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THE HINDU NEWSPAPER

27 NOVEMBER 2025

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PCS Special:	27 November 2025
UPPSC	
1. Ahmedabad formally named 2030 CWG host अहमदाबाद को औपचारिक रूप से 2030 CWG की मेज़बानी मिली	

UPPSC	27/11/2025
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Voices of Change



PCS

Bold stand: Women hold a banner in front of the Pantheon in Paris, France, on Tuesday, to mark the International Day for the Elimination of Violence Against Women. AP



Ahmedabad formally named 2030 CWG host

PCS

Y.B. Sarangi
KOLKATA

The Commonwealth Games will return to India after a gap of 20 years, with Ahmedabad hosting the 2030 centenary edition.

Commonwealth Sport (CS) on Wednesday made the announcement from Glasgow through a physical-cum-virtual press conference after its General Assembly ratified the Executive Board's October 15 proposal in favour of Ahmedabad ahead of the Nigerian capital city of Abuja.

Boost

The opportunity would give a boost to India's ambition to bid for the 2036 Olympics.

CS president Dr. Donald Rukare said the decision followed a "robust evaluation process."

The Indian delegation, including Gujarat Sports Minister Harsh Sanghavi and Indian Olympic Association president P.T. Usha, underlined that the Games would be athlete-centric and sustainable "which can be taken for next 100 years."

Acknowledging the challenges related to Delhi hosting the 2010 Games, which was mired in controversies due to delayed projects and allegations of cor-

ruption, Gujarat Sports Department principal secretary Ashwini Kumar said the Games could be staged with existing infrastructure.

But with the city having aspirations of becoming the sports capital of the country, new venues would be added.

"This time we are well-prepared. The organising committee is going to be established within a month or so. Our fundamentals are very strong," said Ashwini, adding lessons could be learnt from the past editions to avoid over-committing on infrastructure.

He said infrastructure would be built at the Sardar Vallabhbhai Patel Sports Enclave and Gujarat Police Academy, which would include an athletics stadium and a shooting range.

"The funding has been secured by the Government.

"The construction is likely to begin by April 2026, and we will be completing by the end of 2028 or early 2029," he said, adding Ahmedabad would also host the 2029 World Police and Fire Games.

Ashwini said October, coinciding with the festive season of Navratri and Diwali, would be the preferred month to host the Games.

भ्रष्टाचार के आरोप जैसी चुनौतियों को मानते हुए, गुजरात खेल विभाग के प्रमुख सचिव अश्विनी कुमार ने कहा कि गेम्स को मौजूदा बुनियादी ढांचे के साथ आयोजित किया जा सकता है।

- But with the city having aspirations of becoming the **sports capital of the country**, new venues would be added.

लेकिन शहर के देश की खेल राजधानी बनने के सपने के साथ, नए खेल स्थलों को भी जोड़ा जाएगा।

- "This time we are well-prepared. The organising committee is going to be established within a **month** or so. Our fundamentals are very strong," said Ashwini, adding lessons could be learnt from the past editions to avoid **over-committing on infrastructure**.

"इस बार हम अच्छी तरह तैयार हैं। आयोजन समिति लगभग एक महीने में स्थापित कर दी जाएगी। हमारे मूल सिद्धांत बहुत मजबूत हैं," अश्विनी ने कहा, यह जोड़ते हुए कि पिछली गलतियों से सीखकर अत्यधिक बुनियादी ढांचा वादे करने से बचा जाएगा।

Ahmedabad formally named 2030 CWG host

अहमदाबाद को औपचारिक रूप से 2030 CWG की मेज़बानी मिली

- The **Commonwealth Games** will return to **India** after a gap of **20 years**, with **Ahmedabad** hosting the **2030 centenary edition**.

कॉमनवेल्थ गेम्स 20 साल बाद भारत लौटेंगे, और अहमदाबाद 2030 की शताब्दी संस्करण की मेज़बानी करेगा।

- **Commonwealth Sport (CS)** on **Wednesday** made the **announcement from Glasgow** through a physical-cum-virtual press conference after its General Assembly ratified the Executive Board's **October 15 proposal** in favour of Ahmedabad ahead of **Abuja (Nigeria)**.

कॉमनवेल्थ स्पोर्ट (CS) ने बुधवार को ग्लासगो से फिजिकल-कम-वर्चुअल प्रेस कॉन्फ्रेंस में घोषणा की, जब उसकी जनरल असेंबली ने 15 अक्टूबर के प्रस्ताव को मंजूरी दी जिसमें अबुजा (नाइजीरिया) की तुलना में अहमदाबाद के पक्ष में निर्णय किया गया।

- The opportunity would give a boost to **India's ambition to bid for the 2036 Olympics**.

यह अवसर भारत की **2036 ओलंपिक्स** की बोली लगाने की महत्वाकांक्षा को बढ़ावा देगा।

- CS president **Dr. Donald Rukare** said the decision followed a "**robust evaluation process**."

CS अध्यक्ष **डॉ. डोनाल्ड रुकारे** ने कहा कि यह निर्णय "**मजबूत मूल्यांकन प्रक्रिया**" के बाद लिया गया।

- The Indian delegation, including **Gujarat Sports Minister Harsh Sanghavi** and **Indian Olympic Association president P.T. Usha**, underlined that the Games would be **athlete-centric** and **sustainable**, "which can be taken for next **100 years**."

भारतीय प्रतिनिधिमंडल जिसमें गुजरात के खेल मंत्री हर्ष सांघवी और भारतीय ओलंपिक संघ की अध्यक्ष पी.टी. उषा शामिल थीं, ने कहा कि ये गेम्स एथलीट-केंद्रित और सस्टेनेबल होंगे, "जिसे आने वाले **100 वर्षों** तक जारी रखा जा सकता है।"

- Acknowledging the challenges related to **Delhi hosting the 2010 Games**, which was mired in controversies due to **delayed projects** and **allegations of corruption**, Gujarat Sports Department principal secretary **Ashwini Kumar** said the Games could be staged with **existing infrastructure**.

2010 दिल्ली कॉमनवेल्थ गेम्स में देरी से परियोजनाएँ और



- He said infrastructure would be built at the **Sardar Vallabhbhai Patel Sports Enclave and Gujarat Police Academy**, which would include an **athletics stadium** and a **shooting range**.
उन्होंने कहा कि बुनियादी ढांचा **सरदार वल्लभभाई पटेल स्पोर्ट्स एन्क्लेव** और **गुजरात पुलिस अकादमी** में विकसित किया जाएगा, जिसमें एक **एथलेटिक्स स्टेडियम** और **शूटिंग रेंज** शामिल होंगे।
- “The **funding** has been secured by the Government.
उन्होंने कहा, “सरकार द्वारा **फंडिंग** सुनिश्चित कर दी गई है।
- “The construction is likely to begin by **April 2026**, and we will be completing by the end of **2028** or early **2029**,” he said, adding **Ahmedabad** would also host the **2029 World Police and Fire Games**.
“निर्माण **अप्रैल 2026** तक शुरू होने की संभावना है, और इसे **2028** के अंत या **2029** की शुरुआत तक पूरा कर लिया जाएगा,” उन्होंने कहा, और यह भी बताया कि **अहमदाबाद 2029 वर्ल्ड पुलिस एंड फायर गेम्स** की मेजबानी भी करेगा।
- Ashwini said **October**, coinciding with the festive season of **Navratri** and **Diwali**, would be the preferred month to host the Games.
अश्विनी ने कहा कि **अक्टूबर**, जो **नवरात्रि** और **दीवाली** के त्योहारों के समय आता है, गेम्स आयोजित करने का पसंदीदा महीना होगा।

GS Paper 1: History, Society and Geography

TOPICS COVERED

27 November 2025

Geography

1. **3.5 billion-year-old crater on Mars to be christened after geologist M.S. Krishnan**
मंगल ग्रह पर 3.5 अरब साल पुराने क्रेटर का नाम जियोलॉजिस्ट एम.एस. कृष्णन के नाम पर रखा जाएगा
2. **Kremlin confirms U.S. envoy's visit as talks on truce gain momentum**
क्रेमलिन ने अमेरिकी राजदूत के दौरे की पुष्टि की, संघर्ष विराम पर बातचीत तेज़ हुई

Geography

26/11/2025



3.5 billion-year-old crater on Mars to be christened after geologist M.S. Krishnan

3.5 billion-year-old crater on Mars to be christened after geologist M.S. Krishnan

GS II: Geography

Tiki Rajwi

THIRUVANANTHAPURAM

A 3.5 billion-year-old crater on Mars will henceforth be known after M.S. Krishnan, the pioneering Indian geologist. The International Astronomical Union (IAU) has approved it and several other names for Martian landforms proposed by two Kerala-based researchers.

Apart from 'Krishnan,' the IAU has also accepted several Kerala-based names for smaller landforms associated with the crater. These are 'Valiamala,' 'Thumba,' 'Bekal,' 'Varkala' and 'Periyar' for smaller craters and a vallis



Smaller craters and vallis in Mars are set to get names — 'Valiamala,' 'Thumba,' 'Bekal,' 'Varkala' and 'Periyar'. SPECIAL ARRANGEMENT

(valley). Which means, these places in Kerala now have counterparts on Mars.

The naming proposal was jointly submitted by Asif Iqbal Kakkassery, formerly research scholar at

the Indian Institute of Space Science and Technology (IIST) here and who is now Assistant Professor in Geology at Government College, Kasaragod, and Rajesh V.J. of the Department of Earth and Space

Sciences, IIST.

Born in Thanjavur in what was then Madras Presidency in 1898, Dr. Krishnan was the first Indian to be director of the Geological Society of India. As for the other names, it is the first time that place names from Kerala are being adopted for Martian features, the team said.

"The plain inside Krishnan Crater has been officially named Krishnan Palus, and a channel cutting across it has been named Periyar Vallis," Dr. Rajesh said.

The findings have been published in the journal *Meteoritics & Planetary Science*.

मंगल ग्रह पर 3.5 अरब साल पुराने क्रेटर का नाम जियोलॉजिस्ट एम.एस. कृष्णन के नाम पर रखा जाएगा

Naming of Martian Crater after M.S. Krishnan

एम.एस. कृष्णन के नाम पर मंगल ग्रह के क्रेटर का नामकरण

- A 3.5 billion-year-old crater on Mars will henceforth be known after M.S. Krishnan, the pioneering Indian geologist. The **International Astronomical Union (IAU)** has approved it and several other names for Martian landforms proposed by two **Kerala-based researchers**.

3.5 अरब वर्ष पुराना क्रेटर मंगल ग्रह पर अब से भारतीय भूवैज्ञानिक एम.एस. कृष्णन के नाम से जाना जाएगा। इंटरनेशनल एस्ट्रोनॉमिकल यूनियन (IAU) ने इसे और दो केरल-आधारित शोधकर्ताओं द्वारा प्रस्तावित अन्य मार्शियन भू-आकृतियों के नामों को मंजूरी दी है।

- Apart from 'Krishnan,' the IAU has also accepted several **Kerala-based names** for smaller landforms associated with the crater. These are '**Valiamala**,' '**Thumba**,' '**Bekal**,' '**Varkala**' and '**Periyar**' for **smaller craters and a vallis (valley)**. Which means, these places in Kerala now have counterparts on **Mars**. 'Krishnan' के अलावा IAU ने क्रेटर से जुड़े छोटे भू-आकृतियों के लिए कई **केरल-आधारित नामों** को स्वीकार किया है। इनमें छोटे क्रेटरों और एक घाटी (vallis) के लिए '**Valiamala**,' '**Thumba**,' '**Bekal**,' '**Varkala**' और '**Periyar**' शामिल हैं। इसका मतलब है कि अब केरल के ये स्थान **मंगल ग्रह पर भी मौजूद हैं।**
- The naming proposal was jointly submitted by **Asif Iqbal Kakkassery**, formerly research scholar at the **Indian Institute of Space Science and Technology (IIST)** here and now **Assistant Professor in Geology** at Government College, Kasaragod, and **Rajesh V.J.** of the Department of **Earth and Space Sciences**, IIST.

नामकरण प्रस्ताव **आसिफ इक़बाल कक्कासेरी**, जो पहले IIST में शोधार्थी थे और अब सरकारी कॉलेज, कसारगोड



में भूविज्ञान के सहायक प्रोफेसर हैं, और राजेश वी.जे., विभाग पृथ्वी और अंतरिक्ष विज्ञान, IIST द्वारा संयुक्त रूप से प्रस्तुत किया गया था।

- Born in **Thanjavur** in what was then **Madras Presidency** in 1898, **Dr. Krishnan was the first Indian to be director of the Geological Society of India.** As for the other names, **it is the first time that place names from Kerala are being adopted for Martian features,** the team said.
- 1898 में उस समय की **मद्रास प्रेसिडेंसी** के **थंजावुर** में जन्मे डॉ. कृष्णन **Geological Society of India** के निदेशक बनने वाले **पहले भारतीय** थे। टीम के अनुसार, अन्य नामों के लिए, यह पहली बार है जब **केरल** के स्थानों के नाम मंगल ग्रह की भू-आकृतियों के लिए अपनाए जा रहे हैं।
- “The **plain inside Krishnan Crater has been officially named Krishnan Palus,** and a channel cutting across it has been named **Periyar Vallis,**” Dr. Rajesh said.
- डॉ. राजेश ने कहा, “**Krishnan Crater** के भीतर की मैदानी सतह का आधिकारिक नाम **Krishnan Palus** रखा गया है, और इसके पार जाने वाली एक जल-धारा का नाम **Periyar Vallis** रखा गया है।”
- The findings have been published in the journal **Meteoritics & Planetary Science.** इन निष्कर्षों को **Meteoritics & Planetary Science** नामक जर्नल में प्रकाशित किया गया है।

Kremlin confirms U.S. envoy’s visit as talks on truce gain momentum

Russian officials say they have not yet received or seen the U.S. peace proposal in detail; Trump defends negotiations led by Witkoff, describing his approach as ‘standard dealmaking’; Peskov warns against exaggerating significance of leaked calls

GS I: Geography: Mapping

Associated Press
KYIV

A senior Kremlin official confirmed on Wednesday that U.S. special envoy Steve Witkoff is set to visit Moscow next week as efforts to find a consensus on ending the nearly four-year war between Russia and Ukraine pick up speed.

