Normally, these surfaces are not flat because their outermost atoms rearrange themselves into more densely packed roughly hexagonal patterns in a process called surface reconstruction.

**Chemists have used gold as a catalyst for reactions involving oxygen, yet it is unable to react with the gas to oxidise and rust**

They do this because the new arrangement has lower surface energy, which is desirable. (In water, the surface molecules have more energy than in the bulk. This undesirable situation is the source of surface tension.) The researchers wanted to know if this process was responsible for gold's shyness with oxygen. They used density functional theory, a well-known computational method to simulate how atoms and electrons behave, comparing unreconstructed gold surfaces to reconstructed ones. They also estimated the amount of energy an oxygen molecule would need to split apart after being adsorbed to a gold surface. They found that before reconstruction, Au(100) and Au(110) both had a rectangular arrangement of atoms. On these surfaces, the oxygen molecule's dissociation energy was 0.65-0.74 electron-volt (eV, a small unit of energy suitable for atomic settings). But once the surface had reconstructed, the dissociation energy rose well beyond 1 eV.

Further, kinetic modelling suggested that unreconstructed Au(110) had a surface oxygen coverage of 0.4 monolayers within 10 seconds in ambient conditions while a reconstructed surface achieved a small fraction of that over the same period.

Even when the researchers changed the assumptions in the model, reconstruction still suppressed oxidation by roughly nine to 12 orders of magnitude. Mr. Biswas and Mr. Montemore traced these significant effects of reconstruction to the atoms' geometry. When an oxygen molecule breaks apart on a surface with a hexagonal grid of atoms, the gold atoms need to move significantly to accommodate the new bonding arrangements. But they can't move – not with what energy they have anyway – which keeps the oxygen molecule from dissociating. The reported finding could change scientists' understanding of why gold does not react with oxygen. The noble gases are called so because their atoms have a very stable configuration of electrons, and they are disinclined to form bonds with other atoms or molecules without receiving a lot of energy. In gold, the structural arrangement of its atoms in a solid also plays a role. According to Mr. Biswas and Mr. Montemore, their findings may point to a new strategy to design gold catalysts. If researchers can stabilise square or rectangular surface geometries, they may be able to make gold much more reactive in oxidation reactions.

का उपयोग उत्प्रेरक के रूप में किया है, जिनमें ऑक्सीजन से जुड़ी अभिक्रियाएँ भी

शामिल हैं।

- But if **gold** can accelerate oxidation reactions, why does it not react with **oxygen** to rust? लेकिन यदि **सोना** ऑक्सीकरण अभिक्रियाओं को तेज कर सकता है, तो यह **ऑक्सीजन** के साथ अभिक्रिया करके जंग क्यों नहीं खाता?
- In a new study in *Physical Review Letters*, Santu Biswas and Matthew Montemore of Tulane University in the U.S. have an answer: **its surface**. *Physical Review Letters* में प्रकाशित एक नए अध्ययन में अमेरिका के Tulane University के Santu Biswas और Matthew Montemore ने इसका उत्तर दिया है: इसकी सतह।

**28M. Why does gold never rust? Its surface may have the clue**

**सोना कभी जंग क्यों**

**नहीं खाता? इसका**

**सतही भाग इसका**

**संकेत दे सकता है**

- **Gold** is one of the least reactive metals.

**सोना** सबसे कम

अभिक्रियाशील धातुओं में से एक है।

- It neither rusts like **iron** nor tarnishes like **silver**.

यह न तो **लोहे** की तरह जंग खाता है और न ही **चाँदी** की तरह मलिन पड़ता है।

- In fact, **this** property has made **gold** the symbol of permanence worldwide.

वास्तव में, इसी गुण ने **सोने** को विश्वभर में स्थायित्व का प्रतीक बना दिया है।

- At the same time, **chemists** have used **gold** as a catalyst, including in reactions that involve **oxygen**.

साथ ही, रसायनज्ञों ने **सोने**



- When an oxidation reaction begins, **oxygen molecules** must split up into atoms. जब कोई ऑक्सीकरण अभिक्रिया प्रारम्भ होती है, तो **ऑक्सीजन अणुओं** को परमाणुओं में विभाजित होना पड़ता है।
- **Gold struggles to make this happen.**  
सोना इस प्रक्रिया को होने देने में कठिनाई अनुभव करता है।
- The researchers examined **gold surfaces** with two different arrangements of atoms, called **Au(100)** and **Au(110)**.  
शोधकर्ताओं ने परमाणुओं की दो भिन्न व्यवस्थाओं वाली **सोने की सतहों** का अध्ययन किया, जिन्हें **Au(100)** और **Au(110)** कहा जाता है।
- Normally, these surfaces are not flat because their outermost atoms rearrange themselves into more densely packed roughly **hexagonal patterns** in a process called **surface reconstruction**.  
सामान्यतः, ये सतहें समतल नहीं होतीं क्योंकि उनके बाहरी परमाणु स्वयं को अधिक सघन लगभग षट्कोणीय विन्यास में पुनर्व्यवस्थित कर लेते हैं, जिसे **surface reconstruction** कहा जाता है।
- They do this because the new arrangement has lower **surface energy**, which is desirable. वे ऐसा इसलिए करते हैं क्योंकि नई व्यवस्था में **सतही ऊर्जा** कम होती है, जो वांछनीय मानी जाती है।
- (In water, the surface molecules have more energy than in the bulk. (पानी में, सतह के अणुओं में आंतरिक भाग की तुलना में अधिक ऊर्जा होती है।
- This undesirable situation is the source of **surface tension**.) यह अवांछनीय स्थिति ही **पृष्ठ तनाव** का कारण बनती है।)
- They used **density functional theory**, a well-known computational method to simulate how atoms and electrons behave, comparing **unreconstructed gold surfaces** to reconstructed ones.  
उन्होंने **density functional theory** का उपयोग किया, जो परमाणुओं और इलेक्ट्रॉनों के व्यवहार का अनुकरण करने की एक प्रसिद्ध संगणकीय विधि है, और इसके माध्यम से unreconstructed तथा reconstructed **सोने की सतहों** की तुलना की।
- On these surfaces, the **oxygen molecule's dissociation energy** was **0.65-0.74 electron-volt (eV)**, a small unit of energy suitable for atomic settings.  
इन सतहों पर **ऑक्सीजन अणु की विघटन ऊर्जा** **0.65-0.74 electron-volt (eV)** थी, जो परमाणु स्तर की परिस्थितियों के लिए उपयुक्त ऊर्जा की एक छोटी इकाई है।
- But once the surface had reconstructed, the dissociation energy rose well beyond **1 eV**.  
लेकिन जैसे ही सतह का पुनर्निर्माण हुआ, विघटन ऊर्जा बढ़कर **1 eV** से काफी अधिक हो गई।
- Further, **kinetic modelling** suggested that unreconstructed **Au(110)** had a surface oxygen coverage of **0.4 monolayers** within 10 seconds in ambient conditions while a reconstructed surface achieved a small fraction of that over the same period.  
इसके अतिरिक्त, **kinetic modelling** से संकेत मिला कि unreconstructed **Au(110)** ने सामान्य परिस्थितियों में 10 सेकंड के भीतर **0.4 monolayers** का सतही ऑक्सीजन आवरण प्राप्त कर लिया, जबकि reconstructed सतह उसी अवधि में उसका केवल एक छोटा अंश ही प्राप्त कर सकी।
- When an **oxygen molecule** breaks apart on a surface with a hexagonal grid of atoms, the **gold atoms** need to move significantly to accommodate the new bonding arrangements. जब कोई **ऑक्सीजन अणु** परमाणुओं की षट्कोणीय जाली वाली सतह पर विभाजित होता है, तो नए बंधन विन्यास को समायोजित करने के लिए **सोने के परमाणुओं** को काफी हद तक स्थानांतरित होना पड़ता है।
- The **noble gases** are called so because their atoms have a very stable configuration of electrons, and they are disinclined to form bonds with other atoms or molecules without receiving a lot of energy.  
**निष्क्रिय गैसों** को यह नाम इसलिए दिया गया है क्योंकि उनके परमाणुओं में इलेक्ट्रॉनों का अत्यंत स्थिर विन्यास होता है, और वे अधिक ऊर्जा प्राप्त किए बिना अन्य परमाणुओं या अणुओं के साथ बंध बनाने की प्रवृत्ति नहीं रखते।



- If researchers can stabilise square or rectangular surface geometries, they may be able to make **gold** much more reactive in oxidation reactions.  
यदि शोधकर्ता वर्गाकार या आयताकार सतही ज्यामितियों को स्थिर कर सकें, तो वे **सोने** को ऑक्सीकरण अभिक्रियाओं में कहीं अधिक अभिक्रियाशील बना सकते हैं।

#### Answers to May 21 quiz:

1. Condition due to parasitic worms blocking lymphatic system – **Ans: Elephantiasis**
  2. Disease inflicting facial wounds resembling the gnawing of a wolf – **Ans: Lupus**
  3. Bone changes caused by Paget's disease, resembling a lion's features – **Ans: Leontiasis ossea**
  4. Stubborn variant of alopecia areata causing patchy hair loss – **Ans: Ophiasis**
  5. Condition when fingers and toes are highly flexible – **Ans: Arachnodactyly**
- Visual: **Ichthyosis**

#### 28M. QUIZ: 1. Elephantiasis – Condition due to parasitic worms blocking lymphatic system

- **Elephantiasis** is a severe manifestation of **Lymphatic Filariasis**, a neglected tropical disease caused mainly by parasitic worms such as *Wuchereria bancrofti*.
  - These worms damage and block the lymphatic system, leading to swelling of legs, arms, or genitals.
  - According to the World Health Organization and India's Health Ministry, the disease spreads through **mosquito bites**.
  - India has implemented **Mass Drug Administration programmes to eliminate filariasis**. Chronic cases may cause disability, social stigma, and reduced quality of life.

#### 2. Lupus – Disease inflicting facial wounds resembling the gnawing of a wolf

- **Lupus** is an autoimmune disease in which the immune system attacks healthy tissues, affecting skin, joints, kidneys, and other organs.
- The term originates from the Latin word for "wolf" because facial skin lesions were historically thought to resemble wolf bites. The most common form is **Systemic Lupus Erythematosus (SLE)**.
- According to medical research institutions and health agencies, **lupus occurs more frequently in women**.
- **Symptoms include fatigue, joint pain, skin rashes, and inflammation**. Early diagnosis and immunosuppressive treatment help control complications.

#### 3. Leontiasis ossea – Bone changes caused by Paget's disease resembling a lion's features

- **Leontiasis ossea** refers to abnormal thickening and overgrowth of facial and cranial bones, producing a lion-like appearance.
- It may occur in advanced **Paget's disease of bone**, fibrous dysplasia, or other skeletal disorders.
- Paget's disease disrupts normal bone remodelling, causing enlarged and weakened bones. Medical literature explains that skull enlargement can alter facial structure and compress nerves
- Diagnosis is usually done through imaging scans and blood tests.
- Treatment commonly includes **bisphosphonate medicines to regulate abnormal bone metabolism and reduce symptoms**.

#### 4. Ophiasis – Stubborn variant of alopecia areata causing patchy hair loss

- **Ophiasis** is a difficult-to-treat subtype of **Alopecia Areata**, an autoimmune disorder causing hair loss. In this condition, hair loss occurs in a band-like pattern around the sides and back of the scalp.
- The name comes from the Greek word for "snake" because of the pattern's appearance.
- Dermatology research shows that **ophiasis often responds less effectively to standard treatments than ordinary alopecia areata**.



- Treatment options include corticosteroids, topical immunotherapy, and newer immunomodulatory drugs under specialist supervision.

## 5. Arachnodactyly – Condition when fingers and toes are highly flexible

- **Arachnodactyly** is a condition characterized by unusually long, slender, and highly flexible fingers and toes. The term means “spider fingers” in Greek.
- It is commonly associated with genetic disorders such as **Marfan syndrome**, which affects connective tissues of the body
- According to medical genetics research, affected individuals may also experience heart, eye, and skeletal complications. Diagnosis involves physical examination, imaging, and genetic evaluation.