But Yuri Ushakov, Russian President Vladimir Putin’s foreign affairs adviser, insisted that Kremlin officials still haven’t seen a U.S. peace proposal, even though representatives of the United States, Russia and Ukraine held talks earlier this week in Abu Dhabi, United Arab Emirates.

“Contact is ongoing, including via telephone, but no one has yet sat down at a round-table and dis-



Diplomatic manoeuvre: Yuri Ushakov, left, and Dmitry Peskov attend a meeting in Bishkek, Kyrgyzstan, on Wednesday. AP

cussed this point by point. That hasn’t happened,” Mr. Ushakov told Russian state media.

Ukrainian officials did not confirm whether U.S. Army Secretary Dan Driscoll, who in recent weeks has played a high-profile role in the peace efforts, would be in Kyiv in the

coming days, as U.S. President Donald Trump indicated on Tuesday.

Mr. Trump’s plan for ending the war became public last week, setting off a spate of diplomatic manoeuvring. The initial version appeared heavily slanted toward Russian demands for halting Mos-

cow’s invasion of its neighbour.

After weekend talks in Geneva between U.S. and Ukrainian officials, President Volodymyr Zelenskyy said the plan could be “workable,” although key points remain unresolved. A Ukrainian official said that Mr. Zelenskyy hoped to meet with Mr. Trump in the coming days.

Mr. Witkoff’s role in the peace efforts came under a renewed spotlight on Tuesday when a report indicated that he coached Mr. Ushakov, the Putin aide, on how Russia’s leader should pitch Mr. Trump on the Ukraine peace plan.

Mr. Trump described Mr. Witkoff’s reported approach to the Russians in the call as “standard” negotiating procedure.

“He’s got to sell this to

Ukraine. He’s got to sell Ukraine to Russia,” Mr. Trump told presspersons aboard Air Force One as he flew to his home in Florida on Tuesday night. “That’s what a dealmaker does.”

Kremlin spokesperson Dmitry Peskov said that he “wouldn’t exaggerate [the] significance” of the leaked call, Russian state news outlet Tass reported.

However, “it’s clear that there will be a very large number of people in various countries, including the United States, who will try to disrupt these efforts toward peace,” Mr. Peskov said from Kyrgyzstan, where Mr. Putin travelled this week.

Asked whether a peace agreement had never been closer, Mr. Peskov said, “It’s a little too early to say that,” according to Tass.



GS Paper II: Polity, Governance, And International Relations

TOPICS COVERED

26 November 2025

Polity	
1.	No hitch in Kerala SIR, 99% forms issued: EC केरल में कोई दिक्कत नहीं, 99% फॉर्म जारी हो गए: EC
2.	CJI says court will consider plea seeking to revive NJAC, end the Collegium system CJI ने कहा कि कोर्ट NJAC को फिर से शुरू करने और कॉलेजियम सिस्टम को खत्म करने की मांग वाली याचिका पर विचार करेगा
3.	Passive euthanasia: SC forms medical board for 31-year-old man पैसिव यूथेनेशिया: SC ने 31 साल के आदमी के लिए मेडिकल बोर्ड बनाया
4.	Can a 'foreigner' be allowed to use Aadhaar to enter poll rolls, asks SC क्या किसी 'विदेशी' को वोटर लिस्ट में नाम दर्ज कराने के लिए आधार का इस्तेमाल करने की इजाज़त दी जा सकती है, SC ने पूछा
5.	India rejects Pak. remarks on flag hoisting at Ayodhya Ram Temple भारत ने अयोध्या राम मंदिर में झंडा फहराने पर पाकिस्तान की टिप्पणी को खारिज किया
International Relations	
7.	Gaza's economy collapsed in 2024: UNCTAD गाजा की अर्थव्यवस्था 2024 में ध्वस्त हो जाएगी: UNCTAD

Polity

27/11/2025



No hitch in Kerala SIR, 99% forms issued: EC

EC says it is coordinating with the State's poll panel, and denies a human resources crunch

Kerala had moved the SC saying conduct of SIR along with local polls will be 'near impossible'

The CPI had moved court, aiming not only to defer but also to quash the revision process

GS II: Polity: Election

Krishnadas Rajagopal
NEW DELHI

The Election Commission (EC) expressed confidence that it can conduct the special intensive revision (SIR) of poll rolls in Kerala in the midst of local body elections, telling the Supreme Court on Wednesday that there is "no problem" whatsoever, and noting that enumeration forms have been distributed to 99% of voters in the State.

"EC and the Kerala State Election Commission are collaborating, coordinating and have held meetings with officials and District Collectors in Kerala. There is no problem. The State Election Commission has said its work is not hampered. In any case, it is almost over, 99% voters have been distributed [enumeration forms], more than 50% have been digitised," said the EC, represented by senior advocate Rakesh Dwivedi, appearing before a Bench headed by Chief Justice of India Surya Kant.

The SIR process began in Kerala on November 4 and will go on till December 4. The Kerala State Election Commission had decided to conduct the local body elections on December 9 and 11.

The State government, in a petition filed through advocate C.K. Sasi, had said that the simultaneous conduct of the SIR and the local body elections would be a "near impossibility".

"SIR is a huge exercise requiring deployment of 1,76,000 personnel from government and quasi-governmental services for election-related duties, and a further 68,000 police and other security personnel. SIR is also a comprehensive process with a cumbersome procedure," it had submitted.

Obstacle course

The Kerala government and political parties have filed separate petitions in the SC submitting that the "cumbersome" SIR process would create an "administrative impasse" during civic polls



Close check: A Booth Level Officer collecting SIR forms in Kerala. THULASI KAKKAT

■ The Kerala State Election Commission has decided to conduct polls to the local self-government institutions (LSGIs) on Dec. 9 and 11

■ Kerala has 1,200 LSGIs made up of 941 gram panchayats, 152 block panchayats, 14 district panchayats, 87 municipalities and six corporations. There are 23,612 wards in total

sonnel. SIR is also a comprehensive process with a cumbersome procedure," it had submitted.

"Will allocate EC staffs" On Wednesday, the EC denied the Kerala government's version of a human resources crunch, saying "different people have been allotted Booth Level

Officer duties from those deployed in the local self government institutions elections".

The EC said a small section of people have been doing BLO duties successfully, and if need be, the State Election Commission would be allocated more from the EC's own staff. The Communist Party of

India (CPI), a partner in the ruling Left Democratic Front (LDF) in Kerala, had separately moved the top court, seeking not only the deferment of the SIR but also a judicial direction to quash the revision process, which had spread to 12 States and Union Territories after Bihar.

Tamil Nadu argued that the EC had given "unrealistic timelines" to complete the SIR process in the State, noting that the forecast of a cyclone could also hinder the exercise.

One of the petitioners submitted that the EC had only digitised 50% enumeration forms in the past 22 days in Tamil Nadu, with the remaining forms to be completed in the eight days left before the end of the enumeration stage on December 4.

Mr. Dwivedi assuaged fears by noting that once

the enumerations were signed and submitted by citizens, it would be processed on time by the EC machinery.

Senior advocate Kapil Sibal – leading the petitioner side, which includes political parties, leaders, and State governments from Tamil Nadu, West Bengal, and Kerala – said what was happening on the ground was very different from what was presented in court.

Distribution of forms

He said the EC allows Booth-level agents (BLAs) of political parties to upload 50 enumeration forms every day till December 4. However, they have been restricted to 10 forms daily after December 4, following the publication of the draft list. Mr. Sibal urged the court to remove the restriction.

Mr. Dwivedi said political parties opposing the SIR were deliberately hampering the distribution of enumeration forms. Mr. Sibal countered, reading out the EC's own instruction, and said the revision should happen in a proper manner.

Advocates Prashant Bhushan and Neha Rathi submitted that BLOs were taking their own lives, unable to cope with the workload.

Mr. Bhushan submitted that the process in Assam followed earlier revisions in which there was no requirement for voters to submit enumeration forms or any documents.

Mr. Dwivedi countered that such an allegation was not part of any record filed by Mr. Bhushan's client, the Association of Democratic Reforms, in the top court.

No hitch in Kerala SIR, 99% forms issued: EC केरल में कोई दिक्कत नहीं, 99% फॉर्म जारी हो गए: EC

- The Election Commission (EC) expressed confidence that it can conduct the special intensive revision (SIR) of poll rolls in Kerala in the midst of local body elections, telling the Supreme Court on Wednesday that there is "no problem" whatsoever, and noting that enumeration forms have been distributed to 99% of voters in the State.

केरल में स्थानीय निकाय चुनावों के बीच मतदाता सूची के विशेष गहन पुनरीक्षण (SIR) को कराने में सक्षम होने पर चुनाव आयोग (EC) ने बुधवार को सुप्रीम कोर्ट को "कोई समस्या नहीं" बताते हुए भरोसा जताया, और यह भी कहा कि राज्य के 99% मतदाताओं को एन्यूमेरेशन फॉर्म वितरित कर दिए गए हैं।

- "EC and the Kerala State Election Commission are collaborating, coordinating and have held meetings with officials and District Collectors in Kerala. There is no problem. The State Election Commission has said its work is not hampered. In any case, it is almost over, 99% voters have been distributed [enumeration forms], more than 50% have been digitised," said the EC, represented by senior advocate Rakesh Dwivedi, appearing before a Bench headed by Chief Justice of India Surya Kant.

"EC और केरल राज्य निर्वाचन आयोग सहयोग और समन्वय कर रहे हैं और केरल में अधिकारियों और जिला कलेक्टरों के साथ बैठकें कर चुके हैं। कोई समस्या नहीं है। राज्य निर्वाचन आयोग ने कहा है कि उसका काम बाधित नहीं हुआ है। यह लगभग पूरा हो चुका है, 99% मतदाताओं को फॉर्म वितरित हो चुके हैं, और 50% से अधिक डिजिटल हो चुके हैं," यह बात EC के वरिष्ठ अधिवक्ता राकेश द्विवेदी ने मुख्य न्यायाधीश सूर्यकांत की अध्यक्षता वाली पीठ के समक्ष कही।

- The SIR process began in Kerala on November 4 and will go on till December 4. The Kerala State Election Commission had decided to conduct the local body elections on December 9 and 11. SIR प्रक्रिया केरल में 4 नवंबर को शुरू हुई और 4 दिसंबर तक चलेगी। केरल राज्य निर्वाचन आयोग ने स्थानीय निकाय चुनाव 9 और 11 दिसंबर को कराने का निर्णय लिया था।
- The State government, in a petition led through advocate C.K. Sasi, had said that the simultaneous conduct of the SIR and the local body elections would be a "near impossibility". राज्य सरकार ने अधिवक्ता सी.के. ससी के माध्यम से दायर याचिका में कहा था कि SIR और स्थानीय निकाय चुनावों का एक साथ संचालन "लगभग असंभव" होगा।
- "SIR is a huge exercise requiring deployment of 1,76,000 personnel from government and quasi-governmental services for election-related duties, and a further 68,000 police and other security



personnel. SIR is also a comprehensive process with a cumbersome procedure,” it had submitted. “SIR एक बड़ा अभ्यास है जिसके लिए सरकार और अर्ध-सरकारी सेवाओं से 1,76,000 कर्मियों तथा 68,000 पुलिस और सुरक्षा कर्मियों की आवश्यकता होती है। SIR एक व्यापक और जटिल प्रक्रिया है,” यह प्रस्तुत किया गया।