# The Ebola species with no vaccine

The Bundibugyo ebolavirus outbreak in Congo and Uganda has exposed gaps in vaccine preparedness, with no licensed vaccine yet for the rare species; funding constraints, weak commercial incentives, and limited research investment continue to hamper vaccine development for neglected tropical diseases

ISSUE: 5&T

### FULL CONTEXT

Vasudevan Mukunth

The World Health Organization (WHO) declared the Bundibugyo ebolavirus (BDBV) outbreak in the Democratic Republic of the Congo and Uganda to be a public health emergency of international concern on May 17.

The outbreak exposes a critical gap in international vaccine preparedness. There is no licensed vaccine yet for the Bundibugyo species of the ebolavirus because the resources required to develop one have not been mustered and because of the specific economic realities of neglected tropical diseases (NTDs).

#### BSL-4 facilities

To study, develop, and test a vaccine, medical researchers need the virus itself or its genetic sequence to ensure the vaccine's antigens match the circulating strain. In mid-May, the National Institute of Biomedical Research in the Congo and the Central Public Health Laboratories in Uganda delivered this sequence.

Second, to work with a live ebolavirus, scientists need Biosafety Level (BSL) 4 facilities. These are research facilities with the highest level of biological containment, required when dealing with deadly viruses – like ebolavirus and Nipah virus – or viruses that are very easily transmitted or which have no known treatment.

BSL-4 facilities are strongly isolated, with monolithic walls, floors, and ceilings, tightly sealed pipes and wires, multiple sterile rooms with specialised airlocks, negative air pressure (so that a leak causes air to flow into the facility), dedicated ventilation systems, and redundant HEPA filters. All waste from the facility is first sterilised before being disposed of.

Personnel in a BSL-4 facility have to don positive-pressure suits (leak causes air to flow out) and pass through decontamination showers. They also have to undergo rigorous medical tests. There are just over a hundred BSL-4 facilities worldwide, including two in India.

#### Primate trials

To design the vaccine, researchers need to identify which proteins of the virus provoke the antibody responses in the human body. Then, they need to select a platform – the technology that will carry the antigen into the body and present it to the immune system. The options for ebolavirus include viral vectors such as rVSV or ChAdOx1, mRNA-based approaches, and protein subunits.

Finally, the vaccines may be tested in animal models, in particular non-human primates, as they are the gold standard to assess the safety and efficacy of a vaccine against a disease with a mortality rate of 25% to 90%.

Human clinical trials would be better but such an enterprise would be extraordinarily complicated during an ongoing outbreak.

Once a vaccine is ready, manufacturing it will require hundreds of millions of dollars in addition to development costs, including specialised facilities, cold storage and transport chains (at -80° to -60° C), quality control, regulatory approvals, and advance purchase commitments.

Then, at the very last stage of this long pipeline, healthcare workers and public health officials must detect an outbreak early and administer the vaccine to avail its benefits.



Once a vaccine is ready, manufacturing it will require hundreds of millions of dollars in addition to development costs, including specialised facilities, cold storage and transport chains, quality control, regulatory approvals, and advance purchase commitments. GETTY IMAGES

#### What 'neglect' means

The ebolavirus is not a single virus species but a genus with multiple species, including 'Zaire', 'Sudan', 'Bundibugyo', and 'Tai Forest'. If a person has become immune to one species, they are not expected to be sufficiently cross-protected against infection by another species. This is because the different species have different surface proteins, so each outbreak may require species-specific research.

Ebolavirus outbreaks are also sporadic and hard to predict as to their location – which is unlike influenza or COVID-19, which circulate continuously in populations. So by the time an ebolavirus vaccine reaches the third phase of a clinical trial, the outbreak may have already subsided, leaving fewer cases to track for the trial.

The commercial market for ebolavirus vaccines is small and concentrated in lower-income countries, which means the financial incentive for pharmaceutical companies to invest without substantial backing from governments and/or coalitions like Gavi and the Coalition for Epidemic Preparedness Innovations (CEPI) is minimal.

All of the same factors attend to most NTDs, and illustrate what the 'neglect' in their name entails. NTDs are almost always diseases of poor, rural, and politically marginalised populations in the world's tropical and subtropical areas. In fact, these people are neglected – and that's why their diseases are neglected as well.

#### Two declarations

Historically, funding for infectious diseases was dominated by just three: HIV/AIDS, tuberculosis, and malaria. The situation changed somewhat following the London Declaration in 2012 and the Kigali Declaration in 2022.

With the participation of the WHO, the World Bank, 13 pharmaceutical companies, and representatives from

seven countries, the London Declaration committed to eliminate or control 10 NTDs by 2020 with more than \$785 million for research and development. The Kigali Declaration, sponsored by Rwanda, aimed to reinvigorate commitments to eliminate the NTDs; at a June 23, 2022, event, the country reported a pledge of \$1.5 billion by various governments, pharmaceutical companies, and NGOs.

However, R&D has often been patchy, compounded by weak healthcare delivery and poor (disease) surveillance.

Governments have also often prioritised diseases afflicting patients in richer countries. But the worst is perhaps market failure, as affected populations have little purchasing power while developing a single vaccine these days costs more than a billion dollars. The vaccines also cannot be sold for much in countries most of whose populations live on two dollars a day.

Many NTDs are caused by eukaryotic parasites, i.e. worms and protozoa, which develop in multiple stages across multiple hosts, complicating researchers' efforts to identify a stable antigen for vaccines to target. The immune system also struggles to confer lasting protection against infections by these organisms, making them categorically harder to vaccinate against than, say, measles.

#### Local response

At this time, there are two licensed Ebolavirus vaccines – Ervebo and a combination of Zabdono and Mvabea – but they are both for the 'Zaire' species. The Bundibugyo species is also much rarer, having caused only two outbreaks before the current one. As a result, research on it hasn't drawn significant investments.

Promising Bundibugyo vaccine candidates are currently in preclinical or early development, with the WHO and the Oxford Vaccine Group estimating at least six months more to manufacture

enough doses for a small clinical trial.

Taken together, the local healthcare systems – already strained by conflict and climate change – are left with reliably detecting cases, isolating patients, contact-tracing, safe burial practices, and community engagement to manage the Bundibugyo ebolavirus outbreak.

#### Causes for hope

That said, in the meantime, the Road Map 2021-2030 of the WHO has specified eliminate-by targets for particular NTDs and has been pushing domestically led programmes that combine mass drug administration, vector control, sanitation, and surveillance.

In February this year, the African Union launched 'ACHIEVE Africa', a programme to build indigenous R&D for vaccine development for NTDs that western manufacturers have overlooked. Using the help of such programmes, the African Union plans to manufacture 60% of the continent's vaccine needs by 2040. Likewise, CEPI has increasingly funded work on pathogens that currently present weak commercial incentives.

Also earlier this year, India initiated phase I human clinical trials for an indigenous vaccine against Kysanur forest disease, a regional NTD. Hubs established in South Africa and Senegal to manufacture mRNA vaccines for COVID-19 are being repurposed to produce experimental vaccines for NTDs, including leishmaniasis.

Brazil and Cuba have built state manufacturing capacity to address diseases that multinational firms have skipped (although this may no longer be a priority in Cuba, which has faced prolonged fuel and medicine shortages thanks to crippling U.S. embargoes).

But for now, the Bundibugyo ebolavirus outbreak continues to unfold against infrastructure and financing gaps and a broader system that struggles to respond to diseases of the poor and the peripheral.

### THE GIST

Scientists need BSL-4 facilities and non-human primate trials to safely study and test vaccines against deadly viruses like ebolavirus.

Different ebolavirus species have different surface proteins, meaning immunity against one species may not sufficiently protect against another.

Local healthcare systems are relying on early detection, isolation, contact-tracing, safe burial practices, and community engagement to manage the outbreak.



## 28M. The Ebola species with no vaccine

### टीका रहित इबोला प्रजाति

- The **Bundibugyo ebolavirus outbreak in Congo and Uganda** has exposed gaps in **vaccine preparedness**, with no licensed vaccine yet for the **rare species**; **funding constraints**, **weak commercial incentives**, and **limited research investment** continue to hamper vaccine development for **neglected tropical diseases**

कांगो और युगांडा में **Bundibugyo ebolavirus** प्रकोप ने टीका तैयारी (**vaccine preparedness**) में कमियों को उजागर किया है, जहाँ अभी तक इस **दुर्लभ प्रजाति** के लिए कोई लाइसेंस प्राप्त टीका उपलब्ध नहीं है; **वित्तीय बाधाएँ**, कमजोर वाणिज्यिक प्रोत्साहन, और सीमित अनुसंधान निवेश मिलकर **उपेक्षित उष्णकटिबंधीय रोगों (neglected tropical diseases)** के लिए टीका विकास में बाधा डालते हैं।

- The **World Health Organization (WHO)** declared the **Bundibugyo ebolavirus (BDBV)** outbreak in the **Democratic Republic of the Congo and Uganda** to be a **public health emergency of international concern** on May 17.

विश्व स्वास्थ्य संगठन (WHO) ने **Democratic Republic of the Congo** और **Uganda** में **Bundibugyo ebolavirus (BDBV)** के प्रकोप को 17 मई को **अंतरराष्ट्रीय चिंता का सार्वजनिक स्वास्थ्य आपातकाल** घोषित किया।

- There is no licensed vaccine yet for the Bundibugyo species of the ebolavirus** because the resources required to develop one have not been mustered and because of the specific economic realities of **neglected tropical diseases (NTDs)**.  
अभी तक **Bundibugyo इबोला वायरस प्रजाति** के लिए कोई लाइसेंस प्राप्त टीका उपलब्ध नहीं है, क्योंकि इसे विकसित करने के लिए आवश्यक संसाधन जुटाए नहीं गए हैं तथा **उपेक्षित उष्णकटिबंधीय रोगों** की विशिष्ट आर्थिक वास्तविकताओं के कारण भी ऐसा नहीं हो पाया है।

### BSL-4 Facilities

#### BSL-4 सुविधाएँ

- Second, to work with a live **ebolavirus**, scientists need **Biosafety Level (BSL)-4 facilities**.  
दूसरा, जीवित **इबोला वायरस** के साथ कार्य करने के लिए वैज्ञानिकों को **Biosafety Level (BSL)-4 सुविधाओं** की आवश्यकता होती है।
- These are research facilities with the highest level of biological containment, required when dealing with deadly viruses — like ebolavirus and Nipah virus — or viruses that are very easily transmitted or which have no known treatment.**  
ये अनुसंधान सुविधाएँ जैविक **नियंत्रण** के सर्वोच्च स्तर वाली होती हैं, जिनकी आवश्यकता **इबोला वायरस** और **निपाह वायरस** जैसे घातक वायरस या अत्यधिक संक्रामक अथवा जिनका कोई ज्ञात उपचार नहीं है, ऐसे वायरस के साथ कार्य करते समय होती है।
- BSL-4 facilities are strongly isolated, with monolithic walls, floors, and ceilings, tightly sealed pipes and wires, multiple sterile rooms with specialised airlocks, negative air pressure (so that a leak causes air to flow into the facility), dedicated ventilation systems, and redundant HEPA filters.**  
BSL-4 सुविधाएँ अत्यधिक पृथक होती हैं, जिनमें एकीकृत दीवारें, फर्श और छत, पूरी तरह सीलबंद पाइप एवं तार, विशेष एयरलॉक सहित अनेक निष्कलुष कक्ष, नकारात्मक वायु दाब (ताकि रिसाव होने पर हवा सुविधा के भीतर प्रवाहित हो), समर्पित वेंटिलेशन प्रणाली तथा अतिरिक्त HEPA फ़िल्टर होते हैं।
- All waste from the facility is first sterilised before being disposed of.**  
सुविधा से निकलने वाला सभी अपशिष्ट पहले निष्फल किया जाता है, उसके बाद ही उसका निपटान किया जाता है।
- Personnel in a BSL-4 facility have to don positive-pressure suits (leak causes air to flow out) and pass through decontamination showers.**



BSL-4 सुविधा में कार्यरत कर्मियों को पॉजिटिव-प्रेसर सूट (जिसमें रिसाव होने पर हवा बाहर की ओर जाती है) पहनना होता है तथा डिफेंडमिनेशन शॉवर्स से गुजरना होता है।

- They also have to undergo rigorous medical tests. उन्हें कठोर चिकित्सा परीक्षणों से भी गुजरना पड़ता है।
- There are just over a hundred BSL-4 facilities worldwide, including two in India. विश्वभर में केवल लगभग सौ से थोड़ा अधिक BSL-4 सुविधाएँ हैं, जिनमें से दो भारत में स्थित हैं।

## Primate Trials

### प्राइमेट परीक्षण

- To design the vaccine, researchers need to identify which proteins of the virus provoke the antibody responses in the human body. टीका तैयार करने के लिए शोधकर्ताओं को यह पहचानना होता है कि वायरस के कौन से प्रोटीन मानव शरीर में एंटीबॉडी प्रतिक्रिया उत्पन्न करते हैं।

## What 'neglect' means

### 'उपेक्षा' का अर्थ

- The **ebolavirus** is not a single virus species but a genus with multiple species, including 'Zaire', 'Sudan', 'Bundibugyo', and 'Taï Forest'. इबोला वायरस कोई एकल वायरस प्रजाति नहीं है, बल्कि एक वंश (genus) है जिसमें 'Zaire', 'Sudan', 'Bundibugyo' और 'Taï Forest' जैसी कई प्रजातियाँ शामिल हैं।
- If a person has become immune to one species, they are not expected to be sufficiently cross-protected against infection by another species. यदि कोई व्यक्ति एक प्रजाति के प्रति प्रतिरक्षित हो जाता है, तो उससे यह अपेक्षा नहीं की जाती कि वह दूसरी प्रजाति के संक्रमण से पर्याप्त रूप से सुरक्षित रहेगा।
- This is because the different species have different surface proteins, so each outbreak may require species-specific research. ऐसा इसलिए है क्योंकि विभिन्न प्रजातियों के सतही प्रोटीन अलग-अलग होते हैं, इसलिए प्रत्येक प्रकोप के लिए प्रजाति-विशिष्ट अनुसंधान की आवश्यकता हो सकती है।
- The commercial market for ebolavirus vaccines is small and concentrated in lower-income countries, which means the financial incentive for pharmaceutical companies to invest without substantial backing from governments and/or coalitions like Gavi and the Coalition for Epidemic Preparedness Innovations (CEPI) is minimal. इबोला वायरस टीकों का व्यावसायिक बाजार छोटा है और यह मुख्यतः निम्न-आय वाले देशों में केंद्रित है, जिसका अर्थ है कि सरकारों या Gavi तथा Coalition for Epidemic Preparedness Innovations (CEPI) जैसी संस्थाओं के पर्याप्त समर्थन के बिना फार्मास्यूटिकल कंपनियों के लिए निवेश का वित्तीय प्रोत्साहन बहुत कम है।
- NTDs are almost always diseases of poor, rural, and politically marginalised populations in the world's tropical and subtropical areas. NTDs लगभग हमेशा दुनिया के उष्णकटिबंधीय और उपोष्णकटिबंधीय क्षेत्रों की गरीब, ग्रामीण और राजनीतिक रूप से हाशिए पर रहने वाली आबादी की बीमारियाँ होती हैं।



## Two declarations दो घोषणाएँ

- **Historically, funding for infectious diseases was dominated by just three: HIV/AIDS, tuberculosis, and malaria.**  
ऐतिहासिक रूप से संक्रामक रोगों के लिए वित्तपोषण मुख्य रूप से तीन बीमारियों पर केंद्रित रहा है: HIV/AIDS, तपेदिक (tuberculosis) और मलेरिया।
- The situation changed somewhat following the **London Declaration in 2012 and the Kigali Declaration in 2022.**  
2012 की लंदन घोषणा और 2022 की किगाली घोषणा के बाद इस स्थिति में कुछ परिवर्तन आया।
- With the participation of the WHO, the World Bank, 13 pharmaceutical companies, and representatives from seven countries, the **London Declaration committed to eliminate or control 10 NTDs by 2020 with more than \$785 million for research and development.**  
WHO, विश्व बैंक, 13 फार्मास्यूटिकल कंपनियों तथा सात देशों के प्रतिनिधियों की भागीदारी के साथ लंदन घोषणा ने 2020 तक 10 NTDs को समाप्त या नियंत्रित करने का संकल्प लिया तथा अनुसंधान एवं विकास के लिए 785 मिलियन डॉलर से अधिक की राशि निर्धारित की।
- The **Kigali Declaration, sponsored by Rwanda, aimed to reinvigorate commitments to eliminate the NTDs; at a June 23, 2022, event, the country reported a pledge of \$1.5 billion by various governments, pharmaceutical companies, and NGOs.**  
रवांडा द्वारा प्रायोजित किगाली घोषणा का उद्देश्य NTDs के उन्मूलन के प्रति प्रतिबद्धताओं को पुनर्जीवित करना था; 23 जून 2022 के एक कार्यक्रम में देश ने विभिन्न सरकारों, फार्मास्यूटिकल कंपनियों और NGOs द्वारा 1.5 अरब डॉलर की प्रतिबद्धता की जानकारी दी।
- **Many NTDs are caused by eukaryotic parasites, i.e. worms and protozoa, which develop in multiple stages across multiple hosts, complicating researchers' efforts to identify a stable antigen for vaccines to target.**  
अनेक उपेक्षित उष्णकटिबंधीय रोग (NTDs) का कारण यूकेरियोटिक परजीवी होते हैं, अर्थात् कृमि और प्रोटोजोआ, जो अनेक चरणों में विभिन्न मेजबानों के भीतर विकसित होते हैं, जिससे शोधकर्ताओं के लिए टीकों हेतु एक स्थिर एंटीजन की पहचान करना कठिन हो जाता है।
- The immune system also struggles to confer lasting protection against infections by these organisms, making them categorically harder to vaccinate against than, say, measles.  
प्रतिरक्षा तंत्र भी इन जीवों के संक्रमण के विरुद्ध दीर्घकालिक सुरक्षा प्रदान करने में संघर्ष करता है, जिससे इनसे बचाव हेतु टीकाकरण खसरा जैसी बीमारियों की तुलना में अधिक कठिन हो जाता है। **Local response**

## स्थानीय प्रतिक्रिया

- At this time, there are two licensed **Ebolavirus vaccines** — Ervebo and a combination of Zabdeno and Mvabea — but they are both for the 'Zaire' species.  
वर्तमान समय में दो लाइसेंस प्राप्त **इबोला वायरस टीके** हैं — Ervebo तथा Zabdeno और Mvabea का संयोजन — लेकिन ये दोनों केवल 'Zaire' प्रजाति के लिए हैं।
- The Bundibugyo species is also much rarer, having caused only two outbreaks before the current one.  
**Bundibugyo** प्रजाति भी काफी दुर्लभ है, जिसने वर्तमान प्रकोप से पहले केवल दो बार ही प्रकोप उत्पन्न किया है।
- As a result, research on it hasn't drawn significant investments.  
फलस्वरूप, इस पर अनुसंधान के लिए पर्याप्त निवेश आकर्षित नहीं हुआ है।
- Promising Bundibugyo vaccine candidates are currently in preclinical or early development, with the WHO and the Oxford Vaccine Group estimating at least six months more to manufacture enough doses for a small clinical trial.



आशाजनक **Bundibugyo टीका उम्मीदवार** वर्तमान में प्री-क्लिनिकल या प्रारंभिक विकास चरण में हैं, और WHO तथा ऑक्सफोर्ड वैक्सीन समूह का अनुमान है कि छोटे नैदानिक परीक्षण के लिए पर्याप्त मात्रा में खुराक तैयार करने में कम से कम छह महीने और लगेंगे।

- Taken together, the local healthcare systems — already strained by conflict and climate change — are left with reliably detecting cases, isolating patients, contact-tracing, safe burial practices, and community engagement to manage the Bundibugyo ebolavirus outbreak. समय रूप से, स्थानीय स्वास्थ्य प्रणालियाँ — जो पहले से ही संघर्ष और जलवायु परिवर्तन से दबाव में हैं — के पास केवल मामलों की पहचान, रोगियों का पृथक्करण, संपर्क ट्रेसिंग, सुरक्षित दफन प्रथाएँ और सामुदायिक सहभागिता के माध्यम से Bundibugyo इबोला वायरस प्रकोप के प्रबंधन का कार्य बचता है।

## Causes for hope

### आशा के कारण

- That said, in the meantime, the **Road Map 2021–2030** of the WHO has specified eliminate-by targets for particular NTDs and has been pushing domestically led programmes that combine mass drug administration, vector control, sanitation, and surveillance. इसके बावजूद, इस बीच WHO की **Road Map 2021–2030** ने विशेष NTDs के लिए उन्मूलन-लक्ष्य निर्धारित किए हैं तथा ऐसे घरेलू नेतृत्व वाले कार्यक्रमों को बढ़ावा दिया है जो व्यापक औषधि प्रशासन, वेक्टर नियंत्रण, स्वच्छता और निगरानी को जोड़ते हैं।
- In February this year, the **African Union** launched 'ACHIEVE Africa', a programme to build indigenous R&D for vaccine development for NTDs that western manufacturers have overlooked. इस वर्ष फरवरी में **अफ्रीकी संघ** ने 'ACHIEVE Africa' नामक कार्यक्रम शुरू किया, जिसका उद्देश्य उन NTDs के लिए स्वदेशी अनुसंधान एवं विकास क्षमता विकसित करना है जिन्हें पश्चिमी निर्माता अनदेखा करते रहे हैं।
- Using the help of such programmes, the African Union plans to manufacture 60% of the continent's vaccine needs by 2040. ऐसे कार्यक्रमों की सहायता से अफ्रीकी संघ का लक्ष्य 2040 तक महाद्वीप की 60% टीका आवश्यकताओं का निर्माण करना है।
- Likewise, **CEPI** has increasingly funded work on pathogens that currently present weak commercial incentives. इसी प्रकार, **CEPI** ने उन रोगजनकों पर अनुसंधान के लिए वित्तपोषण बढ़ाया है जिनमें वर्तमान में कमजोर व्यावसायिक प्रोत्साहन हैं।
- Also earlier this year, India initiated phase I human clinical trials for an indigenous vaccine against **Kyasanur forest disease**, a regional NTD. इस वर्ष की शुरुआत में भारत ने क्षेत्रीय NTD **Kyasanur forest disease** के विरुद्ध स्वदेशी टीके के लिए चरण-I मानव नैदानिक परीक्षण शुरू किए।
- Hubs established in South Africa and Senegal to manufacture mRNA vaccines for COVID-19 are being repurposed to produce experimental vaccines for NTDs, including leishmaniasis. COVID-19 के लिए mRNA टीके बनाने हेतु दक्षिण अफ्रीका और सेनेगल में स्थापित केंद्रों का उपयोग अब NTDs, जिसमें लीशमैनियासिस शामिल है, के प्रयोगात्मक टीकों के उत्पादन के लिए किया जा रहा है।
- Brazil and Cuba have built state manufacturing capacity to address diseases that multinational firms have skipped (although this may no longer be a priority in Cuba, which has faced prolonged fuel and medicine shortages thanks to crippling U.S. embargoes). ब्राज़ील और क्यूबा ने उन बीमारियों के समाधान हेतु राज्य-स्तरीय निर्माण क्षमता विकसित की है जिन्हें बहुराष्ट्रीय कंपनियों ने अनदेखा किया है (हालाँकि क्यूबा में यह अब प्राथमिकता नहीं रह सकती, क्योंकि वह लंबे समय से अमेरिकी प्रतिबंधों के कारण ईंधन और दवाओं की गंभीर कमी का सामना कर रहा है)।



- But for now, the Bundibugyo ebolavirus outbreak continues to unfold against infrastructure and financing gaps and a broader system that struggles to respond to diseases of the poor and the peripheral.