- ‘Will allocate EC staff’
‘EC स्टाफ आवंटित करेगा’
- On Wednesday, the EC denied the Kerala government’s version of a human resources crunch, saying “different people have been allotted Booth Level Officer duties from those deployed in the local self government institutions elections”.
बुधवार को EC ने मानव संसाधन की कमी संबंधी केरल सरकार के दावे से इनकार किया और कहा कि “स्थानीय स्व-शासन संस्थाओं के चुनावों में तैनात लोगों से अलग लोगों को BLO ड्यूटी दी गई है।”
- The EC said a small section of people have been doing BLO duties successfully, and if need be, the State Election Commission would be allocated more from the EC’s own staff.
EC ने कहा कि एक छोटा वर्ग BLO ड्यूटी सफलतापूर्वक कर रहा है और आवश्यकता पड़ने पर राज्य निर्वाचन आयोग को EC के अपने स्टाफ से और लोग दिए जाएंगे।
- The Communist Party of India (CPI), a partner in the ruling Left Democratic Front (LDF) in Kerala, had separately moved the top court, seeking not only the deferment of the SIR but also a judicial direction to quash the revision process, which had spread to 12 States and Union Territories after Bihar.
केरल में सत्तारूढ़ वाम लोकतांत्रिक मोर्चा (LDF) की सहयोगी पार्टी CPI ने भी शीर्ष अदालत में याचिका दाखिल की थी, जिसमें न केवल SIR को स्थगित करने बल्कि इस पुनरीक्षण प्रक्रिया को रद्द करने का आदेश मांगा गया था, जो बिहार के बाद 12 राज्यों और केंद्रशासित प्रदेशों तक फैल चुकी थी।
- Tamil Nadu argued that the EC had given “unrealistic timelines” to complete the SIR process in the State, noting that the forecast of a cyclone could also hinder the exercise.
तमिलनाडु ने तर्क दिया कि SIR पूरा करने के लिए EC ने “अवास्तविक समयसीमा” दी है और चक्रवात की आशंका से यह प्रक्रिया प्रभावित हो सकती है।
- One of the petitioners submitted that the EC had only digitised 50% enumeration forms in the past 22 days in Tamil Nadu, with the remaining forms to be completed in the eight days left before the end of the enumeration stage on December 4.
एक याचिकाकर्ता ने बताया कि तमिलनाडु में पिछले 22 दिनों में केवल 50% फॉर्म डिजिटाइज हुए हैं, और 4 दिसंबर तक बचे 8 दिनों में शेष फॉर्म पूरे करने होंगे।
- Mr. Dwivedi assuaged fears by noting that once the enumerations were signed and submitted by citizens, it would be processed on time by the EC machinery.
श्री द्विवेदी ने आश्वासन दिया कि नागरिकों द्वारा फॉर्म पर हस्ताक्षर कर जमा करते ही EC मशीनरी समय पर प्रक्रिया पूरी करेगी।
- Senior advocate Kapil Sibal — leading the petitioner side, which includes political parties, leaders, and State governments from Tamil Nadu, West Bengal, and Kerala — said what was happening on the ground was very different from what was presented in court.
वरिष्ठ अधिवक्ता कपिल सिबल — जो तमिलनाडु, पश्चिम बंगाल, और केरल की पार्टियों, नेताओं और राज्य सरकारों की ओर से पेश हो रहे थे — उन्होंने कहा कि जमीनी स्थिति अदालत में बताए गए से बिल्कुल अलग है।

Distribution of forms फॉर्म का वितरण

- He said the EC allows Booth-level agents (BLAs) of political parties to upload 50 enumeration forms every day till December 4. However, they have been restricted to 10 forms daily after December 4, following the publication of the draft list. Mr. Sibal urged the court to remove the restriction.
उन्होंने कहा कि EC राजनीतिक दलों के BLA को 4 दिसंबर तक रोज 50 फॉर्म अपलोड करने की अनुमति देता है, लेकिन ड्राफ्ट सूची जारी होने के बाद प्रतिदिन केवल 10 फॉर्म की सीमा लगा दी गई है। श्री सिबल ने यह प्रतिबंध हटाने का आग्रह किया।
- Mr. Dwivedi said political parties opposing the SIR were deliberately hampering the distribution of enumeration forms. Mr. Sibal countered, reading out the EC’s own instruction, and said the revision should happen in a proper manner.



श्री द्विवेदी ने कहा कि SIR का विरोध करने वाली पार्टियां जानबूझकर फॉर्म वितरण में बाधा डाल रही हैं। श्री सिब्बल ने EC के अपने निर्देश पढ़कर इसका खंडन किया और उचित प्रक्रिया में पुनरीक्षण कराने की मांग की।

- Advocates Prashant Bhushan and Neha Rathi submitted that BLOs were taking their own lives, unable to cope with the workload.

अधिवक्ता प्रशांत भूषण और नेहा राठी ने कहा कि BLO अत्यधिक कार्यभार के कारण आत्महत्या कर रहे हैं।

- Mr. Bhushan submitted that the process in Assam followed earlier revisions in which there was no requirement for voters to submit enumeration forms or any documents.

श्री भूषण ने कहा कि असम में पहले होने वाले पुनरीक्षणों में मतदाताओं को फॉर्म या दस्तावेज़ जमा करने की आवश्यकता नहीं होती थी।

- Mr. Dwivedi countered that such an allegation was not part of any record • led by Mr. Bhushan's client, the Association of Democratic Reforms, in the top court.

श्री द्विवेदी ने कहा कि यह आरोप श्री भूषण के मुवक्किल ADR द्वारा दाखिल रिकॉर्ड में कहीं नहीं है।

CJI says court will consider plea seeking to revive NJAC, end the Collegium system

GS II: Polity: Judiciary

The Hindu Bureau
NEW DELHI

Chief Justice of India Surya Kant on Wednesday orally said the court would consider a plea seeking to revive the National Judicial Appointments Commission and bring an end to the Collegium system of judicial appointments to the constitutional courts.

The plea, which arraigns the Chief Justice of India and even the Supreme Court Collegium as respondents along with the Union government and a clutch of parties, submitted that the striking down of the NJAC by the court was a "great wrong because it meant substitution of the will of the people by the opinion of the four judges".

The oral mentioning of the application was made

History revisited

1993: Collegium system of judicial appointments came into existence by virtue of a Constitution Bench judgment

2014: The National Judicial Appointments Commission Act, 2014 and the Constitution (99th Amendment) Act, 2014 came into existence to substitute the Collegium system

2015: A Bench declared the 99th Constitutional Amendment Act and the NJAC Act unconstitutional, reviving the Collegium system



by advocate Mathews J. Nedumpara, who has sought permission to argue the case in-person.

The NJAC, which briefly gave the government an equal role along with the judiciary in the appoint-

ment of judges to constitutional courts, was struck down by the court in 2015 as unconstitutional.

The plea urged the 2015 judgment to be rendered void *ab initio* as it revived the Collegium system, which was a "synonym for nepotism and favouritism."

"Since the Collegium came into existence, appointments to higher judiciary have been a 'riddle wrapped in a mystery, inside an enigma' to borrow an expression from Winston Churchill... The Parliament, which represents the will of the people, had enacted the 99th Constitutional Amendment Act and the NJAC Act. However, the enactments were "quashed and set aside" by this court, reducing the Parliament to an inferior tribunal," it said.

CJI says court will consider plea seeking to revive NJAC, end the Collegium system

CJI ने कहा कि कोर्ट NJAC को फिर से शुरू करने और कॉलेजियम सिस्टम को खत्म करने की मांग वाली याचिका पर विचार करेगा

**Plea on NJAC and Collegium System
NJAC और कोलेजियम प्रणाली पर याचिका**



- Chief Justice of India **Surya Kant** on **Wednesday** orally said the court would consider a plea seeking to revive the **National Judicial Appointments Commission** and bring an end to the **Collegium system** of judicial appointments to the constitutional courts.
भारत के मुख्य न्यायाधीश **सूर्यकांत** ने **बुधवार** को मौखिक रूप से कहा कि अदालत **National Judicial Appointments Commission (NJAC)** को पुनर्जीवित करने और संवैधानिक अदालतों में नियुक्तियों के **कोलेजियम सिस्टम** को समाप्त करने की मांग वाली याचिका पर विचार करेगी।
- The plea, which arraigns the Chief Justice of India and even the **Supreme Court Collegium** as respondents along with the **Union government** and a clutch of parties, submitted that the striking down of the NJAC by the court was a “great wrong because it meant substitution of the will of the people by the opinion of the **four judges**”.
याचिका, जिसमें भारत के मुख्य न्यायाधीश, **सुप्रीम कोर्ट कोलेजियम, केंद्र सरकार** और कई पक्षों को प्रतिवादी बनाया गया है, ने कहा कि अदालत द्वारा NJAC को रद्द करना “एक बड़ी गलती थी क्योंकि इससे जनता की इच्छा को **चार जजों** की राय से बदल दिया गया।”
- The oral mentioning of the application was made by advocate **Mathews J. Nedumpara**, who has sought permission to argue the case **in-person**.
इस आवेदन का मौखिक उल्लेख अधिवक्ता **मैथ्यूज जे. नेडुमपरा** ने किया, जिन्होंने केस को **व्यक्तिगत रूप से** बहस करने की अनुमति मांगी है।
- The NJAC, which briefly gave the government an equal role along with the judiciary in the appointment of judges to constitutional courts, was struck down by the court in **2015** as **unconstitutional**.
NJAC, जिसने संवैधानिक अदालतों में जजों की नियुक्ति में सरकार को न्यायपालिका के साथ समान भूमिका दी थी, उसे **2015** में अदालत ने **असंवैधानिक** करार देते हुए निरस्त कर दिया था।
- The plea urged the **2015** judgment to be rendered **void ab initio** as it revived the **Collegium system**, which was a “synonym for nepotism and favouritism.”
याचिका में **2015** के फैसले को **शून्य (void ab initio)** घोषित करने की मांग की गई, क्योंकि उसने **कोलेजियम सिस्टम** को पुनर्जीवित किया, जो “भाई-भतीजावाद और पक्षपात” का पर्याय बताया गया।

Passive euthanasia: SC forms medical board for 31-year-old man

GS II: Polity

Press Trust of India
NEW DELHI

The Supreme Court on Wednesday asked the Noida District Hospital to constitute a primary board to explore passive euthanasia for a 31-year-old man suffering from 100% disability quadriplegia and who has been in a vegetative state for over a decade, saying his health condition has gone from bad to worse.

Plea by father

Passive euthanasia is the intentional act of letting a patient die by withholding or withdrawing life support. A Bench of justices J.B. Pardiwala and K.V. Viswanathan asked the hospi-

talto file its report within two weeks on an application filed by father of 31-year-old Harish Rana seeking passive euthanasia for his son.

“We want the primary board to give us a report that life-sustaining treatment can be withheld. Let the primary board place its report at the earliest, and once it is before us, we shall proceed to pass further orders. Let this exercise be done within two weeks,” the Bench directed.

This is the second time in as many years that parents of the patient have approached the top court seeking passive euthanasia for their son.

याचिका में **2015** के फैसले को **शून्य (void ab initio)** घोषित करने की मांग की गई, क्योंकि उसने **कोलेजियम सिस्टम** को पुनर्जीवित किया, जो “भाई-भतीजावाद और पक्षपात” का पर्याय बताया गया।

• “Since the Collegium came into existence, appointments to higher judiciary have been a ‘riddle wrapped in a mystery, inside an enigma’ to borrow an expression from **Winston Churchill**... The **Parliament**, which represents the will of the people, had enacted the **99th Constitutional Amendment Act** and the **NJAC Act**.

However, the enactments were “quashed and set aside” by this court, reducing the Parliament to an inferior tribunal,” it said.

“कोलेजियम सिस्टम के अस्तित्व में आने के बाद से उच्च न्यायपालिका में नियुक्तियाँ **विंस्टन चर्चिल** के शब्दों में ‘रहस्य के भीतर पहिली में लिपटा हुआ एक रहस्य’ बन गई हैं... जनता की इच्छा का प्रतिनिधित्व करने वाली **संसद** ने **99वां संविधान संशोधन अधिनियम** और **NJAC अधिनियम** पारित किया था। लेकिन इन अधिनियमों को इस अदालत ने ‘रद्द और निरस्त’ कर दिया, जिससे संसद को एक निम्नस्तरीय न्यायाधिकरण जैसा बना दिया गया,” यह कहा गया।

Passive euthanasia: SC forms medical board for 31-year-old man

पैसिव यूथेनेशिया: SC ने 31 साल के आदमी के लिए मेडिकल बोर्ड बनाया

Supreme Court on Passive Euthanasia Case
निष्क्रिय इच्छामृत्यु मामले पर सुप्रीम कोर्ट

- The **Supreme Court** on **Wednesday** asked the **Noida District Hospital** to constitute a **primary board** to explore **passive euthanasia** for a **31-year-old man** suffering from **100% disability quadriplegia** and who has been in a **vegetative state** for over a decade, saying his health condition has gone from bad to worse.
सुप्रीम कोर्ट ने **बुधवार** को **नोएडा जिला अस्पताल** से कहा कि वह **31 वर्षीय व्यक्ति** के लिए **निष्क्रिय इच्छामृत्यु**



की संभावना की जांच हेतु एक प्राथमिक बोर्ड बनाए, जो 100% विकलांग क्राइप्लेजिया से ग्रस्त है और पिछले दशक से वनस्पतिजन्य अवस्था में है, यह कहते हुए कि उसकी स्वास्थ्य स्थिति बदतर होती गई है।

Plea by father पिता द्वारा याचिका

- **Passive euthanasia is the intentional act of letting a patient die by withholding or withdrawing life support.** A Bench of justices **J.B. Pardiwala** and **K.V. Viswanathan** asked the hospital to • le its report within **two weeks** on an application • led by father of **31-year-old Harish Rana** seeking passive euthanasia for his son.
निष्क्रिय इच्छामृत्यु वह जानबूझकर किया गया कार्य है जिसमें रोगी को **लाइफ सपोर्ट** रोककर या हटाकर मरने दिया जाता है। न्यायमूर्ति **जे.बी. पारदीवाला** और **के.वी. विश्वनाथन** की पीठ ने अस्पताल से कहा कि वह **दो सप्ताह** के भीतर **31 वर्षीय हरीश राणा** के पिता द्वारा दायर आवेदन पर अपनी रिपोर्ट दाखिल करे, जिसमें उन्होंने अपने बेटे के लिए निष्क्रिय इच्छामृत्यु मांगी है।
- “We want the primary board to give us a report that **life-sustaining treatment** can be withheld. Let the primary board place its report at the earliest, and once it is before us, we shall proceed to pass further orders. Let this exercise be done within **two weeks**,” the Bench directed.
पीठ ने निर्देश दिया, “हम चाहते हैं कि प्राथमिक बोर्ड हमें यह रिपोर्ट दे कि **जीवन-संरक्षण उपचार** रोका जा सकता है। प्राथमिक बोर्ड जल्द से जल्द अपनी रिपोर्ट दे, और जैसे ही वह हमारे सामने होगी, हम आगे के आदेश पारित करेंगे। यह कार्य **दो सप्ताह** के भीतर पूरा हो।”
- This is the **second time** in as many years that parents of the patient have approached the top court seeking passive euthanasia for their son.
यह **दूसरी बार** है जब मरीज के माता-पिता पिछले दो वर्षों में अपने बेटे के लिए निष्क्रिय इच्छामृत्यु की मांग लेकर शीर्ष अदालत पहुंचे हैं।

PATRIOTICIAS



Can a 'foreigner' be allowed to use Aadhaar to enter poll rolls, asks SC

Justice Bagchi observes that inherent jurisdiction of EC to 'examine, vet, verify' documents submitted to it is traceable to Section 21 of RP Act and Article 326; the court had ordered Aadhaar to be included as a '12th document' during Bihar SIR

GS II: Polity: Citizenship

Krishnadas Rajagopal
NEW DELHI

The Supreme Court on Wednesday tested the role of Aadhaar in the Special Intensive Revision (SIR) exercise, asking whether a foreigner, who has already managed to use the document to access welfare benefits such as subsidised ration, should be further allowed to exploit it to gain automatic entry into the electoral roll.