लेकिन वर्तमान में Bundibugyo इबोला वायरस का प्रकोप बुनियादी ढाँचे और वित्तीय अंतरालों के बीच जारी है, तथा एक ऐसे व्यापक तंत्र के सामने है जो गरीब और हाशिए की बीमारियों पर प्रभावी प्रतिक्रिया देने में संघर्ष करता है।

<b>GS Paper III: Environment</b>		<b>28 May 2026</b>
<b>TOPICS COVERED</b>		
<b>28M</b>	<b>Rare dragonfly resurfaces in Arunachal, underscores need for habitat protection</b> अरुणाचल में दुर्लभ ड्रैगनफ्लाई पुनः दिखाई दी, आवास संरक्षण की आवश्यकता को रेखांकित करती है।	
<b>28M</b>	<b>Kerala scientists discover new evergreen tree species at Shendurney Sanctuary</b> केरल के वैज्ञानिकों ने शेंडुर्नेय अभयारण्य में सदाबहार वृक्ष की नई प्रजाति खोजी	
<b>28M</b>	<b>Tariffs to carbon, the new rules shaping India's trade</b> शुल्क से कार्बन तक, भारत के व्यापार को आकार देने वाले नए नियम	
<b>28M</b>	<b>Ordinary homes and offices are becoming death traps for birds</b> सामान्य घर और कार्यालय पक्षियों के लिए मृत्यु-फंदे बनते जा रहे हैं	

## Rare dragonfly resurfaces in Arunachal, underscores need for habitat protection

**GS III: Environment**

**Rahul Karmakar**  
GUWAHATI

An insect that enjoys a near-360° vision with thousands of lenses, and can stay still in the air, has resurfaced in Arunachal Pradesh's Changlang district, about 600 km east of where it was first recorded 110 years ago.

A team of four citizen scientists recorded *Gynacantha khasiaca*, a rare dragonfly commonly known as the long-tailed duskhawker, from the Namdapha National Park and Tiger Reserve. This insect with two compound eyes, each with thousands of tiny lenses and photoreceptor clusters, was last described from the erstwhile Abor Hills in 1914.



The insect with two compound eyes was last described from the erstwhile Abor Hills area of the State in 1914. SPECIAL ARRANGEMENT

Mahesh R. from Kerala's Ernakulum, Rajesh Gopinath from Karnataka's BMS Institute of Technology and Management, Gaurav Joshi from Uttarakhand's Haldwani, and Roshan Upadhaya, a policeman from Arunachal Pradesh's Basar, are the authors of a study on the "rediscovery"

published in the *Journal of Threatened Taxa*.

According to the authors, the long-tailed duskhawker was sighted at Deban in October 2024 and confirmed through photographs taken in the presence of the forest staff. They said that the finding has underscored the need

for continued monitoring and habitat protection in India's easternmost State.

Dragonflies and damselflies, belonging to the order Odonata, are crucial components of freshwater ecosystems, as predators and prey in the aquatic food web. The global diversity of Odonata comprises 6,442 species across 693 genera.

### Home to 504 species

India is home to 504 species and 27 subspecies. The total number of species in Arunachal Pradesh is 110.

Beyond Arunachal Pradesh, the long-tailed duskhawker has been documented in Assam, Maharashtra, Meghalaya, Uttarakhand, and West Bengal.

**28M. Rare dragonfly resurfaces in Arunachal, underscores need for habitat protection**



## अरुणाचल में दुर्लभ ड्रैगनफ्लाइ पुनः दिखाई दी, आवास संरक्षण की आवश्यकता को रेखांकित करती है।

- An insect that enjoys a near-360° vision with thousands of lenses, and can stay still in the air, has resurfaced in **Arunachal Pradesh's Changlang district**, about 600 km east of where it was first recorded 110 years ago.  
हजारों लेंसों वाली लगभग 360° दृष्टि रखने वाला तथा हवा में स्थिर रह सकने वाला एक कीट अरुणाचल प्रदेश के चांगलांग जिले में पुनः दिखाई दिया है, जो उस स्थान से लगभग 600 किमी पूर्व में स्थित है जहाँ इसे 110 वर्ष पूर्व पहली बार दर्ज किया गया था।
- A team of four **citizen scientists** recorded **Gynacantha khasiaca**, a rare dragonfly commonly known as the **long-tailed duskhawker**, from the **Namdapha National Park and Tiger Reserve**.  
चार सिटीजन वैज्ञानिकों की एक टीम ने नामदाफा राष्ट्रीय उद्यान एवं टाइगर रिजर्व से **Gynacantha khasiaca** नामक दुर्लभ ड्रैगनफ्लाइ, जिसे सामान्यतः **लॉन्ग-टेल्ड डस्कहॉकर** कहा जाता है, का अभिलेखन किया।
- This insect with two **compound eyes**, each with thousands of tiny lenses and photoreceptor clusters, was last described from the erstwhile **Abor Hills** in 1914.  
दो संयुक्त नेत्रों (**compound eyes**) वाले इस कीट, जिनमें प्रत्येक में हजारों सूक्ष्म लेंस और प्रकाशग्राही समूह होते हैं, का अंतिम विवरण 1914 में तत्कालीन **अबोर हिल्स** से प्राप्त हुआ था।
- Mahesh R.** from Kerala's **Ernakulum**, **Rajesh Gopinath** from Karnataka's **BMS Institute of Technology and Management**, **Gaurav Joshi** from Uttarakhand's **Haldwani**, and **Roshan Upadhaya**, a policeman from Arunachal Pradesh's **Basar**, are the authors of a study on the "rediscovery" published in the **Journal of Threatened Taxa**.  
केरल के **एर्नाकुलम** से **महेश आर.**, कर्नाटक के **बीएमएस इंस्टीट्यूट ऑफ टेक्नोलॉजी एंड मैनेजमेंट** से **राजेश गोपीनाथ**, उत्तराखंड के **हल्द्वानी** से **गौरव जोशी**, तथा अरुणाचल प्रदेश के **बासर** के पुलिसकर्मी **रोशन उपाध्याय** "पुनर्खोज" पर आधारित अध्ययन के लेखक हैं, जो **जर्नल ऑफ थ्रेटेन्ड टैक्सा** में प्रकाशित हुआ है।
- According to the authors, the **long-tailed duskhawker** was sighted at **Deban** in October 2024 and confirmed through photographs taken in the presence of the **forest staff**.  
लेखकों के अनुसार, **लॉन्ग-टेल्ड डस्कहॉकर** को अक्टूबर 2024 में **डेबन** में देखा गया तथा इसकी पुष्टि **वन कर्मचारियों** की उपस्थिति में ली गई तस्वीरों से की गई।
- They said that the finding has underscored the need for continued **monitoring** and **habitat protection** in India's easternmost State.  
उन्होंने कहा कि इस खोज ने भारत के पूर्वोत्तरतम राज्य में निरंतर **निगरानी** और **आवास संरक्षण** की आवश्यकता को रेखांकित किया है।
- Dragonflies** and **damselflies**, belonging to the order **Odonata**, are crucial components of **freshwater ecosystems**, as predators and prey in the aquatic food web.  
**ओडोनाटा (Odonata)** गण से संबंधित **ड्रैगनफ्लाइ** और **डैम्सेलफ्लाइ** जलीय खाद्य शृंखला में शिकारी और शिकार दोनों के रूप में **मीठे जल के पारितंत्रों** के महत्वपूर्ण घटक हैं।
- The global diversity of **Odonata** comprises 6,442 species across 693 genera.  
विश्व स्तर पर **ओडोनाटा** की विविधता में 693 वंशों में फैली 6,442 प्रजातियाँ शामिल हैं।

### Home to 504 species

#### 504 प्रजातियों का आवास

- India is home to **504 species** and **27 subspecies**.  
भारत में **504 प्रजातियाँ** और **27 उप-प्रजातियाँ** पाई जाती हैं।
- The total number of species in **Arunachal Pradesh** is 110.  
अरुणाचल प्रदेश में कुल 110 प्रजातियाँ पाई जाती हैं।



- Beyond Arunachal Pradesh, the long-tailed duskhawker has been documented in Assam, Maharashtra, Meghalaya, Uttarakhand, and West Bengal.  
अरुणाचल प्रदेश के अतिरिक्त, लॉन्ग-टेल्ड डस्कहॉकर का अभिलेखन असम, महाराष्ट्र, मेघालय, उत्तराखंड और पश्चिम बंगाल में भी किया गया है।

## Kerala scientists discover new evergreen tree species at Shendurney Sanctuary

CS III: Environment

Sarath Babu George  
THIRUVANANTHAPURAM

Scientists from the Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI), in Palode, Kerala, have discovered a new evergreen tree species from the southern Western Ghats of Kerala. The newly discovered species identified in the riparian forests of the Shendurney Wildlife Sanctuary has been officially named as *Humboldtia nairiana*.

The species, belonging to the genus *Humboldtia*, has been named in honour of G.M. Nair, a distinguished plant biotechnologist and former Director of JNTBGRI. The initial breakthrough for the discovery



*Humboldtia nairiana* has been named in honour of G.M. Nair, a distinguished plant biotechnologist. SPECIAL ARRANGEMENT

came in 2010 during a floristic exploration along the Cheenikkala-Pandimotta forest trail within the Shendurney Wildlife Sanctuary. Three scientists from JNTBGRI collected an unusual and taxonomically

intriguing specimen.

To carefully observe and safeguard the plant, a few healthy seedlings were brought back and successfully established *ex-situ* within the JNTBGRI Arboretum. After a prolonged

juvenile phase, the cultivated trees began flowering and fruiting in 2022. This allowed the research team to conduct a comprehensive morphological assessment, which confirmed that its distinct vegetative and reproductive characters set it apart as a brand-new species to science.

The species is strictly endemic to Kerala and is presently known only from the biodiversity-rich Agasthyamala Biosphere Reserve. Alarmingly, field surveys indicate a fragile wild population. Based on the IUCN Red List criteria, the species has been categorised as 'data deficient' to highlight the need for extensive field tracking and habitat protection.

### 28M. Kerala scientists discover new evergreen tree species at Shendurney Sanctuary

केरल के वैज्ञानिकों ने शेंडुर्नेय अभयारण्य में सदाबहार वृक्ष की नई प्रजाति खोजी

- Scientists from the Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI), in Palode, Kerala, have discovered a new evergreen tree species from the southern Western Ghats of Kerala.

केरल के पालोड स्थित जवाहरलाल नेहरू ट्रॉपिकल बॉटैनिक गार्डन एंड रिसर्च इंस्टीट्यूट (JNTBGRI) के वैज्ञानिकों ने केरल के दक्षिणी पश्चिमी घाट से सदाबहार वृक्ष की एक नई प्रजाति की खोज की है।

- The newly discovered species identified in the riparian forests of the Shendurney Wildlife Sanctuary has been officially named as *Humboldtia nairiana*.

शेंडुर्नेय वन्यजीव अभयारण्य के नदी तटीय वनों में पहचानी गई इस नई प्रजाति का आधिकारिक नाम *Humboldtia nairiana* रखा गया है।

- The species, belonging to the genus *Humboldtia*, has been named in honour of G.M. Nair, a distinguished plant biotechnologist and former Director of JNTBGRI.

*Humboldtia* वंश से संबंधित इस प्रजाति का नाम प्रतिष्ठित पादप जैव-प्रौद्योगिकीविद् तथा JNTBGRI के पूर्व निदेशक जी.एम. नायर के सम्मान में रखा गया है।

- The initial breakthrough for the discovery came in 2010 during a floristic exploration along the Cheenikkala-Pandimotta forest trail within the Shendurney Wildlife Sanctuary.



इस खोज की प्रारंभिक सफलता वर्ष 2010 में शेंडुर्नेय वन्यजीव अभयारण्य के भीतर स्थित चीनीकला-पांडिमोट्टा वन मार्ग पर वनस्पति सर्वेक्षण के दौरान प्राप्त हुई।

- Three scientists from JNTBGRI collected an unusual and taxonomically intriguing specimen. JNTBGRI के तीन वैज्ञानिकों ने एक असामान्य और वर्गिकी दृष्टि से अत्यंत रोचक नमूना एकत्र किया।
- To carefully observe and safeguard the plant, a few healthy seedlings were brought back and successfully established **ex-situ** within the JNTBGRI Arboretum. पौधे का सावधानीपूर्वक अवलोकन और संरक्षण करने हेतु कुछ स्वस्थ पौधों को वापस लाकर JNTBGRI आर्बोरिटम में सफलतापूर्वक **ex-situ** स्थापित किया गया।
- After a prolonged juvenile phase, the cultivated trees began flowering and fruiting in 2022. लंबे किशोरावस्था चरण के बाद, संवर्धित वृक्षों में 2022 में फूल और फल आने लगे।
- This allowed the research team to conduct a comprehensive morphological assessment, which confirmed that its distinct vegetative and reproductive characters set it apart as a brand-new species to science. इससे अनुसंधान दल को विस्तृत आकारिकीय मूल्यांकन करने का अवसर मिला, जिसने पुष्टि की कि इसके विशिष्ट वनस्पतिक और प्रजनन संबंधी लक्षण इसे विज्ञान के लिए एक पूर्णतः नई प्रजाति बनाते हैं।
- The species is strictly endemic to Kerala and is presently known only from the biodiversity-rich Agasthyamala Biosphere Reserve. यह प्रजाति पूर्णतः केरल की स्थानिक (एंडेमिक) है और वर्तमान में केवल जैव-विविधता समृद्ध अगस्थ्यमाला बायोस्फीयर रिजर्व में ही ज्ञात है।
- Alarmingly, field surveys indicate a fragile wild population. चिंताजनक रूप से, क्षेत्रीय सर्वेक्षण इस प्रजाति की अत्यंत नाजुक जंगली आबादी की ओर संकेत करते हैं।
- Based on the IUCN Red List criteria, the species has been categorised as 'data deficient' to highlight the need for extensive field tracking and habitat protection. IUCN रेड लिस्ट के मानदंडों के आधार पर इस प्रजाति को 'डेटा डेफिशिएंट' श्रेणी में रखा गया है, ताकि व्यापक क्षेत्रीय निगरानी और आवास संरक्षण की आवश्यकता को रेखांकित किया जा सके।

## Tariffs to carbon, the new rules shaping India's trade

GS III: Environment

**P**roposed in July 2021, the European Union (EU)'s Carbon Border Adjustment Mechanism (CBAM) entered its definitive phase from January 1, 2026. As a climate policy tool, CBAM seeks to prevent carbon leakage by imposing a carbon-linked charge on imports based on their embedded emissions. Carbon-intensive products such as steel, cement, aluminium, fertilizers, electricity, and hydrogen will be affected. While CBAM could encourage wider adoption of carbon-pricing policies and help reduce global emissions, it also poses significant challenges for developing countries such as India.

Even as India pursues bilateral trade negotiations with the EU, CBAM will still apply, making carbon-intensive exports to Europe costlier. Market access, therefore, is increasingly being shaped not only by tariffs but also by compliance with carbon-emission standards. Its effects may also extend beyond targeted sectors through global price shifts and the gradual adoption of similar policies by other developed countries.

### Sectors to be impacted

India's steel and aluminium sectors are likely to face the most immediate impact, given their dependence on European markets and carbon-intensive production processes. Although the carbon levy will formally be paid by EU importers, part of the burden is likely to shift to exporters through tighter contracts and stricter supplier selection. As European buyers increasingly prefer low-emission suppliers, Indian exporters may have to absorb some of the additional costs to remain competitive in the European market or invest in cleaner



**Poornima Varma**  
Faculty member at the Indian Institute of Management Ahmedabad (IIMA)

India's carbon trade challenge demands reforms and effective global negotiations

technologies to retain market access. In the short run, compliance costs could shrink profit margins and hurt export competitiveness despite ongoing free trade agreement negotiations.

The effects of CBAM are not confined to direct trade impacts. As a major net importer of fertilizers, India may also face indirect price pressures through global price transmission. Key fertilizer exporters to the EU – Egypt, Russia, Morocco and China – are also major suppliers of fertilizers to India. As these suppliers face higher carbon-compliance costs, part of the burden is likely to be passed on through higher global fertilizer prices. India's fertilizer import bill is therefore likely to increase, jeopardising the agricultural sector, farm profitability and high food prices. More broadly, CBAM signals a structural shift in global trade, as other developed countries consider adopting similar carbon tariff compliance policies, potentially constraining market access for developing countries such as India.

### The CBAM framework

CBAM is structurally distinct from traditional non-tariff measures (NTMs), such as product standards. While NTMs affect market access through compliance requirements and are largely qualitative, with scope for interpretation, CBAM is price-based and quantifiable, directly linking market access for carbon-intensive products to carbon emissions.

In this changed scenario, even if exporters comply with the product quality standards in destination markets, the carbon intensity of production is likely to raise export costs and thereby constrain market access. Additionally, investing in cleaner energy and transitioning

toward carbon-neutral production is significantly more expensive than complying with conventional product quality standards, especially in the short run.

Market access and export growth are no longer determined by tariffs alone. As global trade becomes increasingly linked to carbon-emission measures, comparative advantage now depends not only on production efficiency and pricing, but also on the carbon efficiency of production processes. In this context, countries such as India must adopt a two-pronged strategy of domestic reform and effective international negotiation.

### Moves to consider

Domestically, greater investment in clean energy and stricter implementation of carbon policies are essential to improve firms' carbon efficiency. Internationally, India must negotiate for equitable treatment of developing countries so that the short-run costs of carbon compliance can be eased through a phased transition. Since climate policies such as CBAM also raise the cost of importing emission-intensive and more expensive goods such as fertilizers, reducing import dependence through higher domestic production and better implementation of the Soil Health Cards Scheme and the promotion of balanced and need-based application of fertilizers is equally important. India must also seek transitional support and technology transfer to ensure a level playing field in trade agreements with developed countries. The challenge is not merely adapting to carbon-constrained trade regimes, but ensuring that the transition does not undermine growth and sustainability.

The views expressed are personal



## 28M. Tariffs to carbon, the new rules shaping India's trade

### शुल्क से कार्बन तक, भारत के व्यापार को आकार देने वाले नए नियम

- Proposed in July 2021, the European Union's **Carbon Border Adjustment Mechanism (CBAM)** entered its definitive phase from January 1, 2026.  
जुलाई 2021 में प्रस्तावित European Union का कार्बन बॉर्डर एडजस्टमेंट मैकेनिज्म (CBAM) 1 जनवरी 2026 से अपने निर्णायक चरण में प्रवेश कर गया।

#### Sectors to be impacted

##### प्रभावित होने वाले क्षेत्र

- Key fertilizer exporters to the EU — Egypt, Russia, Morocco and China — are also major suppliers of fertilizers to India.  
यूरोपीय संघ को उर्वरक निर्यात करने वाले प्रमुख देश — Egypt, Russia, Morocco और China — भारत के लिए भी उर्वरकों के प्रमुख आपूर्तिकर्ता हैं।
- As these suppliers face higher carbon-compliance costs, part of the burden is likely to be passed on through higher global fertilizer prices.  
जब ये आपूर्तिकर्ता अधिक कार्बन-अनुपालन लागत का सामना करेंगे, तब इस भार का एक हिस्सा वैश्विक उर्वरक कीमतों में वृद्धि के रूप में आगे स्थानांतरित होने की संभावना है।
- India's fertilizer import bill is therefore likely to increase, jeopardising the agricultural sector, farm profitability and high food prices.  
अतः भारत का उर्वरक आयात बिल बढ़ने की संभावना है, जिससे कृषि क्षेत्र, किसानों की लाभप्रदता और खाद्य मूल्यों पर प्रतिकूल प्रभाव पड़ सकता है।

#### The CBAM framework

##### CBAM ढाँचा

- CBAM is structurally distinct from traditional non-tariff measures (NTMs), such as product standards.**  
CBAM संरचनात्मक रूप से पारंपरिक गैर-शुल्क उपायों (NTMs), जैसे उत्पाद मानकों, से भिन्न है।
- While NTMs affect market access through compliance requirements and are largely qualitative, with scope for interpretation, CBAM is price-based and quantifiable, directly linking market access for carbon-intensive products to carbon emissions.**  
जहाँ NTMs अनुपालन आवश्यकताओं के माध्यम से बाज़ार पहुँच को प्रभावित करते हैं और मुख्यतः गुणात्मक होते हैं जिनमें व्याख्या की गुंजाइश रहती है, वहीं CBAM मूल्य-आधारित और मात्रात्मक है, जो कार्बन-गहन उत्पादों की बाज़ार पहुँच को सीधे कार्बन उत्सर्जन से जोड़ता है।
- In this changed scenario, even if exporters comply with the product quality standards in destination markets, the carbon intensity of production is likely to raise export costs and thereby constrain market access.**  
इस परिवर्तित परिदृश्य में, भले ही निर्यातक गंतव्य बाज़ारों के उत्पाद गुणवत्ता मानकों का पालन करें, उत्पादन की कार्बन-गहनता निर्यात लागत को बढ़ा सकती है और इस प्रकार बाज़ार पहुँच को सीमित कर सकती है।

#### Moves to consider

##### विचारणीय कदम

- Domestically, greater investment in clean energy and stricter implementation of carbon policies are essential to improve firms' carbon efficiency.**  
घरेलू स्तर पर स्वच्छ ऊर्जा में अधिक निवेश और कार्बन नीतियों का कठोर क्रियान्वयन कंपनियों की कार्बन दक्षता सुधारने के लिए आवश्यक है।



- Since climate policies such as CBAM also raise the cost of importing emission-intensive and more expensive goods such as fertilizers, reducing import dependence through higher domestic production and **better implementation of the Soil Health Cards Scheme** and the promotion of balanced and need-based application of fertilizers is equally important. चूँकि CBAM जैसी जलवायु नीतियाँ उर्वरकों जैसे उत्सर्जन-गहन और महंगे उत्पादों के आयात की लागत भी बढ़ाती हैं, इसलिए अधिक घरेलू उत्पादन, **Soil Health Cards Scheme** के बेहतर क्रियान्वयन तथा संतुलित एवं आवश्यकता-आधारित उर्वरक उपयोग को बढ़ावा देकर आयात निर्भरता कम करना भी समान रूप से महत्वपूर्ण है।
- India must also seek transitional support and technology transfer to ensure a level playing field in trade agreements with developed countries. भारत को विकसित देशों के साथ व्यापार समझौतों में समान अवसर सुनिश्चित करने हेतु संक्रमणकालीन सहायता और प्रौद्योगिकी हस्तांतरण की भी मांग करनी चाहिए।

## Ordinary homes and offices are becoming death traps for birds

Bird-glass collisions are emerging as an undercounted threat in India, with birds flying into reflective or transparent glass panels in homes, schools, offices and apartment buildings; experts say many small and migratory birds are injured or killed by these human-made structures

CS III: Environment  
Aditya Ansh

In 2008, architect and avid birdwatcher Peeyush Sekhsaria was having breakfast at a traditional homestay in Coorg when he heard a loud thud. Sekhsaria tracked down the cause of the noise to find an emerald dove lying still on the floor after flying into a glass panel.

Bird-glass collisions, also called bird-window strikes, happen because birds are not able to notice clear or slightly reflective glass.

India has no national estimate for bird-glass collisions, nor is there a coordinated monitoring system to track how many birds die or are injured after colliding with windows.

In one October 2025 study from the Nilgiris, researchers from around India documented 35 bird-glass collision incidents in two locations within a year. In Bengaluru, the Avian and Reptile Rehabilitation Centre (ARRC) has recorded more than 500 birds injured in collisions over the last three years.