The question was posed despite the court having ordered Aadhaar to be included as a "12th document" during the Bihar SIR hearings.

"Aadhaar is the creation of a statute. Nobody can dispute the use of Aadhaar card to avail welfare benefits. But suppose a person comes from a neighbouring country to India, works as a labourer or a rickshaw puller, he accesses Aadhaar to provide subsidised ration for his children – that is our constitutional ethos and morality, but does it mean that since he has got Aadhaar, he should be made a voter also?" Chief Justice of India Surya Kant asked senior advocate Kapil Sibal, appearing for the petitioners.

The query from the Bench came shortly after Mr. Sibal opened arguments challenging the very constitutionality of the SIR



Verification drive: A booth-level officer checks documents during the special intensive revision of electoral rolls in Purnia district of Bihar in July. SHASHI SHEKHAR KASHYAP

exercise undertaken by the Election Commission (EC).

Mr. Sibal said the view, if necessary, might be true in the case of some border States, but it could not be true for States like Kerala and Bihar. After Bihar, the second phase of SIR covers 51 crore people in 12 States and Union Territories, including Tamil Nadu, West Bengal, Kerala and Puducherry.

EC jurisdiction

Justice Joymalya Bagchi, the Associate Judge on the Bench, observed that EC has an inherent jurisdiction to verify and vet entries in electoral rolls which are of "doubtful integrity". Enumeration forms are part of that en-

quiry by the EC to check voters' credibility.

"Any exclusionary step or attempt taken by the EC is against the constitutional scheme. Asking the elector to fill up and submit an enumeration form is an exclusionary measure. Don't you think there are millions of illiterate women in this country? Will they not be excluded from the voter list? Any exclusion of a name from the electoral roll must follow a reasonable process. These are the real issues that Your Lordships need to decide..." Mr. Sibal argued.

He questioned the power given to booth level officers (BLOs) under the SIR notification to decide whether a person was a ci-

tizen or not. The petitioners have argued that SIR was only a thinly-veiled "citizenship screening" in which the burden of verification has been shifted from the EC to an already registered elector.

Justice Bagchi observed that the inherent jurisdiction of the EC to "examine, vet, verify" documents submitted to it was traceable to Section 21 of the Representation of the People Act and Article 326, which required a voter to be a citizen.

"The EC says there are certain entries which are of doubtful integrity. In that spirit, the EC makes an endeavour. How can we say that there was a complete lack of jurisdiction?"

There is always a residual jurisdiction afforded to a constitutional authority to go into a preliminary enquiry as regards credibility," Justice Bagchi observed.

Mr. Sibal said he was not challenging the jurisdiction of the EC, but the "hasty, unreasonable and exclusionary" process adopted by the poll body.

"I accept the EC has the power. Revisions have been done before. I am saying the process of the SIR is unreasonable, both procedurally and substantively. There is no earthly reason to have to complete the process in two months," he clarified.

However, Chief Justice Kant asked whether the court could stop the SIR because of doubts that the exercise cannot be completed within the specified period.

Indicating that there was always a possibility of extending the time, he said, "On the argument whether it is humanly possible to do SIR in two months, that chance has to be given to them". The court said that, in the Bihar case, the petitioners had apprehended that crores of voters would be excluded, but a little over three lakh were deleted finally. Exclusions in the Bihar SIR barely saw any objections from the individual voters concerned.

Can a 'foreigner' be allowed to use Aadhaar to enter poll rolls, asks SC
क्या किसी 'विदेशी' को वोटर लिस्ट में नाम दर्ज कराने के लिए आधार का इस्तेमाल करने की इजाज़त दी जा सकती है, SC ने पूछा

- The Supreme Court on Wednesday tested the role of Aadhaar in the Special Intensive Revision (SIR) exercise, asking whether a foreigner, who has already managed to use the document to access welfare benefits such as subsidised ration, should be further allowed to exploit it to gain automatic entry into the electoral roll.



सुप्रीम कोर्ट ने बुधवार को स्पेशल इंटेसिव रिवीजन (SIR) में आधार की भूमिका की जांच करते हुए पूछा कि क्या कोई विदेशी जिसने पहले ही सब्सिडी वाले राशन जैसे कल्याण लाभ पाने के लिए इसे उपयोग किया है, क्या उसे मतदाता सूची में स्वचालित प्रवेश पाने के लिए इसे और उपयोग करने की अनुमति दी जानी चाहिए?

- The question was posed despite the court having ordered Aadhaar to be included as a “12th document” during the Bihar SIR hearings.

यह प्रश्न तब पूछा गया जब अदालत ने बिहार SIR सुनवाई के दौरान आधार को “12वां दस्तावेज़” के रूप में शामिल करने का आदेश दिया था।

- “Aadhaar is the creation of a statute. Nobody can dispute the use of Aadhaar card to avail welfare bene• ts. But suppose a person comes from a neighbouring country to India, works as a labourer or a rickshaw puller, he accesses Aadhaar to provide subsidised ration for his children — that is our constitutional ethos and morality, but does it mean that since he has got Aadhaar, he should be made a voter also?” Chief Justice of India Surya Kant asked senior advocate Kapil Sibal, appearing for the petitioners.

“आधार एक विधिक निर्माण है। आधार कार्ड का उपयोग कर कल्याण लाभ प्राप्त करने पर कोई विवाद नहीं हो सकता। लेकिन यदि कोई व्यक्ति पड़ोसी देश से भारत आए, मजदूर या रिक्शा चालक के रूप में काम करे, और अपने बच्चों के लिए सब्सिडी वाला राशन लेने हेतु आधार का उपयोग करे — यह हमारी संवैधानिक नैतिकता है, पर क्या इसका मतलब यह है कि उसके पास आधार होने से उसे मतदाता भी बना दिया जाए?” यह प्रश्न मुख्य न्यायाधीश सूर्यकांत ने याचिकाकर्ताओं की ओर से पेश हो रहे वरिष्ठ अधिवक्ता कपिल सिबल से पूछा।

- The query from the Bench came shortly after Mr. Sibal opened arguments challenging the very constitutionality of the SIR exercise undertaken by the Election Commission (EC).

यह प्रश्न पीठ की ओर से तब आया जब श्री सिबल ने चुनाव आयोग (EC) द्वारा किए जा रहे SIR अभ्यास की संवैधानिक वैधता को चुनौती देने की दलीलें शुरू कीं।

- Mr. Sibal said the view, if necessary, might be true in the case of some border States, but it could not be true for States like Kerala and Bihar. After Bihar, the second phase of SIR covers 51 crore people in 12 States and Union Territories, including Tamil Nadu, West Bengal, Kerala and Puducherry.

श्री सिबल ने कहा कि यह दृष्टिकोण कुछ सीमा राज्यों के लिए सही हो सकता है, लेकिन केरल और बिहार जैसे राज्यों के लिए नहीं। बिहार के बाद SIR के दूसरे चरण में 12 राज्यों और केंद्रशासित प्रदेशों के 51 करोड़ लोग शामिल हैं, जिनमें तमिलनाडु, पश्चिम बंगाल, केरल और पुदुच्चेरी शामिल हैं।

EC jurisdiction

EC का अधिकार-क्षेत्र

- Justice Joyrnalya Bagchi, the Associate Judge on the Bench, observed that EC has an inherent jurisdiction to verify and vet entries in electoral rolls which are of “doubtful integrity”. Enumeration forms are part of that enquiry by the EC to check voters’ credibility.

न्यायमूर्ति जॉयमल्या बागची ने कहा कि EC के पास मतदाता सूचियों में “संदिग्ध सत्यता” वाली प्रविष्टियों की जांच और सत्यापन करने का अंतर्निहित अधिकार है। एन्यूमेरेशन फॉर्म मतदाताओं की विश्वसनीयता जांचने की उसी प्रक्रिया का हिस्सा हैं।

- “Any exclusionary step or attempt taken by the EC is against the constitutional scheme. Asking the elector to fill up and submit an enumeration form is an exclusionary measure. Don’t you think there are millions of illiterate women in this country? Will they not be excluded from the voter list? Any exclusion of a name from the electoral roll must follow a reasonable process. These are the real issues that Your Lordships need to decide...,” Mr. Sibal argued.

श्री सिबल ने तर्क दिया, “EC द्वारा उठाया गया कोई भी बहिष्करण-कारी कदम संवैधानिक व्यवस्था के खिलाफ है। मतदाता से फॉर्म भरवाना एक बहिष्करण-कारी उपाय है। क्या आपको नहीं लगता कि इस देश में लाखों निर्मलाक्षर महिलाएँ (illiterate women) हैं? क्या वे मतदाता सूची से बाहर नहीं हो जाएँगी? किसी भी नाम को हटाने के लिए एक उचित प्रक्रिया होनी चाहिए। यही वास्तविक मुद्दे हैं जिन पर न्यायालय को निर्णय करना है।”

- He questioned the power given to booth level officers (BLOs) under the SIR notification to decide whether a person was a citizen or not. The petitioners have argued that SIR was only a thinly-veiled “citizenship screening” in which the burden of veri• cation has been shifted from the EC to an already registered elector.

उन्होंने SIR अधिसूचना में बूथ लेवल अफसरों (BLOs) को यह तय करने की दी गई शक्ति पर सवाल उठाया कि कोई व्यक्ति नागरिक है या नहीं। याचिकाकर्ताओं ने कहा कि SIR वास्तव में एक छिपा हुआ “नागरिकता परीक्षण” है जिसमें सत्यापन का बोझ EC से हटाकर पंजीकृत मतदाता पर डाल दिया गया है।



- Justice Bagchi observed that the inherent jurisdiction of the EC to “examine, vet, verify” documents submitted to it was traceable to **Section 21** of the **Representation of the People Act** and **Article 326**, which required a voter to be a **citizen**.
न्यायमूर्ति बागची ने कहा कि दस्तावेजों की “जांच, सत्यापन, परीक्षण” करने का EC का अधिकार **जन प्रतिनिधित्व अधिनियम की धारा 21** और **अनुच्छेद 326** से उत्पन्न होता है, जो मतदाता के **नागरिक** होने की शर्त रखता है।
- “The EC says there are certain entries which are of doubtful integrity. In that spirit, the EC makes an endeavour. How can we say that there was a complete lack of jurisdiction? There is always a **residual jurisdiction** afforded to a constitutional authority to go into a preliminary enquiry as regards credibility,” Justice Bagchi observed.
न्यायमूर्ति बागची ने कहा, “EC कहता है कि कुछ प्रविष्टियों की सत्यता संदिग्ध है। उसी भावना में EC प्रयास करता है। हम कैसे कह सकते हैं कि पूर्ण अधिकार-क्षेत्र का अभाव है? किसी संवैधानिक प्राधिकरण के पास हमेशा एक **अवशिष्ट अधिकार-क्षेत्र (residual jurisdiction)** रहता है ताकि वह प्रारंभिक जांच कर सके।”
- Mr. Sibal said he was not challenging the **jurisdiction** of the EC, but the “**hasty, unreasonable and exclusionary**” process adopted by the poll body.
श्री सिबल ने कहा कि वह EC के **अधिकार-क्षेत्र** को नहीं, बल्कि चुनाव आयोग द्वारा अपनाई गई “**जल्दबाजी, अव्यवहारिक और बहिष्करण-कारी**” प्रक्रिया को चुनौती दे रहे हैं।
- “I accept the EC has the power. Revisions have been done before. I am saying the process of the **SIR** is unreasonable, both procedurally and substantively. There is no earthly reason to have to complete the process in **two months**,” he clarified.
उन्होंने स्पष्ट किया, “मुझे स्वीकार है कि EC के पास शक्ति है। पुनरीक्षण पहले भी हुए हैं। मैं कह रहा हूँ कि **SIR** की प्रक्रिया प्रक्रियागत और सामग्री-गत रूप से अव्यवहारिक है। इसे **दो महीने** में पूरा करने का कोई तार्किक आधार नहीं है।”
- However, Chief Justice Kant asked whether the court could stop the **SIR** because of doubts that the exercise cannot be completed within the **specified period**.
हालांकि, मुख्य न्यायाधीश कांत ने पूछा कि क्या अदालत **SIR** को इसलिए रोक सकती है क्योंकि यह आशंका है कि इसे **निर्धारित अवधि** में पूरा नहीं किया जा सकता।
- Indicating that there was always a possibility of extending the time, he said, “On the argument whether it is humanly possible to do **SIR** in **two months**, that chance has to be given to them”. The court said that, in the **Bihar case**, the petitioners had apprehended that crores of voters would be excluded, but a little over **three lakh** were deleted.
उन्होंने संकेत दिया कि समय बढ़ाने की संभावना हमेशा रहती है और कहा, “क्या **दो महीने** में **SIR** मानवीय रूप से संभव है, इस पर उन्हें मौका दिया जाना चाहिए।” अदालत ने कहा कि **बिहार मामले** में याचिकाकर्ताओं को करोड़ों मतदाताओं के बहिष्करण का डर था, लेकिन अंततः केवल **तीन लाख** के थोड़ा अधिक मतदाता हटाए गए।
- Exclusions in the **Bihar SIR** barely saw any objections from the individual voters concerned.
बिहार SIR में हटाए गए नामों पर संबंधित मतदाताओं की ओर से लगभग कोई आपत्ति नहीं आई।

International Relations

26/11/2025

Gaza's economy collapsed in 2024: UNCTAD

GS II: IR

The Hindu Bureau

Gaza's economy suffered an unprecedented collapse, shrinking by 83% in 2024 and pushing every one of its 2.3 million residents into poverty, according to a new assessment by the Trade and Development agency (UNCTAD).