"At Bengaluru, most of the major threats bringing birds to our rescue centre are human-made: manja is still the worst, but collisions are frequent," ARRC executive director Jayanthi Kallam said.

### Beyond skyscrapers

A major concern researchers and birdwatchers have is the nature of buildings involved in such accidents. Contrary to common perception, most collisions do not occur at skyscrapers but at everyday structures like homes, schools, office complexes, and apartment balconies.

"Glass collisions aren't a skyscraper problem but they are a glass problem," Dr. Kallam said. "People often imagine this as something that happens only at IT

parcs, corporate campuses or large glass buildings. But our cases come from ordinary urban spaces like homes, cafe fronts, schools, resorts and two- or three-storey buildings."

Reflective surfaces mirror sky, foliage, and open space, creating what ecologists call a visual illusion. Transparent panes can also appear as clear flight paths. To birds moving quickly through urban vegetation, the barrier often remains invisible.

According to Mr. Sekhsaria, "The data in the U.S. shows us that 50% of bird deaths actually happen up to third-floor buildings and a lot of birds are active within a certain height range from the ground up to the canopy height."

In Indian cities where residential towers and office buildings are often located alongside fragmented green spaces, the risk increases.

Glass near trees, balconies, and gardens can reflect the vegetation nearby, confusing birds.

### Vulnerable migrating birds

Certain bird species are especially vulnerable. Between September and January, when birds migrate, ARRC said it often finds Indian pittas (*Pitta brachyura*) dazed or injured near buildings.

White-cheeked barbets (*Psilopogon viridis*) seem vulnerable during the March-April breeding season.

"At the moment, we are seeing many white-cheeked barbets, mostly newly fledged young birds that are inexperienced fliers, easily misled by reflections of foliage on glass," Dr. Kallam said.

Asian koels (*Eudynamis scolopacea*) also appear susceptible during breeding, possibly because of their higher territorial movement, which can bring them closer to reflective surfaces.

Pune-based birdwatcher Parth Barhate began noticing patterns similar to this after moving from Jalgaon: "Small bird species such as sparrows, robins, sunbirds and babblers are particularly vulnerable."

According to experts at ARRC, bird-glass collisions are severely undercounted partly because collisions are hard to observe. Smaller birds may move away after the impact and die elsewhere, while some others are quickly removed by scavengers. The rescue centres eventually receive only a subset of injured or dead birds.

"When we looked more closely at building collision cases, nearly 70-80% involved glass in some form, be it windows, sliding doors, panels, reflective glass or facades," Dr. Kallam said.

"And this is almost certainly an undercount. Small birds are easy to miss, many collisions are never witnessed and if a bird moves away from the impact site, identifying glass as the cause also becomes harder."

### Citizen science

In recent years, citizen-science platforms and informal reporting networks have begun filling some data gaps.

Birdwatchers now upload collision records to platforms like iNaturalist. Rescue organisations also compile local observations.

Mr. Sekhsaria and his collaborators have analysed several hundred such records collected from online birding communities and wildlife rescue groups.

"We have about 110 species of birds that we have recorded having bird-window collisions," he said. "For a country like India, a thousand data points is nothing, but we actually have some data points to begin with."

"One common thing would be a head injury to birds," Dr. Kallam said.

"Post-concussion, they will be dull and dazed." Some injuries are also difficult to spot by seeing: "Sometimes there could be internal organs bleeding. Those will be very difficult to diagnose," she added.

According to her, many birds appear to recover briefly after impact, leading residents to release them too early. She said she believes substantial underreporting persists.

"Particularly in the small birds, which are difficult to notice, if it is impacted and goes some distance and falls in a wooded area, those are difficult for anybody to notice."

### Bird-safe cities

Researchers said the absence of regulations does not mean mitigation is impossible. Experts have pointed to many simple, inexpensive interventions. For example, patterns, decals or strips pasted on the outward-facing parts of windows can help birds identify glass surfaces as barriers.

"The first step is simple: make glass visible to birds," Dr. Kallam said.

Awareness and understanding of bird-glass collisions also suffer from their absence in mainstream urban ecological discussions in the country. Conservation debates continue to focus on habitat destruction, air pollution, and infrastructure expansion.

One 2023 petition before the National Green Tribunal filed by a resident in Bengaluru had asked for the Ministry of Environment, Forest and Climate Change to draft bird-safe building guidelines. As of May 2026, no public update or draft framework has been released.

Mr. Sekhsaria said systematic citizen-science reporting may eventually shift that understanding. (Aditya Ansh is an independent media writer based in New Delhi, India)

## 28M. Ordinary homes and offices are becoming death traps for birds सामान्य घर और कार्यालय पक्षियों के लिए मृत्यु-फंदे बनते जा रहे हैं

- Bird-glass collisions are emerging as an undercounted threat in India, with birds flying into reflective or transparent glass panels in homes, schools, offices and apartment buildings;



experts say many small and migratory birds are injured or killed by these human-made structures

भारत में **बर्ड-ग्लास टकराव (bird-glass collisions)** एक कम आंके गए खतरे के रूप में उभर रहे हैं, जहाँ पक्षी घरों, स्कूलों, कार्यालयों और अपार्टमेंट भवनों में लगे **परावर्तक या पारदर्शी काँच पैनलों** से टकरा जाते हैं; विशेषज्ञों के अनुसार कई छोटे और **प्रवासी पक्षी** इन मानव-निर्मित संरचनाओं से घायल हो जाते हैं या उनकी मृत्यु हो जाती है।

- In 2008, architect and avid birdwatcher Peeyush Sekhsaria was having breakfast at a traditional homestay in Coorg when he heard a loud thud. Sekhsaria tracked down the cause of the noise to find an emerald dove lying still on the floor after flying into a glass panel.

2008 में, वास्तुकार और उत्साही पक्षी-प्रेक्षक पीयूष सेकसरिया कॉर्ग के एक पारंपरिक होमस्टे में नाश्ता कर रहे थे, जब उन्होंने एक तेज़ आवाज़ सुनी। सेकसरिया ने उस आवाज़ के कारण का पता लगाया और पाया कि एक एमराल्ड डव फर्श पर स्थिर पड़ा था, जो एक काँच के पैनल से टकराने के बाद गिर गया था।

- Bird-glass collisions, also called bird-window strikes, happen because birds are not able to notice clear or slightly reflective glass.

**पक्षी-काँच टकराव**, जिन्हें bird-window strikes भी कहा जाता है, इसलिए होते हैं क्योंकि पक्षी पारदर्शी या हल्के परावर्तक काँच को पहचान नहीं पाते हैं।

- India has no national estimate for bird-glass collisions, nor is there a coordinated monitoring system to track how many birds die or are injured after colliding with windows.

भारत में **पक्षी-काँच टकराव** का कोई राष्ट्रीय अनुमान नहीं है, और न ही कोई समन्वित निगरानी प्रणाली है जो यह ट्रैक कर सके कि खिड़कियों से टकराकर कितने पक्षी घायल या मृत होते हैं।

- In one October 2025 study from the Nilgiris, researchers from around India documented 35 bird-glass collision incidents in two locations within a year.

अक्टूबर 2025 में नीलगिरि से संबंधित एक अध्ययन में, भारत भर के शोधकर्ताओं ने एक वर्ष के भीतर दो स्थानों पर **35 पक्षी-काँच टकराव** की घटनाएँ दर्ज कीं।

- In Bengaluru, the Avian and Reptile Rehabilitation Centre (ARRC) has recorded more than 500 birds injured in collisions over the last three years.

बेंगलुरु में **Avian and Reptile Rehabilitation Centre (ARRC)** ने पिछले तीन वर्षों में टकरावों में घायल हुए **500 से अधिक पक्षियों** को दर्ज किया है।

- “At Bengaluru, most of the major threats bringing birds to our rescue centre are human-made: manja is still the worst, but collisions are frequent,” ARRC executive director Jayanthi Kallam said.

“बेंगलुरु में, हमारे रेस्क्यू सेंटर तक पक्षियों को लाने वाले अधिकांश बड़े खतरे मानव-निर्मित हैं: मांजा अभी भी सबसे खराब है, लेकिन टकराव भी अक्सर होते हैं,” ARRC की कार्यकारी निदेशक जयन्ती कल्लम ने कहा।

## Beyond skyscrapers — गगनचुंबी इमारतों से परे

- A major concern researchers and birdwatchers have is the nature of buildings involved in such accidents.

शोधकर्ताओं और पक्षी-प्रेक्षकों की एक प्रमुख चिंता उन इमारतों की प्रकृति है जिनमें ऐसे हादसे होते हैं।

- Contrary to common perception, most collisions do not occur at skyscrapers but at everyday structures like homes, schools, office complexes, and apartment balconies.

सामान्य धारणा के विपरीत, अधिकांश टकराव गगनचुंबी इमारतों में नहीं बल्कि घरों, स्कूलों, कार्यालय परिसरों और अपार्टमेंट बालकनियों जैसी सामान्य संरचनाओं में होते हैं।

- “Glass collisions aren’t a skyscraper problem but they are a glass problem,” Dr. Kallam said.

“काँच से टकराव गगनचुंबी इमारतों की समस्या नहीं है, बल्कि यह काँच की समस्या है,” डॉ. कल्लम ने कहा।



- **“People often imagine this as something that happens only at IT parks, corporate campuses or large glass buildings. But our cases come from ordinary urban spaces like homes, cafe fronts, schools, resorts and two- or three-storey buildings.”**  
“लोग अक्सर इसे केवल आईटी पार्क, कॉर्पोरेट कैंपस या बड़ी काँच की इमारतों में होने वाली समस्या मानते हैं। लेकिन हमारे मामले सामान्य शहरी स्थानों जैसे घरों, कैफे फ्रंट, स्कूलों, रिसॉर्ट और दो- या तीन-मंज़िला इमारतों से आते हैं।”
- **According to Mr. Sekhsaria, “The data in the U.S. shows us that 50% of bird deaths actually happen up to third-floor buildings and a lot of birds are active within a certain height range from the ground up to the canopy height.”**  
श्री सेकसरिया के अनुसार, “अमेरिका के आंकड़े बताते हैं कि 50% पक्षी मृत्यु वास्तव में तीसरी मंज़िल तक की इमारतों में होती है और कई पक्षी ज़मीन से लेकर वृक्ष-छत्र की ऊँचाई तक सक्रिय रहते हैं।”
- **In Indian cities where residential towers and office buildings are often located alongside fragmented green spaces, the risk increases.**  
भारतीय शहरों में, जहाँ आवासीय टावर और कार्यालय भवन अक्सर खंडित हरित क्षेत्रों के पास स्थित होते हैं, वहाँ जोखिम बढ़ जाता है।
- **Glass near trees, balconies, and gardens can reflect the vegetation nearby, confusing birds.**  
पेड़ों, बालकनियों और बगीचों के पास स्थित काँच आसपास की वनस्पति को प्रतिबिंबित कर देता है, जिससे पक्षी भ्रमित हो जाते हैं।

### Vulnerable migrating birds — संवेदनशील प्रवासी पक्षी

- **Certain bird species are especially vulnerable.**  
कुछ पक्षी प्रजातियाँ विशेष रूप से संवेदनशील होती हैं।
- **Between September and January, when birds migrate, ARRC said it often finds Indian pittas (*Pitta brachyura*) dazed or injured near buildings.**  
सितंबर से जनवरी के बीच, जब पक्षी प्रवास करते हैं, ARRC ने बताया कि वह अक्सर Indian pittas को इमारतों के पास घायल या स्तब्ध अवस्था में पाता है।
- **White-cheeked barbets (*Psilopogon viridis*) seem vulnerable during the March-April breeding season.**  
White-cheeked barbets मार्च-अप्रैल के प्रजनन काल में अधिक संवेदनशील प्रतीत होते हैं।
- **“At the moment, we are seeing many white-cheeked barbets, mostly newly fledged young birds that are inexperienced fliers, easily misled by reflections of foliage on glass,” Dr. Kallam said.**  
“इस समय हम कई white-cheeked barbets देख रहे हैं, जिनमें अधिकतर नए उड़ान भरने वाले अनुभवहीन युवा पक्षी हैं, जो काँच पर पत्तियों के प्रतिबिंब से आसानी से भ्रमित हो जाते हैं,” डॉ. कल्लम ने कहा।
- **Asian koels (*Eudynamis scolopaceus*) also appear susceptible during breeding, possibly because of their higher territorial movement, which can bring them closer to reflective surfaces.**  
Asian koels भी प्रजनन के दौरान संवेदनशील प्रतीत होते हैं, संभवतः उनके अधिक क्षेत्रीय गतिविधि के कारण, जो उन्हें परावर्तक सतहों के करीब ले आती है।
- **Pune-based birdwatcher Parth Barhate began noticing patterns similar to this after moving from Jalgaon: “Small bird species such as sparrows, robins, sunbirds and babblers are particularly vulnerable.”**  
पुणे-आधारित पक्षी-प्रेक्षक पार्थ बरहाटे ने जलगाँव से स्थानांतरित होने के बाद इसी तरह के पैटर्न देखना शुरू किया: “छोटी पक्षी प्रजातियाँ जैसे sparrows, robins, sunbirds और babblers विशेष रूप से अधिक संवेदनशील होती हैं।”

According to experts at ARRC



## ARRC के विशेषज्ञों के अनुसार

- According to experts at **ARRC**, bird-glass collisions are severely **undercounted** partly because collisions are hard to observe.  
**ARRC** के विशेषज्ञों के अनुसार पक्षी-काँच टकरावों को गंभीर रूप से **कम आँका जाता है**, क्योंकि इन टकरावों का निरीक्षण करना कठिन होता है।
- Smaller birds may move away after the impact and die elsewhere, while some others are quickly removed by scavengers.  
छोटे पक्षी टकराव के बाद वहाँ से हटकर कहीं और मर सकते हैं, जबकि कुछ अन्य को शीघ्र ही **अपमार्जक जीवों (scavengers)** द्वारा हटा दिया जाता है।
- The rescue centres eventually receive only a subset of injured or dead birds.  
अंततः बचाव केंद्रों को केवल घायल या मृत पक्षियों का एक सीमित हिस्सा ही प्राप्त होता है।
- “When we looked more closely at building collision cases, nearly 70-80% involved glass in some form, be it windows, sliding doors, panels, reflective glass or facades,” Dr. Kallam said.  
“जब हमने भवन टकराव मामलों का गहन अध्ययन किया, तो लगभग **70-80% मामलों** में किसी न किसी रूप में **काँच** शामिल था—जैसे खिड़कियाँ, स्लाइडिंग दरवाजे, पैनल, परावर्तक काँच या भवन मुखावरण,” डॉ. कल्लम ने कहा।
- “And this is almost certainly an undercount. Small birds are easy to miss, many collisions are never witnessed and if a bird moves away from the impact site, identifying glass as the cause also becomes harder.”  
“और यह लगभग निश्चित रूप से एक **कम आँकड़ा (undercount)** है। छोटे पक्षियों को देख पाना कठिन होता है, कई टकराव कभी देखे ही नहीं जाते और यदि पक्षी टकराव स्थल से दूर चला जाए, तो काँच को कारण के रूप में पहचानना और भी कठिन हो जाता है।”

## Citizen science

### नागरिक विज्ञान (Citizen Science)

- In recent years, citizen-science platforms and informal reporting networks have begun filling some data gaps.  
हाल के वर्षों में **नागरिक विज्ञान प्लेटफॉर्मों** और अनौपचारिक रिपोर्टिंग नेटवर्क ने कुछ डेटा अंतरालों को भरना शुरू किया है।
- Birdwatchers now upload collision records to platforms like iNaturalist.  
पक्षी-प्रेक्षक अब टकराव रिकॉर्ड्स को **iNaturalist** जैसे प्लेटफॉर्म पर अपलोड कर रहे हैं।
- Rescue organisations also compile local observations.  
बचाव संगठन भी स्थानीय अवलोकनों को संकलित करते हैं।
- Mr. Sekhsaria and his collaborators have analysed several hundred such records collected from online birding communities and wildlife rescue groups.  
श्री सेखसरिया और उनके सहयोगियों ने ऑनलाइन पक्षी-समुदायों और वन्यजीव बचाव समूहों से एकत्रित कई सौ ऐसे रिकॉर्डों का विश्लेषण किया है।
- “We have about 110 species of birds that we have recorded having bird-window collisions,” he said.  
“हमने लगभग **110 पक्षी प्रजातियों** को दर्ज किया है जिनमें पक्षी-खिड़की टकराव पाए गए हैं,” उन्होंने कहा।
- “For a country like India, a thousand data points is nothing, but we actually have some data points to begin with.”  
“भारत जैसे देश के लिए एक हजार डेटा पॉइंट कुछ भी नहीं है, लेकिन हमारे पास शुरुआत करने के लिए कुछ डेटा अवश्य है।”



- “One common thing would be a head injury to birds,” Dr. Kallam said.  
“एक सामान्य बात पक्षियों में सिर की चोट होती है,” डॉ. कल्लम ने कहा।
- “Post-concussion, they will be dull and dazed.”  
“आघात (concussion) के बाद वे सुस्त और भ्रमित अवस्था में हो जाते हैं।”
- “Sometimes there could be internal organs bleeding. Those will be very difficult to diagnose,” she added.  
“कभी-कभी आंतरिक अंगों में रक्तस्राव भी हो सकता है, जिसे पहचानना बहुत कठिन होता है,” उन्होंने जोड़ा।
- According to her, many birds appear to recover briefly after impact, leading residents to release them too early.  
उनके अनुसार, कई पक्षी टकराव के बाद कुछ समय के लिए ठीक दिखते हैं, जिससे निवासी उन्हें समय से पहले छोड़ देते हैं।
- She said she believes substantial underreporting persists.  
उन्होंने कहा कि उनके अनुसार महत्वपूर्ण स्तर पर कम-रिपोर्टिंग अभी भी जारी है।
- “Particularly in the small birds, which are difficult to notice, if it is impacted and goes some distance and falls in a wooded area, those are difficult for anybody to notice.”  
“विशेष रूप से छोटे पक्षियों के मामले में, जिन्हें देखना कठिन होता है, यदि वे टकराकर कुछ दूरी पर जाकर किसी वनाच्छादित क्षेत्र में गिर जाते हैं, तो उन्हें कोई भी देख नहीं पाता।”

## Bird-safe cities

### पक्षी-अनुकूल शहर (Bird-safe Cities)

- Researchers said the absence of regulations does not mean mitigation is impossible.  
शोधकर्ताओं ने कहा कि नियमों की अनुपस्थिति का अर्थ यह नहीं है कि समाधान असंभव है।
- Experts have pointed to many simple, inexpensive interventions.  
विशेषज्ञों ने कई सरल और कम लागत वाले उपायों की ओर संकेत किया है।
- For example, patterns, decals or strips pasted on the outward-facing parts of windows can help birds identify glass surfaces as barriers.  
उदाहरण के लिए, खिड़कियों के बाहरी हिस्सों पर पैटर्न, स्टिकर या पट्टियाँ लगाने से पक्षी काँच की सतहों को अवरोध के रूप में पहचान सकते हैं।
- “The first step is simple: make glass visible to birds,” Dr. Kallam said.  
“पहला कदम सरल है: काँच को पक्षियों के लिए दिखाई देने योग्य बनाना,” डॉ. कल्लम ने कहा।
- Awareness and understanding of bird-glass collisions also suffer from their absence in mainstream urban ecological discussions in the country.  
भारत में शहरी पारिस्थितिकी संबंधी मुख्य चर्चाओं में इसकी अनुपस्थिति के कारण पक्षी-काँच टकराव के प्रति जागरूकता और समझ भी प्रभावित होती है।
- Conservation debates continue to focus on habitat destruction, air pollution, and infrastructure expansion.  
संरक्षण संबंधी बहसों अभी भी मुख्यतः आवास विनाश, वायु प्रदूषण और अवसंरचना विस्तार पर केंद्रित हैं।
- One 2023 petition before the National Green Tribunal filed by a resident in Bengaluru had asked for the Ministry of Environment, Forest and Climate Change to draft bird-safe building guidelines.  
2023 में बैंगलुरु के एक निवासी द्वारा राष्ट्रीय हरित अधिकरण (NGT) में दायर याचिका में पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय से पक्षी-अनुकूल भवन दिशानिर्देश तैयार करने की मांग की गई थी।
- As of May 2026, no public update or draft framework has been released.  
मई 2026 तक इस संबंध में कोई सार्वजनिक अद्यतन या मसौदा ढांचा जारी नहीं किया गया है।



- Mr. Sekhsaria said systematic citizen-science reporting may eventually shift that understanding.  
श्री सेखसरिया ने कहा कि व्यवस्थित नागरिक विज्ञान रिपोर्टिंग अंततः इस समझ को बदल सकती है।

<b>GS Paper III: Internal Security</b>		<b>28 May 2026</b>
<b>TOPICS COVERED</b>		
<b>28M</b>	<b>AMCA fighter project moves ahead as Centre issues RFP to shortlisted firms</b> केंद्र द्वारा चयनित कंपनियों को RFP जारी किए जाने के साथ AMCA लड़ाकू विमान परियोजना आगे बढ़ी	
<b>28M</b>	<b>Partial digitisation</b> आंशिक डिजिटलीकरण	

# AMCA fighter project moves ahead as Centre issues RFP to shortlisted firms

**GS III: IS: Defence**

**Saurabh Trivedi**  
NEW DELHI

The Ministry of Defence on Wednesday issued the Request for Proposal (RFP) for the indigenous fifth-generation Advanced Medium Combat Aircraft (AMCA) programme to three shortlisted bidders, marking a major step forward in India's push for self-reliance in advanced combat aviation.

The shortlisted entities include the Larsen and Toubro-Bharat Electronics Limited combine, Tata Advanced Systems, and the Bharat Forge-BEML consortium. A top official in the Ministry of Defence confirmed the development to *The Hindu*. "It is a huge step towards the Make in India initiative of the Centre to develop an indigenous fifth-generation



**Next-gen project:** An Advanced Medium Combat Aircraft fighter jet designed by the Aeronautical Development Agency. K. MURALI KUMAR

fighter jet," the official said. Interestingly, the State-run aerospace major Hindustan Aeronautics Ltd. has been kept out of the process, sources said. After the shortlisted companies submit their responses to the RFP, the selection process is likely to be completed within four to five months based on technical and commercial evaluations.

Under the programme, the government plans to build five prototypes of the AMCA, a stealth fighter aircraft being developed to meet the Indian Air Force's long-term operational requirements.

The selected private defence entity will work in partnership with the Aeronautical Development Agency, functioning under the Ministry of Defence,

for the development of the prototypes.

The AMCA programme is considered one of India's most ambitious indigenous aerospace projects aimed at developing a fifth-generation stealth combat aircraft with advanced avionics, supercruise capability, and reduced radar signature.

On May 15, Defence Minister Rajnath Singh and Andhra Pradesh Chief Minister N. Chandrababu Naidu laid the foundation stone for the ₹15,803-crore AMCA infrastructure project in Andhra Pradesh's Sri Sathya Sai district.

Last year, the Defence Minister approved the AMCA Programme Execution Model, under which the Aeronautical Development Agency will execute the project through industry partnership.