Gaza's GDP fell to just \$362 million in 2024, with cumulative losses across 2023 and 2024 reaching 87%. GDP per capita has plunged to \$161 among the lowest worldwide dropping to just 6.4% of its 2005

peak. The inflation envelope soared to 238%, while unemployment reached 80%. “All 2.3 million people are now below the poverty line,” the report notes.

By April 2025, roughly 70% of all structures in Gaza had been damaged or destroyed, including factories, homes, hospitals, schools, banks, and key infrastructure for energy, water, telecommunications, and agriculture. Satellite analysis shows nighttime luminosity across Gaza, an indicator of economic activity, fell 73%

between October 2023 and May 2025.

The devastation extends across the occupied Palestinian Territory. The West Bank is experiencing its sharpest economic downturn on record, driven by movement restrictions, insecurity, and loss of productive capacity. By the end of 2024, Palestinian GDP had fallen to 70% of its 2022 level, sliding back to 2010 levels.

GDP per capita has regressed to 2003 levels. The national Human Development Index is projected to

fall from 0.716 to 0.643, erasing nearly 25 years of progress.

Fiscal pressures have intensified. Between 2019 and April 2025, Israel withheld or deducted \$1.76 billion in fiscal transfers—equivalent to 12.8% of Palestinian GDP in 2024. Public debt and arrears rose to around \$4.2 billion.

UNCTAD estimates that rebuilding Gaza will require more than \$70 billion and calls for a durable ceasefire, urgent humanitarian access and sustained international financing.

Gaza's economy collapsed in 2024: UNCTAD

गाजा की अर्थव्यवस्था 2024 में ध्वस्त हो जाएगी: UNCTAD

Gaza's Economic Collapse (UNCTAD Assessment)

गाजा का आर्थिक पतन (UNCTAD मूल्यांकन)

- Gaza's economy suffered an **unprecedented collapse**, shrinking by



83% in 2024 and pushing all **2.3 million residents** into poverty, according to UNCTAD.

UNCTAD के अनुसार गाज़ा की अर्थव्यवस्था में **अभूतपूर्व गिरावट** आई, जो 2024 में 83% सिकुड़ गई, और 2.3 मिलियन सभी निवासी गरीबी में धकेल दिए गए।

- Gaza's GDP fell to just \$362 million in 2024, with cumulative losses across 2023 and 2024 reaching 87%.
गाज़ा का GDP 2024 में केवल \$362 मिलियन रह गया, जबकि 2023 और 2024 में कुल क्षति 87% तक पहुँच गई।
- GDP per capita plunged to \$161, among the lowest worldwide, dropping to 6.4% of its 2005 peak.
प्रति व्यक्ति GDP \$161 तक गिर गया, जो दुनिया में सबसे कम में से है, और 2005 के चरम का केवल 6.4% रह गया।
- The inflation rate soared to 238%, while unemployment reached 80%.
मुद्रास्फीति 238% तक बढ़ गई, जबकि बेरोज़गारी 80% तक पहुँच गई।
- "All 2.3 million people are now below the poverty line," the report notes.
रिपोर्ट बताती है कि "2.3 मिलियन सभी लोग अब गरीबी रेखा से नीचे हैं।"
- By April 2025, roughly 70% of all structures in Gaza had been damaged or destroyed — factories, homes, hospitals, schools, banks, and infrastructure for energy, water, telecom, agriculture.
अप्रैल 2025 तक गाज़ा में लगभग 70% संरचनाएँ—फैक्ट्रियाँ, घर, अस्पताल, स्कूल, बैंक तथा ऊर्जा, पानी, दूरसंचार और कृषि ढाँचा—क्षतिग्रस्त या नष्ट हो चुके थे।
- Satellite analysis shows nighttime luminosity fell 73% between October 2023 and May 2025, indicating a collapse in economic activity.
सेटेलाइट विश्लेषण दिखाता है कि अक्टूबर 2023 से मई 2025 के बीच रात का प्रकाश 73% गिर गया, जो आर्थिक गतिविधि के पतन का संकेत है।
- The devastation extends across the occupied Palestinian Territory, with the West Bank facing its sharpest economic downturn on record.
यह विनाश कब्ज़े वाले फ़िलिस्तीनी क्षेत्रों में फैला है, और वेस्ट बैंक अपने इतिहास की सबसे तेज़ आर्थिक गिरावट झेल रहा है।
- By end 2024, Palestinian GDP fell to 70% of its 2022 level, sliding back to 2010 levels.
2024 के अंत तक फ़िलिस्तीनी GDP 2022 के स्तर का 70% रह गया और 2010 के स्तर पर लौट आया।
- GDP per capita regressed to 2003 levels.
प्रति व्यक्ति GDP 2003 के स्तर पर वापस चला गया।
- The national Human Development Index (HDI) is projected to fall from 0.716 to 0.643, erasing 25 years of progress.
राष्ट्रीय HDI 0.716 से 0.643 होने की आशंका है, जिससे 25 वर्षों की प्रगति समाप्त हो जाएगी।
- Fiscal pressures intensified as Israel withheld or deducted \$1.76 billion in fiscal transfers between 2019 and April 2025 — equal to 12.8% of Palestinian GDP in 2024.
वित्तीय दबाव बढ़ गए क्योंकि इज़राइल ने 2019 से अप्रैल 2025 के बीच \$1.76 बिलियन स्थानांतरण रोक लिए, जो 2024 के फ़िलिस्तीनी GDP का 12.8% है।
- Public debt and arrears rose to around \$4.2 billion.
सार्वजनिक ऋण और बकाया लगभग \$4.2 बिलियन तक पहुँच गए।
- UNCTAD estimates that rebuilding Gaza will require more than \$70 billion, calling for a durable ceasefire, urgent humanitarian access, and sustained international financing.
UNCTAD का अनुमान है कि गाज़ा के पुनर्निर्माण के लिए \$70 बिलियन से अधिक की आवश्यकता होगी, और एक स्थायी युद्धविराम, त्वरित मानवीय पहुँच और निरंतर अंतरराष्ट्रीय वित्तपोषण की माँग की है।

GS Paper III: Economy, S&T, Environment, DM, & IS

TOPICS COVERED		26_11_2025
	Economy	
1.	Limited room सीमित गुंजाइश	
2.	China's rare earth dominance gives it crucial leverage over U.S. in trade war	



	चीन का रेयर अर्थ पर दबदबा उसे ट्रेड वॉर में U.S. पर अहम बढ़त देता है
3.	Cabinet approves ₹7,280 cr. scheme for rare earth magnets कैबिनेट ने रेयर अर्थ मैग्नेट के लिए ₹7,280 करोड़ की स्कीम को मंजूरी दी
4.	NBFC borrowings to reach \$750 billion by FY27: Study FY27 तक NBFC की उधारी \$750 बिलियन तक पहुंच जाएगी: स्टडी
6.	‘No bias in RBI’s inflation forecast’ ‘आरबीआई के मुद्रास्फीति पूर्वानुमान में कोई पक्षपात नहीं’
7.	Don’t expect Ukraine peace deal to alter Europe’s gas gameplan यूक्रेन शांति समझौते से यूरोप के गैस गेमप्लान में बदलाव की उम्मीद न करें
	S&T
8.	Groundbreaking brain atlases capture development in motion विकास को गतिशील रूप में प्रदर्शित करने वाले क्रांतिकारी मस्तिष्क एटलस
9.	WiFi signals can quietly surveil you, says study अध्ययन कहता है कि WiFi संकेत चुपचाप आपकी निगरानी कर सकते हैं
10.	The INO that wasn’t and the JUNO that is वह INO जो नहीं बन पाया और वह JUNO जो है
11.	Why telling stories from the Himalaya is ‘an argument against extinction’ हिमालय की कहानियाँ सुनाना ‘विलुप्ति के विरुद्ध एक तर्क’ क्यों है
	Environment
12.	SC panel suggests creation of a Goa tiger reserve in phases सुप्रीम कोर्ट पैनल ने गोवा टाइगर रिज़र्व को अलग-अलग चरणों में बनाने का सुझाव दिया
13.	Fighting the fire आग से लड़ना



GS III: Economy MQB

Limited room

India must reduce dependence on oil imports to stabilise the rupee

Between late November 2024 and now, the rupee has depreciated about 7%, sliding from roughly ₹83.4 a dollar to about ₹89.2. This is not unprecedented as in 2018, it slid 11%-12% against the dollar. The comparison is instructive because the political and trade backdrops have echoes of that earlier period. In 2018, during the first term of U.S. President Donald Trump, global dollar strength, rising U.S. interest rates and trade tensions pressured emerging market currencies, including the rupee. The RBI used its first longer-term currency-swap as a systemic liquidity check. In 2019, it completed a \$5 billion three-year dollar/rupee swap. And in February 2025, it carried out a \$10 billion dollar/rupee buy-sell swap auction to infuse long-term rupee liquidity into the banking system under global stress. Such swaps are a standard tool by central banks to supply liquidity, shore up forex reserves and prevent disorderly currency depreciation when the dollar surges or capital flows reverse. The steep rupee slide in November arises in a context of external pressures – a widening current-account deficit, driven partly by higher imports of bullion, as a hedge in uncertain times, and exporters scrambling to maintain competitiveness amid high U.S. trade tariffs. In such a hostile global macro-environment, the RBI's mandate is limited: under the floating-but-managed regime, it can only 'smoothen volatility' rather than fix the exchange rate.

Between November last year and now, the RBI sold a net of roughly \$50 billion in forex to stabilise the rupee. Even so, the slide has proceeded, highlighting the external pressures. That said, there is room for cautious optimism. India's foreign exchange reserves are comfortable – close to \$693 billion. On the domestic front, retail inflation has slumped: headline CPI inflation came in at just 0.25% in October 2025, well below the RBI's target-band of 2%-6%. This gives the RBI space to tolerate modest currency depreciation without triggering aggressive rate hikes especially as India transitions from cheaper Russian crude to relatively costlier U.S. oil imports. With crude accounting for over a fifth of total imports in FY25, rupee depreciation combined with costlier oil imports could exert upward pressure on inflation. Given this environment, monetary stabilisation alone cannot suffice. The Centre must address India's long-standing vulnerability: heavy dependence on oil. Steps such as faster transport electrification must be treated as strategic imperatives and pursued with urgency. These must be done with a well thought-out trade policy, as opposed to a raft of bilateral trade deals that India has focused on, in the hope that these would diversify trade routes. If anything, trade agreements with Japan, the UAE and ASEAN have tilted the trade balance against India.

- The steep rupee slide in November arises in a context of external pressures — a widening **current-account deficit**, higher **imports of bullion**, and exporters scrambling to maintain competitiveness amid high **U.S. trade tariffs**.

नवंबर में रुपये की तीखी गिरावट बाहरी दबावों के कारण हुई — बढ़ता चालू खाता घाटा, बढ़ते सोने के आयात, और उच्च अमेरिकी व्यापार शुल्क के बीच प्रतिस्पर्धा बनाए रखने के लिए निर्यातकों का संघर्ष।

Economy

26/11/2025

Limited room सीमित गुंजाइश

- India must reduce dependence on oil imports to stabilise the rupee
रुपये को स्थिर करने के लिए भारत को तेल आयात पर निर्भरता कम करनी चाहिए

Rupee Depreciation and External Pressures रुपये का अवमूल्यन और बाहरी दबाव

- Between late November 2024 and now, the rupee has depreciated about 7%, sliding from roughly ₹83.4 a dollar to about ₹89.2. नवंबर 2024 के अंत से अब तक रुपये का लगभग 7% अवमूल्यन हुआ है, जो लगभग ₹83.4 प्रति डॉलर से घटकर ₹89.2 तक पहुँच गया है।

- This is not unprecedented as in 2018, it slid 11%-12% against the dollar.

यह अभूतपूर्व नहीं है क्योंकि 2018 में यह डॉलर के मुकाबले 11%-12% गिरा था।

- The comparison is instructive because the political and trade backdrops have echoes of that earlier period.

यह तुलना महत्वपूर्ण है क्योंकि राजनीतिक और व्यापारिक पृष्ठभूमि उस पूर्व अवधि की झलक दिखाती है।

- In 2018, during the first term of **U.S. President Donald Trump**, global dollar strength, rising U.S. interest rates and trade tensions pressured emerging market currencies, including the rupee.

2018 में, **डोनाल्ड ट्रंप** के पहले कार्यकाल के दौरान, मजबूत अमेरिकी डॉलर, बढ़ती अमेरिकी ब्याज दरें, और व्यापार तनाव ने उभरती अर्थव्यवस्थाओं की मुद्राओं पर दबाव डाला, जिसमें रुपया भी शामिल था।

- The RBI used its first longer-term **currency-swap** as a systemic liquidity check.

RBI ने पहली बार दीर्घकालिक **करेंसी-स्वैप** का उपयोग प्रणालीगत तरलता की जाँच के रूप में किया।

- In 2019, it completed a **\$5 billion** three-year dollar/rupee swap. 2019 में RBI ने **\$5 बिलियन** का तीन-वर्षीय डॉलर/रुपया स्वैप पूरा किया।

- And in **February 2025**, it carried out a **\$10 billion** dollar/rupee buy-sell swap auction to infuse long-term rupee liquidity into the banking system under global stress.

और **फरवरी 2025** में RBI ने **\$10 बिलियन** का डॉलर/रुपया बाय-सेल स्वैप नीलामी करके वैश्विक तनाव के बीच बैंकिंग प्रणाली में दीर्घकालिक तरलता डाली।

- Such swaps are a standard tool by central banks to supply liquidity, shore up **forex reserves** and prevent **disorderly currency depreciation** when the dollar surges or capital flows reverse.

इस प्रकार के स्वैप केंद्रीय बैंकों द्वारा तरलता प्रदान करने, **विदेशी मुद्रा भंडार** मजबूत करने, और **अनियंत्रित मुद्रा अवमूल्यन** को रोकने के लिए उपयोग किए जाने वाले मानक उपकरण हैं।



- In such a hostile macro-environment, the RBI's mandate is limited: under the **floating-but-managed regime**, it can only **smoothen volatility** rather than fix the exchange rate.
ऐसे प्रतिकूल वैश्विक माहौल में RBI का अधिदेश सीमित है: **फ्लोटिंग-बट-मैनेज्ड** व्यवस्था के तहत यह केवल **अस्थिरता को कम** कर सकता है, विनिमय दर तय नहीं कर सकता।
- Between November last year and now, the RBI sold a net of roughly **\$50 billion** in forex to stabilise the rupee.
पिछले वर्ष नवंबर से अब तक RBI ने लगभग **\$50 बिलियन** की विदेशी मुद्रा बेचकर रुपये को स्थिर करने का प्रयास किया।
- Even so, the slide has proceeded, highlighting the external pressures.
इसके बावजूद रुपये में गिरावट जारी रही, जो बाहरी दबावों को उजागर करती है।
- That said, there is room for cautious optimism.
इसके बावजूद, सतर्क आशावाद की गुंजाइश है।
- India's foreign exchange reserves are comfortable — close to **\$693 billion**.
भारत के विदेशी मुद्रा भंडार पर्याप्त हैं — लगभग **\$693 बिलियन**।
- On the domestic front, retail inflation has slumped: headline **CPI inflation** came in at just **0.25% in October 2025**, far below the RBI's target-band of **2%-6%**.
घरेलू मोर्चे पर खुदरा मुद्रास्फीति में गिरावट आई है: मुख्य **CPI मुद्रास्फीति अक्टूबर 2025 में सिर्फ 0.25%** रही, जो RBI के **2%-6%** के लक्ष्य-सीमा से काफी कम है।
- This gives the RBI space to tolerate modest currency depreciation without triggering aggressive rate hikes.
यह RBI को दरों में तेज वृद्धि किए बिना सीमित मुद्रा अवमूल्यन सहन करने की गुंजाइश देता है।
- Especially as India transitions from cheaper **Russian crude** to relatively costlier **U.S. oil imports**.
विशेषकर जब भारत सस्ते **रूसी कच्चे तेल** से अपेक्षाकृत महंगे **अमेरिकी तेल आयात** की ओर बढ़ रहा है।
- With crude accounting for over **one-fifth** of total imports in **FY25**, rupee depreciation combined with costlier oil imports could exert upward pressure on inflation.
FY25 में कुल आयात का **एक-पांचवाँ हिस्सा** कच्चे तेल का होते हुए, रुपये का अवमूल्यन और महंगा तेल आयात मिलकर मुद्रास्फीति पर ऊपर की ओर दबाव बना सकते हैं।
- Given this environment, monetary stabilisation alone cannot suffice.
ऐसे माहौल में, केवल मौद्रिक स्थिरीकरण पर्याप्त नहीं होगा।
- The Centre must address India's long-standing vulnerability: **heavy dependence on oil**.
केंद्र को भारत की पुरानी कमजोरी — **तेल पर भारी निर्भरता** — का समाधान करना चाहिए।
- Steps such as faster **transport electrification** must be treated as strategic imperatives and pursued with urgency.
परिवहन विद्युतीकरण जैसे कदमों को रणनीतिक अनिवार्यता मानकर तेजी से अपनाया जाना चाहिए।
- These must be done with a well thought-out **trade policy**, as opposed to a raft of **bilateral trade deals** that India has focused on.
इन कार्यों को सुविचारित **व्यापार नीति** के साथ किया जाना चाहिए, न कि विविध **द्विपक्षीय व्यापार समझौतों** पर अत्यधिक निर्भरता के साथ।
- If anything, trade agreements with **Japan, the UAE and ASEAN** have tilted the trade balance against India.
वास्तव में, **जापान, यूएई, और आसियान** के साथ व्यापार समझौतों ने व्यापार संतुलन को भारत के विरुद्ध झुका दिया है।



Cabinet approves ₹7,280 cr. scheme for rare earth magnets

The first-of-its-kind initiative aims to establish 6,000 MTPA of integrated rare earth permanent magnet manufacturing in India, govt. says

GS III: Economy

The Hindu Bureau
NEW DELHI

In yet another push to secure India's supplies of rare earth magnets, the Union Cabinet on Wednesday approved a new "first-of-its-kind" scheme, with a financial outlay of ₹7,280 crore, to manufacture Rare Earth Permanent Magnets (REPM) in India.

The approval of this scheme, named the 'Scheme to Promote Manufacturing of Sintered Rare Earth Permanent Magnets', comes two days after Commerce Minister Piyush Goyal specifically noted that one of the areas in which India and Canada have "tremendous potential" to cooperate on was in critical minerals.

This was in the context of the two countries restarting talks on a Comprehensive Economic Partnership Agreement.

"This first-of-its-kind initiative aims to establish 6,000 metric tonnes per annum (MTPA) of integrated Rare Earth Permanent Magnet (REPM) manufacturing in India, thereby enhancing self-reliance and positioning India as a key player in the global REPM market," the government said in a release.

REPMs are vital components that have applications in EVs, renewable energy, electronics, aers-



Shifting gear: The auto industry, in particular, has welcomed the decision, saying it is a pivotal step towards self reliance. REUTERS

pace, and defence sectors. According to the government, the scheme will support the creation of integrated REPM manufacturing facilities, involving the conversion of rare earth oxides to metals, metals to alloys, and alloys to finished REPMs.

The total financial outlay of the scheme of ₹7,280 crore, will comprise a sales-linked incentives of ₹6,450 crore on REPMs for five years and a capital subsidy of ₹750 crore for the setting up of an aggregate of 6,000 MTPA of REPM manufacturing facilities.

The plan is to allocate the total capacity of 6,000 MTPA to five beneficiaries through a global competitive bidding process with each beneficiary being allotted up to 1,200 MTPA.

The total duration of the scheme is to be seven years from the date of award, including a 2-year gestation period for setting up an integrated REPM manufac-

turing facility, and 5 years for incentive disbursement on the sale of REPM.

The auto industry, in particular, has welcomed the decision, saying it is a pivotal step towards self reliance.

"This initiative is a significant step toward building a resilient and stable supply chain, particularly for components and sub-assemblies essential for the production of electrified vehicles," Shailesh Chandra, President of the Society of Indian Automobile Manufacturers (SIAM) said.

"This initiative will not only reduce import dependence but also provide long-term resilience to the automotive supply chain, encourage investments in advanced materials, and position India strongly in global value chains for EVs and clean energy," Vikram-pati Singhania, President of the Automotive Component Manufacturers Association (ACMA) said.

Cabinet approves ₹7,280 cr. scheme for rare earth magnets
कैबिनेट ने रेयर अर्थ मैग्नेट के लिए ₹7,280 करोड़ की स्कीम को मंजूरी दी

Scheme to Promote Manufacturing of Sintered Rare Earth Permanent Magnets (REPM)

सिन्टर्ड रेयर अर्थ परमानेंट मैग्नेट (REPM) के विनिर्माण को प्रोत्साहित करने की योजना

In yet another push to secure India's supplies of rare earth magnets, the Union Cabinet on Wednesday approved a new "first-of-its-kind" scheme, with a financial outlay of ₹7,280 crore, to manufacture Rare Earth Permanent Magnets (REPM) in India.

भारत की rare earth magnets आपूर्ति को सुरक्षित करने के एक और प्रयास में, केंद्रीय मंत्रिमंडल ने बुधवार को भारत में Rare Earth Permanent Magnets (REPM) के विनिर्माण के लिए ₹7,280 करोड़ की वित्तीय लागत वाली एक नई "पहली बार की" योजना को मंजूरी दी।

The approval of this scheme, named the 'Scheme to Promote Manufacturing of Sintered Rare Earth Permanent Magnets', comes two days after Commerce Minister Piyush Goyal specifically noted that one of the areas in which India and Canada have "tremendous potential" to cooperate on was in critical minerals.

इस योजना, जिसका नाम 'Scheme to Promote Manufacturing of Sintered Rare Earth Permanent Magnets' है, की मंजूरी वाणिज्य मंत्री पीयूष गoyal द्वारा यह विशेष रूप से उल्लेख करने के दो दिन बाद आई कि भारत और कनाडा के बीच सहयोग की अत्यधिक संभावनाओं वाले क्षेत्रों में से एक critical minerals है।

This was in the context of the two countries restarting talks on a Comprehensive Economic Partnership Agreement.

यह दोनों देशों के Comprehensive Economic Partnership Agreement पर वार्ता पुनः शुरू करने के संदर्भ में कहा गया था।

- "This first-of-its-kind initiative aims to establish 6,000 metric tonnes per annum (MTPA) of integrated Rare Earth Permanent Magnet (REPM) manufacturing in India, thereby enhancing self-reliance and positioning India as a key player in the global REPM market," the government said in a release. सरकार ने अपने बयान में कहा, "यह पहली बार की पहल भारत में 6,000 metric tonnes per annum (MTPA) की एकीकृत Rare Earth Permanent Magnet (REPM) विनिर्माण क्षमता स्थापित करने का लक्ष्य रखती है, जिससे आत्मनिर्भरता बढ़ेगी और भारत को वैश्विक REPM बाजार में एक मुख्य खिलाड़ी के रूप में स्थापित किया जा सकेगा।"



- **REPMs** are vital components that have applications in **EVs, renewable energy, electronics, aerospace, and defence** sectors.
REPMs अत्यंत महत्वपूर्ण घटक हैं जिनका उपयोग EVs, नवीकरणीय ऊर्जा, इलेक्ट्रॉनिक्स, एयरोस्पेस, और रक्षा क्षेत्र में होता है।
- According to the government, the scheme will support the creation of **integrated REPM manufacturing facilities**, involving the conversion of **rare earth oxides to metals, metals to alloys, and alloys to finished REPMs**.
सरकार के अनुसार, यह योजना **integrated REPM manufacturing facilities** की स्थापना का समर्थन करेगी, जिसमें **rare earth oxides से metals, metals से alloys, और alloys से तैयार REPMs** में रूपांतरण शामिल होगा।
- The total financial outlay of the scheme of **₹7,280 crore**, will comprise a **sales-linked incentives of ₹6,450 crore** on REPMs for **five years** and a **capital subsidy of ₹750 crore** for the setting up of an aggregate of **6,000 MTPA** of REPM manufacturing facilities.
योजना की कुल वित्तीय लागत **₹7,280 करोड़** में **5 वर्षों** के लिए REPMs पर **₹6,450 करोड़** के **sales-linked incentives** और **6,000 MTPA** की REPM विनिर्माण क्षमता स्थापित करने हेतु **₹750 करोड़** की **capital subsidy** शामिल होगी।
- The plan is to allocate the total capacity of **6,000 MTPA** to **five beneficiaries** through a **global competitive bidding process** with each beneficiary being allotted up to **1,200 MTPA**.
योजना के तहत **6,000 MTPA** की कुल क्षमता को **वैश्विक प्रतिस्पर्धी बोली प्रक्रिया** के माध्यम से **5 लाभार्थियों** को आवंटित किया जाएगा, जिसमें प्रत्येक लाभार्थी को अधिकतम **1,200 MTPA** तक की क्षमता दी जाएगी।

NBFC borrowings to reach \$750 billion by FY27: Study

The Hindu Bureau

GS III: Economy: Banking

In a structural shift in the funding mix of India's Non-Banking Financial Companies (NBFCs), the borrowings of this segment is expected to rise at a 13% CAGR, reaching \$750 billion by FY27, according to a study by Avendus Capital, an investment bank.

This is driven by a move away from bank dependence towards capital market instruments, such as Non-Convertible Debentures (NCDs), External Commercial Borrowings (ECBs) and Commercial Paper (CPs), the study said.