## 28M. AMCA fighter project moves ahead as Centre issues RFP to shortlisted firms

केंद्र द्वारा चयनित कंपनियों को RFP जारी किए जाने के साथ AMCA लड़ाकू विमान परियोजना आगे बढ़ी



- The **Ministry of Defence** on Wednesday issued the **Request for Proposal (RFP)** for the indigenous fifth-generation **Advanced Medium Combat Aircraft (AMCA)** programme to three shortlisted bidders, marking a major step forward in India's push for self-reliance in advanced combat aviation.  
रक्षा मंत्रालय ने बुधवार को स्वदेशी पाँचवीं पीढ़ी के एडवांस्ड मीडियम कॉम्बैट एयरक्राफ्ट (AMCA) कार्यक्रम के लिए तीन चयनित बोलीदाताओं को रिक्वेस्ट फॉर प्रोजेक्ट (RFP) जारी किया, जो उन्नत लड़ाकू विमानन में भारत की आत्मनिर्भरता की दिशा में एक बड़ा कदम माना जा रहा है।
- The shortlisted entities include the **Larsen and Toubro-Bharat Electronics Limited** combine, **Tata Advanced Systems**, and the **Bharat Forge-BEML** consortium.  
चयनित संस्थाओं में लार्सन एंड टुब्रो-भारत इलेक्ट्रॉनिक्स लिमिटेड समूह, टाटा एडवांस्ड सिस्टम्स, तथा भारत फोर्ज-बेमल संघ शामिल हैं।
- A top official in the **Ministry of Defence** confirmed the development to The Hindu.  
रक्षा मंत्रालय के एक वरिष्ठ अधिकारी ने इस विकास की पुष्टि की।
- "It is a huge step towards the **Make in India** initiative of the Centre to develop an indigenous fifth-generation fighter jet," the official said.  
अधिकारी ने कहा, "यह स्वदेशी पाँचवीं पीढ़ी के लड़ाकू विमान के विकास हेतु केंद्र की मेक इन इंडिया पहल की दिशा में एक बड़ा कदम है।"
- Interestingly, the State-run aerospace major **Hindustan Aeronautics Ltd. (HAL)** has been kept out of the process, sources said.  
सूत्रों के अनुसार, सरकारी एयरोस्पेस कंपनी हिंदुस्तान एयरोनॉटिक्स लिमिटेड (HAL) को इस प्रक्रिया से बाहर रखा गया है।
- After the shortlisted companies submit their responses to the **RFP**, the selection process is likely to be completed within four to five months based on technical and commercial evaluations.  
चयनित कंपनियों द्वारा **RFP** के उत्तर प्रस्तुत करने के बाद, तकनीकी और वाणिज्यिक मूल्यांकन के आधार पर चयन प्रक्रिया चार से पाँच महीनों में पूरी होने की संभावना है।
- Under the programme, the government plans to build five prototypes of the **AMCA**, a stealth fighter aircraft being developed to meet the **Indian Air Force's** long-term operational requirements.  
इस कार्यक्रम के अंतर्गत सरकार **AMCA** के पाँच प्रोटोटाइप विकसित करने की योजना बना रही है, जो भारतीय वायु सेना की दीर्घकालिक परिचालन आवश्यकताओं को पूरा करने हेतु विकसित किया जा रहा एक स्टेल्थ लड़ाकू विमान है।
- The selected private defence entity will work in partnership with the **Aeronautical Development Agency**, functioning under the **Ministry of Defence**, for the development of the prototypes.  
चयनित निजी रक्षा कंपनी प्रोटोटाइप के विकास के लिए रक्षा मंत्रालय के अधीन कार्यरत एरोनॉटिकल डेवलपमेंट एजेंसी के साथ साझेदारी में कार्य करेगी।
- The **AMCA** programme is considered one of India's most ambitious indigenous aerospace projects aimed at developing a fifth-generation stealth combat aircraft with advanced avionics, supercruise capability, and reduced radar signature.  
**AMCA** कार्यक्रम को भारत की सबसे महत्वाकांक्षी स्वदेशी एयरोस्पेस परियोजनाओं में से एक माना जाता है, जिसका उद्देश्य उन्नत एवियोनिक्स, सुपरक्रूज़ क्षमता और कम रडार पहचान वाले पाँचवीं पीढ़ी के स्टेल्थ लड़ाकू विमान का विकास करना है।
- On **May 15**, Defence Minister **Rajnath Singh** and Andhra Pradesh Chief Minister **N. Chandrababu Naidu** laid the foundation stone for the **₹15,803-crore AMCA infrastructure project** in Andhra Pradesh's **Sri Sathya Sai district**.  
15 मई को रक्षा मंत्री राजनाथ सिंह और आंध्र प्रदेश के मुख्यमंत्री एन. चंद्रबाबू नायडू ने आंध्र प्रदेश के श्री सत्य साई जिले में ₹15,803 करोड़ की **AMCA** अवसंरचना परियोजना की आधारशिला रखी।



- Last year, the Defence Minister approved the **AMCA Programme Execution Model**, under which the **Aeronautical Development Agency** will execute the project through industry partnership.  
पिछले वर्ष रक्षा मंत्री ने **AMCA कार्यक्रम क्रियान्वयन मॉडल** को मंजूरी दी थी, जिसके अंतर्गत **एरोनॉटिकल डेवलपमेंट एजेंसी** उद्योग साझेदारी के माध्यम से परियोजना को क्रियान्वित करेगी।

### GS III: Internal Security

## Partial digitisation

Cumbersome processes from analogue era remain despite more online services

**D**igitising citizen services is a process full of promise and empowerment. In India, making processes faceless carries the added benefit of relief from the rent seeking that is rife in government offices. The more services are available online, the better. It is possible; in December 2024, Estonia digitised the last citizen service that only remained possible on paper: divorce. In this light, participation of private firms such as WhatsApp in getting digital services delivered to more people, as in Gujarat, is welcome. This being said, the digital service delivery in India has several issues: a lack of trust towards the citizen, in spite of the citizen-centricity touted as the reason for their existence; systematic underinvestment leading to lapses in availability and reliability; and lax cybersecurity. In many cases involving the most dysfunctional online services, the responsibility lies with States, such as property records registration and civil acts such as marriage. But even in those where the remit lies with the Union government, there are serious issues.

While lip service is paid to the importance of securing key cybersecurity infrastructure, serious vulnerabilities remain. Security of data residing on public databases is taken for granted, and institutions such as the **Indian Computer Emergency Response Team (CERT-in)** have failed to rise to the challenge. Also, on myriad forms online, users are forced to type and submit the same details repeatedly, even though systems such as Digi Locker exist that are purported to ease this process. A shadow of a "mismatch" can anyway result, and few if any processes allow citizens to cure defects without redoing the entire process – a shocking lapse punishing routine variations in names and spellings. Scant regard is paid to the accessibility and intuitive design, leaving persons with disabilities and vast swathes of the population dependent on outside assistance to go through a self-service process. Some systems are left defunct or sputtering years after their launch: take e-Sanad, launched a decade ago to help people legalise personal documents while travelling abroad or emigrating. Few States have been on-boarded, leaving other residents to deal with middlemen and touts in the pre-verification process that precedes the so-called Apostille stamp they need on a time-bound schedule. As with this process, the analogue equivalents of broken digital services remain inaccessible and cumbersome, such as updating details on Aadhaar, which requires visiting a physical office. The creation of **Digital Public Infrastructure such as UPI and Aadhaar are of little use without reciprocal trust by the government and a commitment to uptime and service quality.**

- Also, on myriad forms online, users are forced to type and submit the same details repeatedly, even though systems such as **DigiLocker** exist that are purported to ease this process.

इसके अतिरिक्त, अनेक ऑनलाइन प्रपत्रों में उपयोगकर्ताओं को बार-बार वही जानकारी भरकर प्रस्तुत करनी पड़ती है, जबकि **DigiLocker** जैसी प्रणालियाँ इस प्रक्रिया को सरल बनाने के उद्देश्य से उपलब्ध हैं।

## 28M. Partial digitisation

### आंशिक डिजिटलीकरण

- In India, making processes faceless carries the added benefit of relief from the rent seeking that is rife in government offices.

India में प्रक्रियाओं को फेसलेस बनाना सरकारी कार्यालयों में व्याप्त **भ्रष्ट लाभ प्राप्ति (rent seeking)** से राहत का अतिरिक्त लाभ प्रदान करता है।

- The more services are available online, the better.

जितनी अधिक सेवाएँ ऑनलाइन उपलब्ध होंगी, उतना ही बेहतर होगा।

- It is possible; in December 2024, Estonia digitised the last citizen service that only remained possible on paper: divorce.

यह संभव है; दिसंबर 2024 में Estonia ने अंतिम ऐसी नागरिक सेवा का भी डिजिटलीकरण कर दिया जो अब तक केवल कागज़ पर ही संभव थी: तलाक।

- In this light, participation of private firms such as **WhatsApp** in getting digital services delivered to more people, as in Gujarat, is welcome.

इस दृष्टि से, Gujarat की तरह अधिक लोगों तक डिजिटल सेवाएँ पहुँचाने में

**WhatsApp** जैसी निजी कंपनियों की भागीदारी स्वागतयोग्य है।

- This being said, the digital service delivery in India has several issues: a lack of trust towards the citizen, in spite of the citizen-centricity touted as the reason for their existence; systematic underinvestment leading to lapses in availability and reliability; and lax cybersecurity.

यह कहने के बावजूद कि भारत में डिजिटल सेवा वितरण में अनेक समस्याएँ हैं:

नागरिकों के प्रति विश्वास की कमी, जबकि नागरिक-केंद्रितता को इनके अस्तित्व का कारण बताया जाता है; व्यवस्थित रूप से अपर्याप्त निवेश जिसके कारण उपलब्धता और विश्वसनीयता में कमी आती है; तथा कमजोर साइबर सुरक्षा।

- In many cases involving the most dysfunctional online services, the responsibility lies with States, such as property records registration and civil acts such as marriage.

अत्यधिक अव्यवस्थित ऑनलाइन सेवाओं से जुड़े अनेक मामलों में उत्तरदायित्व राज्यों का होता है, जैसे संपत्ति अभिलेख पंजीकरण और विवाह जैसे नागरिक कार्य।

- Security of data residing on public databases is taken for granted, and institutions such as the **Indian Computer Emergency Response Team** have failed to rise to the challenge.

सार्वजनिक डेटाबेस में संग्रहीत डेटा की सुरक्षा को सामान्य मान लिया जाता है, और Indian Computer Emergency Response Team जैसी संस्थाएँ इस चुनौती का प्रभावी ढंग से सामना करने में विफल रही हैं।



- Scant regard is paid to the accessibility and intuitive design, leaving persons with disabilities and vast swathes of the population dependent on outside assistance to go through a self-service process.  
सुगम्यता और सहज डिज़ाइन पर बहुत कम ध्यान दिया जाता है, जिससे दिव्यांग व्यक्तियों और बड़ी आबादी को स्वयं-सेवा प्रक्रिया पूरी करने के लिए बाहरी सहायता पर निर्भर रहना पड़ता है।
- Some systems are left defunct or sputtering years after their launch: take [e-Sanad](#), launched a decade ago to help people legalise personal documents while travelling abroad or emigrating.  
कुछ प्रणालियाँ शुरू होने के वर्षों बाद भी निष्क्रिय या अव्यवस्थित बनी रहती हैं; उदाहरण के लिए [e-Sanad](#), जिसे एक दशक पहले विदेश यात्रा या प्रवास के दौरान व्यक्तिगत दस्तावेजों के वैधीकरण में सहायता हेतु प्रारंभ किया गया था।
- As with this process, the analogue equivalents of broken digital services remain inaccessible and cumbersome, such as updating details on [Aadhaar](#), which requires visiting a physical office.  
इसी प्रकार, विफल डिजिटल सेवाओं के पारंपरिक विकल्प भी दुर्गम और जटिल बने हुए हैं, जैसे [Aadhaar](#) में विवरण अद्यतन करना, जिसके लिए भौतिक कार्यालय जाना आवश्यक होता है।
- The creation of **Digital Public Infrastructure** such as **UPI** and **Aadhaar** are of little use without reciprocal trust by the government and a commitment to uptime and service quality. **UPI** और **Aadhaar** जैसी **डिजिटल सार्वजनिक अवसंरचना** का निर्माण तब तक बहुत उपयोगी नहीं है, जब तक सरकार की ओर से पारस्परिक विश्वास तथा सेवाओं की निरंतर उपलब्धता और गुणवत्ता के प्रति प्रतिबद्धता न हो।

PATRIOTIC IAS