By FY27, market-based instruments are expected

Market-based instruments are expected to make up 64% of total NBFC borrowings by FY27

to make up 64% of total NBFC borrowings, compared to 43% in FY24, reflecting a gradual reduction in bank credit, which currently stands at 42%, it said. Of this, ECB borrowings are projected to grow at 60% CAGR, crossing \$120 billion, while NCD borrowings are set to expand at around 25% CAGR, exceeding \$330 billion by FY27," it added.

According to the study, upper-layer NBFCs (NBFC-

ULs) are increasingly tapping global debt markets backed by strong credit ratings, with nine out of fifteen NBFC-ULs expanding their ECB share between FY22 and FY25.

In contrast, middle-layer NBFCs (NBFC-MLs) are turning to NCDs, given their higher yields and flexible maturities, with 14 out of 16 NBFC-MLs having witnessed growth in their NCD borrowings, as per the study. Anshul Agarwal, MD and head, Financial Institutions Group Investment Banking, Avendus Capital said, "NBFCs in India are entering a new phase of maturity, with most players rewriting their funding playbook.



NBFC borrowings to reach \$750 billion by FY27: Study FY27 तक NBFC की उधारी \$750 बिलियन तक पहुंच जाएगी: स्टडी

Structural Shift in Funding Mix of NBFCs NBFCs की फंडिंग मिक्स में संरचनात्मक बदलाव

- In a structural shift in the funding mix of India's **Non-Banking Financial Companies (NBFCs)**, the borrowings of this segment is expected to rise at a **13% CAGR**, reaching **\$750 billion by FY27**, according to a study by **Avendus Capital**, an investment bank.
भारत की **नॉन-बैंकिंग फाइनेशियल कंपनियों (NBFCs)** की फंडिंग मिक्स में एक संरचनात्मक बदलाव के तहत, इस सेगमेंट की उधार राशि **13% CAGR** की दर से बढ़कर **FY27 तक \$750 बिलियन** होने की उम्मीद है, यह **Avendus Capital** के अध्ययन के अनुसार है।
- This is driven by a move away from **bank dependence** towards capital market instruments, such as **Non-Convertible Debentures (NCDs)**, **External Commercial Borrowings (ECBs)** and **Commercial Paper (CPs)**, the study said.
अध्ययन में कहा गया है कि यह बदलाव **बैंकों पर निर्भरता में कमी** और **NCDs, ECB, तथा CPs** जैसे कैपिटल मार्केट साधनों की ओर बढ़ने से प्रेरित है।
- By **FY27**, market-based instruments are expected to make up **64%** of total NBFC borrowings, compared to **43% in FY24**, reflecting a gradual reduction in **bank credit**, which currently stands at **42%**, it said.
अध्ययन के अनुसार, **FY27 तक NBFC उधारी में बाजार आधारित साधनों का हिस्सा 64%** होने की उम्मीद है, जो **FY24 के 43%** से अधिक है, और यह **बैंक क्रेडिट में कमी** को दर्शाता है, जो वर्तमान में **42%** है।
- Of this, **ECB borrowings** are projected to grow at **60% CAGR**, crossing **\$120 billion**, while **NCD borrowings** are set to expand at around **25% CAGR**, exceeding **\$330 billion by FY27**, it added.
इसमें **ECB उधार 60% CAGR** से बढ़कर **\$120 बिलियन** पार करने की उम्मीद है, जबकि **NCD उधार लगभग 25% CAGR** से बढ़कर **FY27 तक \$330 बिलियन** से अधिक होने की संभावना है।
- According to the study, **upper-layer NBFCs (NBFC-ULs)** are increasingly tapping global debt markets backed by strong credit ratings, with **nine out of fifteen NBFC-ULs** expanding their ECB share between **FY22 and FY25**.
अध्ययन के अनुसार, **ऊपरी स्तर के NBFCs (NBFC-ULs)** मजबूत क्रेडिट रेटिंग के आधार पर वैश्विक ऋण बाजारों का उपयोग बढ़ा रहे हैं, जहाँ **15 में से 9 NBFC-ULs** ने **FY22 से FY25** के बीच अपनी **ECB हिस्सेदारी बढ़ाई** है।
- In contrast, **middle-layer NBFCs (NBFC-MLs)** are turning to **NCDs**, given their higher yields and flexible maturities, with **14 out of 16 NBFC-MLs** having witnessed growth in their **NCD borrowings**, as per the study.
इसके विपरीत, **मिडिल-लेयर NBFCs (NBFC-MLs)** अधिक रिटर्न और लचीली परिपक्वता के कारण **NCDs** की ओर बढ़ रहे हैं, और अध्ययन के अनुसार **16 में से 14 NBFC-MLs** ने अपनी **NCD उधारी में वृद्धि** देखी है।

अध्ययन के अनुसार, **ऊपरी स्तर के NBFCs (NBFC-ULs)** मजबूत क्रेडिट रेटिंग के आधार पर वैश्विक ऋण बाजारों का उपयोग बढ़ा रहे हैं, जहाँ **15 में से 9 NBFC-ULs** ने **FY22 से FY25** के बीच अपनी **ECB हिस्सेदारी बढ़ाई** है।

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• Anshul Agarwal, MD and head, Financial Institutions Group Investment Banking, Avendus Capital said, "NBFCs in India are entering a new phase of maturity, with most players rewriting their funding playbook."
Avendus Capital के फाइनेशियल इंस्टीट्यूशंस ग्रुप इन्वेस्टमेंट बैंकिंग के MD और हेड, अंशुल अग्रवाल ने कहा, "भारत में NBFCs परिपक्वता के एक नए चरण में प्रवेश कर रहे हैं, जहाँ अधिकांश खिलाड़ी अपनी फंडिंग रणनीति नए सिरे से लिख रहे हैं।"

'No bias in RBI's inflation forecast' 'आरबीआई के मुद्रास्फीति पूर्वानुमान में कोई पक्षपात नहीं'

RBI's Inflation Forecast & Clarification by Deputy Governor Poonam Gupta

'No bias in RBI's inflation forecast'

GS III: Economy

Ashokamithran T.
MUMBAI

There is no systemic bias in the central bank's inflation forecast, Deputy Governor Poonam Gupta clarified, adding that reducing forecasting error was important.

"While minimising the forecast errors is equally important, there is no systematic bias in the forecast. It is not that the RBI's forecast is biased in any particular way. As far as the growth is concerned, again we use a variety of approaches and models," she said while speaking at an event organised by the Ministry of Statistics and Programme Implementation

(MoSPI) to explain the changes in the new CPI base revision, here on Wednesday.

The Deputy Governor's comments came in the backdrop of economists criticising the RBI for having an overstated CPI forecast and hence a hawkish "bias" in monetary policy, and that a rate cut was warranted. Prices increased at a rate of 0.25% in October 2025, making it the slowest pace ever.

Ms. Gupta also spoke about initiatives brought in by the RBI to disseminate data. The Deputy Governor said that the balance of payments (BoP) data is soon expected to be released on a monthly basis.



RBI की मुद्रास्फीति पूर्वानुमान और डिप्टी गवर्नर पूनम गुप्ता का स्पष्टीकरण

- There is no systematic bias in the central bank's **inflation forecast**, Deputy Governor **Poonam Gupta** clarified, adding that reducing forecasting error was important.
केंद्रीय बैंक के **inflation forecast** में कोई **systematic bias** नहीं है, डिप्टी गवर्नर **पूनम गुप्ता** ने स्पष्ट किया, यह जोड़ते हुए कि पूर्वानुमान त्रुटि को कम करना महत्वपूर्ण है।
- “While minimising the forecast errors is equally important, there is no systematic bias in the forecast. It is not that the RBI's forecast is biased in any particular way. As far as the growth is concerned, again we use a variety of approaches and models,” she said while speaking at an event organised by the **Ministry of Statistics and Programme Implementation (MoSPI)** to explain the changes in the new **CPI base revision**, here on **Wednesday**.
उन्होंने कहा, “पूर्वानुमान त्रुटियों को कम करना जितना महत्वपूर्ण है, उतना ही यह स्पष्ट है कि forecast में कोई **systematic bias** नहीं है। RBI का forecast किसी विशेष दिशा में biased नहीं है। विकास (growth) के संदर्भ में भी हम कई प्रकार के **approaches** और **models** का उपयोग करते हैं।” यह बात उन्होंने **बुधवार** को **MoSPI** द्वारा आयोजित एक कार्यक्रम में कही, जिसमें नए **CPI base revision** में किए गए बदलावों को समझाया गया।
- The Deputy Governor's comments came in the backdrop of economists criticising the RBI for having an **overstated CPI forecast** and hence a hawkish “bias” in monetary policy, and that a **rate cut** was warranted.
डिप्टी गवर्नर की यह टिप्पणी ऐसे समय में आई है जब अर्थशास्त्री RBI की **overstated CPI forecast** और मौद्रिक नीति में hawkish “bias” की आलोचना कर रहे थे, और यह भी कह रहे थे कि **rate cut** उचित है।
- Prices increased at a rate of **0.25% in October 2025**, making it the **slowest pace ever**.
अक्टूबर 2025 में कीमतें 0.25% की दर से बढ़ीं, जो अब तक की **सबसे धीमी वृद्धि** है।
- Ms. Gupta also spoke about initiatives brought in by the **RBI** to disseminate data.
सुश्री गुप्ता ने **RBI** द्वारा डेटा प्रसार के लिए लाई गई पहलों के बारे में भी बात की।
- The Deputy Governor said that the **balance of payments (BoP)** data is soon expected to be released on a **monthly basis**.
डिप्टी गवर्नर ने कहा कि **Balance of Payments (BoP)** डेटा जल्द ही **मासिक आधार** पर जारी किए जाने की उम्मीद है।

PATRIOTIC



China's rare earth dominance gives it crucial leverage over U.S. in trade war

Beijing maintains a decades-long grip on rare earths, controlling most global mining; its export restrictions and trade levers unsettle U.S. industries and shape ongoing China-U.S. talks; Washington and its allies race to build alternative supply chains, but analysts warn the effort will take years

GS III: Economy

MBQ

Agence France-Presse
BEIJING

China's stranglehold on the rare earths industry — from natural reserves and mining through processing and innovation — is the result of a decades-long drive now giving Beijing crucial leverage in its trade war with the United States.

The 17 key elements will play a vital role in the global economy in the coming years, as analysts warn that plans to secure alternative supply chains by Western governments could take years to bear fruit.

Rare earths are crucial for the defence sector — used in fighter jets, missile guidance systems and radar technology — while also having a range of uses in everyday products including smartphones, medical equipment and automobiles.

The southeastern mining region of Ganzhou — which specialises in “heavy” rare earths including yttrium and terbium — was a hive of activity.

Sprawling new headquarters are being built in Ganzhou for China Rare Earth Group, one of the country's two largest state-owned companies in the industry, following years of consolidation directed by Beijing.

Challenges this year have “paved the way for more countries to look into



Mining facility: Construction workers are seen at the site of the new headquarters of China Rare Earth Group in Ganzhou, Jiangxi province, eastern China. AFP

expanding rare earth metal production and processing”, Heron Lim, economics lecturer at ESSEC Business School, said.

“This investment could pay longer-term dividends,” he said.

Trade war

Sweeping export restrictions China imposed on the sector in early October sent shockwaves across global manufacturing sectors.

The curbs raised alarm bells in Washington, which has been engaged in a renewed trade war with Beijing since President Donald Trump began his second term.

At a high-stakes meeting

in South Korea late last month, Mr. Trump and Chinese counterpart Xi Jinping agreed to a one-year truce in a blistering tariff war between the world's top two economies.

The deal — which guarantees the supply of rare earths and other critical minerals, at least temporarily — effectively neutralised the most punishing U.S. measures and was widely seen as a victory for Beijing.

“Rare earths are likely to remain at the centre of future Sino-U.S. economic negotiations despite the tentative agreements thus far,” Mr. Heron Lim said.

“China has demonstrat-

ed its willingness to use more trade levers to keep the United States at the negotiating table,” he said.

“The turbulence has created a challenging environment for producers that rely on various rare earth metals, as near-term supply is uncertain.”

Washington and its allies are now racing to develop alternative mining and processing chains, but experts warn that the process will take years.

Supremacy ceded

During the Cold War, the U.S. led the way in developing abilities to extract and process rare earths, with the Mountain Pass mine in California provid-

ing the bulk of global supplies.

But as tensions with Moscow eased and the substantial environmental toll wrought by the rare earth industry gained prominence, the U.S. gradually offshored capacity in the 1980s and 1990s.

Now, China controls most of the global rare earths mining — around two-thirds, by most estimates.

It is already home to the world's largest natural reserves of the elements of any country, according to geological surveys.

And it has a near total monopoly on separation and refining, with analysis this year showing a share of around nine-tenths of all global processing.

Furthermore, a commanding lead in patents and strict export controls on processing technology solidify efforts by Beijing to prevent know-how from leaving the country.

“The United States and the European Union are heavily reliant on imports of rare earth elements, underscoring significant risks to critical industries,” said Amelia Haines, commodities analyst at BMI, at a seminar this month.

“This sustained risk is likely to catalyse a faster, broader pivot towards rare earth security,” she said.

U.S. defence authorities have in recent years directed large sums towards

shoring up domestic production — part of efforts to achieve a “mine-to-magnet” supply chain by 2027.

Washington has also been working with allies to develop extraction and processing alternatives to China.

Mr. Trump signed a rare earths deal last month promising \$8.5 billion in critical minerals projects with Prime Minister Anthony Albanese of Australia — its vast territory home to extensive rare earth resources.

The U.S. President also signed cooperation deals covering the critical minerals sector last month with Japan, Malaysia and Thailand.

Despite the flurry of activity and headlines this year, Washington has been aware of its rare earths problem for years.

‘Rare earths power’

In 2010, a maritime territorial dispute with Tokyo prompted Beijing to suspend shipments of the minerals to Japan — the first major incident highlighting geopolitical ramifications of China's control over the sector.

The episode sparked calls by the administration of then-President Barack Obama to shore up U.S. domestic resilience in the strategic field.

But 15 years later, China remains the chief rare earths power.

China's rare earth dominance gives it crucial leverage over U.S. in trade war

चीन का रेयर अर्थ पर दबदबा उसे ट्रेड वॉर में U.S. पर अहम बढ़त देता है

China's Global Dominance in Rare Earths

दुर्लभ खनिजों (Rare Earths) में चीन का वैशिक वर्चस्व

- China's stranglehold on the **rare earths industry** — from natural reserves and mining through processing and innovation — is the result of a **decades-long drive** now giving Beijing crucial leverage in its **trade war with the United States**.

चीन की दुर्लभ खनिज उद्योग पर पकड़ — प्राकृतिक भंडार और खनन से लेकर प्रोसेसिंग और नवाचार तक — दशकों लंबी नीति का परिणाम है, जो अब बीजिंग को अमेरिका के साथ व्यापार युद्ध में महत्वपूर्ण बढ़त दे रही है।

- The 17 key elements will play a vital role in the **global economy** in the coming years, as analysts warn that plans to secure **alternative supply chains** by Western governments could take **years** to bear fruit.
- 17 महत्वपूर्ण तत्व आने वाले वर्षों में वैशिक अर्थव्यवस्था में अहम भूमिका निभाएंगे, और विश्लेषकों का कहना है कि पश्चिमी देशों द्वारा वैकल्पिक सप्लाई चेन तैयार करने में कई वर्ष लग सकते हैं।



- Rare earths are crucial for the **defence sector** — used in fighter jets, **missile guidance systems, radar technology** — while also used in everyday products including **smartphones, medical equipment, and automobiles**.
दुर्लभ खनिज रक्षा क्षेत्र के लिए बेहद महत्वपूर्ण हैं — जैसे लड़ाकू विमान, मिसाइल गाइडेंस सिस्टम, रडार तकनीक — और साथ ही स्मार्टफोन, चिकित्सा उपकरण, और ऑटोमोबाइल में भी उपयोग होते हैं।
- The southeastern mining region of **Ganzhou** — which specialises in “**heavy**” rare earths including **yttrium and terbium** — was a hive of activity.
दक्षिण-पूर्व खनन क्षेत्र गानझोउ (Ganzhou) — जो yttrium और terbium सहित “heavy” rare earths में विशेषज्ञ है — गतिविधियों से भरा हुआ था।
- Sprawling new headquarters are being built in Ganzhou for **China Rare Earth Group**, one of the country’s two largest **state-owned companies** in the industry, following years of **consolidation** directed by Beijing.
चाइना रैयर अर्थ ग्रुप, जो इस क्षेत्र की दो सबसे बड़ी सरकारी कंपनियों में से एक है, के लिए गानझोउ में विशाल नया मुख्यालय बनाया जा रहा है, जो बीजिंग के निर्देशों पर वर्षों की **कंसोलिडेशन** के बाद हो रहा है।
- Challenges this year have “paved the way for more countries to look into expanding rare earth metal production and processing”, said **Heron Lim**, economics lecturer at ESSEC Business School.
इस वर्ष की चुनौतियों ने “अधिक देशों को दुर्लभ खनिजों के उत्पादन और प्रोसेसिंग बढ़ाने पर विचार करने का रास्ता बनाया है,” ESSEC बिजनेस स्कूल के अर्थशास्त्री **हेरॉन लिम** ने कहा।
- “This investment could pay **longer-term dividends**,” he said.
उन्होंने कहा कि “यह निवेश **दीर्घकालीन लाभ** दे सकता है।”

Trade war व्यापार युद्ध

- Sweeping **export restrictions** China imposed on the sector in **early October** sent shockwaves across **global manufacturing sectors**.
चीन द्वारा **अक्टूबर की शुरुआत** में लगाए गए व्यापक **निर्यात प्रतिबंधों** ने वैश्विक विनिर्माण क्षेत्रों में हड़कंप मचा दिया।
- The curbs raised alarm bells in **Washington**, which has been engaged in a renewed **trade war** with Beijing since President **Donald Trump** began his **second term**.
इन प्रतिबंधों ने **वॉशिंगटन** में खतरे की घंटी बजा दी, जो राष्ट्रपति **डोनाल्ड ट्रंप** के **दूसरे कार्यकाल** की शुरुआत से ही बीजिंग के साथ नए **व्यापार युद्ध** में लगा हुआ है।
- At a high-stakes meeting in **South Korea** late last month, Mr. Trump and **Xi Jinping** agreed to a **one-year truce** in the tariff war between the world’s top two economies.
पिछले महीने **दक्षिण कोरिया** में एक महत्वपूर्ण बैठक में ट्रंप और **शी जिनपिंग** ने दोनों शीर्ष अर्थव्यवस्थाओं के बीच चल रहे टैरिफ युद्ध में **एक वर्ष के युद्धविराम** पर सहमति जताई।
- The deal — which guarantees the supply of **rare earths and other critical minerals**, at least temporarily — effectively neutralised the most punishing U.S. measures and was seen as a **victory for Beijing**.
यह समझौता — जो दुर्लभ खनिज और अन्य **महत्वपूर्ण खनिजों** की आपूर्ति को अस्थायी रूप से सुनिश्चित करता है — अमेरिका के कठोर कदमों को निष्प्रभावी कर देता है और इसे **बीजिंग की जीत** माना गया।
- “Rare earths are likely to remain at the **centre** of future Sino-U.S. economic negotiations despite the tentative agreements thus far,” Mr. Heron Lim said.
हेरॉन लिम ने कहा, “दुर्लभ खनिज भविष्य की **सिनो-अमेरिकी आर्थिक वार्ताओं** के **केंद्र** में बने रहेंगे।”
- “China has demonstrated its willingness to use more **trade levers** to keep the United States at the negotiating table,” he said.
उन्होंने कहा, “चीन ने यह दर्शाया है कि वह अमेरिका को वार्ता की मेज पर बनाए रखने के लिए और अधिक **व्यापारिक दबाव तंत्र** का उपयोग करने को तैयार है।”
- “The turbulence has created a challenging environment for producers relying on rare earth metals, as **near-term supply is uncertain**.”
“यह उथल-पुथल उन उत्पादकों के लिए कठिन वातावरण बना रही है, जो दुर्लभ खनिजों पर निर्भर हैं, क्योंकि **निकट भविष्य की आपूर्ति अनिश्चित** है।”
- Washington and its allies are racing to develop **alternative mining and processing chains**, but the process will take **years**.
वॉशिंगटन और उसके सहयोगी **वैकल्पिक खनन और प्रोसेसिंग चेन** विकसित करने की दौड़ में हैं, लेकिन इसमें **कई वर्ष** लगेंगे।



Supremacy ceded श्रेष्ठता का परित्याग

- During the **Cold War**, the U.S. led the way in developing abilities to extract and process rare earths, with the **Mountain Pass mine** in California providing the bulk of global supplies.
शीत युद्ध के दौरान, अमेरिका दुर्लभ खनिजों के निष्कर्षण और प्रोसेसिंग में अग्रणी था, और कैलिफोर्निया की माउंटैन पास खान वैशिक आपूर्ति का बड़ा हिस्सा प्रदान करती थी।
- But as tensions with **Moscow** eased and environmental concerns grew, the U.S. **offshored capacity** in the 1980s and 1990s.
लेकिन मास्को के साथ तनाव कम होने और पर्यावरणीय चिंताओं के बढ़ने के साथ, अमेरिका ने 1980 और 1990 के दशक में अपनी क्षमता विदेशों में स्थानांतरित कर दी।
- Now, **China controls around two-thirds of global rare earths mining**.
अब चीन वैशिक दुर्लभ खनिज खनन का लगभग दो-तिहाई नियंत्रित करता है।
- It also has the **largest natural reserves and a near-total monopoly in separation and refining, holding around nine-tenths of all global processing**.
चीन के पास सबसे बड़े प्राकृतिक भंडार हैं और वह सेपरेशन और रिफाइनिंग में लगभग दस में नौ हिस्सेदारी रखता है।
- **China also holds a commanding lead in patents and uses strict export controls to prevent processing know-how from leaving the country**.
चीन पेटेंट में भी बढ़त रखता है और प्रोसेसिंग तकनीक बाहर जाने से रोकने के लिए कड़े निर्यात नियंत्रण का उपयोग करता है।
- “The U.S. and EU are heavily reliant on imports, posing significant risks to critical industries,” said **Amelia Haines** of BMI.
BMI की अमेरिया हेन्स ने कहा, “अमेरिका और यूरोपीय संघ आयात पर भारी निर्भर हैं, जिससे महत्वपूर्ण उद्योगों को जोखिम है।”
- “This risk is likely to catalyse a faster, broader pivot towards rare earth security,” she added.
उन्होंने कहा, “यह जोखिम दुर्लभ खनिज सुरक्षा की दिशा में तेज और व्यापक बदलाव को प्रेरित करेगा।”
- U.S. defence authorities have been funding domestic production to achieve a **mine-to-magnet** supply chain by 2027.
अमेरिकी रक्षा विभाग 2027 तक माइन-टू-मैग्नेट सप्लाय चैन हासिल करने के लिए घरेलू उत्पादन को वित्तपोषित कर रहा है।
- Washington is also working with allies to develop **extraction and processing alternatives** to China.
वॉशिंगटन चीन के विकल्प के रूप में निष्कर्षण और प्रोसेसिंग क्षमताएँ विकसित करने के लिए सहयोगियों के साथ काम कर रहा है।
- **Mr. Trump signed an \$8.5 billion rare earths deal with Australia** last month, whose territory has vast reserves.
ट्रंप ने पिछले महीने ऑस्ट्रेलिया के साथ 8.5 अरब डॉलर का दुर्लभ खनिज समझौता किया, जहाँ विशाल भंडार मौजूद हैं।
- **The U.S. President also signed critical minerals cooperation deals with Japan, Malaysia, and Thailand**.
अमेरिकी राष्ट्रपति ने जापान, मलेशिया, और थाईलैंड के साथ महत्वपूर्ण खनिज सहयोग समझौते भी किए।
- Despite this activity, Washington has been aware of its **rare earths problem** for years.
इस सक्रियता के बावजूद, वॉशिंगटन वर्षों से अपनी दुर्लभ खनिज समस्या से अवगत रहा है।

‘Rare earths power’ ‘दुर्लभ खनिज शक्ति’

- In 2010, a maritime dispute with **Tokyo** prompted Beijing to suspend shipments to Japan — the first major incident showing the **geopolitical implications** of China’s dominance.
2010 में टोक्यो के साथ समुद्री विवाद के चलते बीजिंग ने जापान को निर्यात रोक दिया — यह चीन की प्रभुत्वता के भूराजनीतिक प्रभावों को दिखाने वाली पहली बड़ी घटना थी।
- Calls grew in the **Obama administration** to strengthen U.S. domestic resilience.
ओबामा प्रशासन के दौरान अमेरिका की घरेलू क्षमता मजबूत करने की मांग बढ़ी।
- But 15 years later, China remains the **chief rare earths power**.
लेकिन 15 वर्षों बाद भी चीन दुर्लभ खनिजों का प्रमुख शक्ति बना हुआ है।



Groundbreaking brain atlases capture development in motion

New brain atlases combine several advanced mapping methods to trace how neurons and glia form, migrate, and diversify across time and species, turning static brain charts into a dynamic developmental reference: the brain is portrayed as a living continuum, a time-lapse of genetic patterns

GENE SAT
Anirban Mukhopadhyay

Imagine watching the brain not as a finished organ but as a city under construction, where every neuron is a worker changing jobs as the skyline rises.

A series of papers in *Nature* published on November 5 has captured exactly that. Led by researchers at the Allen Institute for Brain Science in the U.S., together with partners across the US BRAIN Initiative, scientists have charted how the brain's main cells — neurons and their supporting glia — form, migrate, and specialise across species from mouse to human.

Instead of treating the brain as a fixed catalogue of parts, the new maps portray it as a living continuum, a time-lapse of genetic patterns flickering on and off as cells mature, connect, and build networks.

For the first time these studies offer a unified view of brain development across time and species. Previous efforts were hard to compare because labs used different methods, sampled different stages or focused on separate regions. The BRAIN Initiative teams scoured by standardising protocols, building new sequencing and imaging tools, and creating shared computational pipelines to align data from mouse, marmoset, and human tissue. Together, they now provide a common reference for how neurons and glia emerge and assemble into circuits.

Hongkui Zeng, director of the Allen Institute, described it as ushering in a "new era of developmental neuroscience," one that unifies data across space, time, and species. The six coordinated studies offer what she calls a "common reference" for how genes assemble the brain's intricate circuitry, a guide likely to steer neuroscience for years to come.

Where old maps fell short

For decades, brain atlases treated neurons as if they came in fixed categories. The new datasets have overturned this view by showing that developing cells move through gradual transitions, with gene-activity patterns that change step by step rather than in sharp jumps.

In one of Dr. Zeng's studies, her team found that as the mouse brain matured, young neurons passing through intermediate stages where they showed a mix of features from both earlier and forthcoming cell types.

"The boundaries are never clear-cut," Dr. Zeng said.

Tomaz Nowakowski, an associate professor at the University of California, San Francisco, showed in his human lineage atlas that human brain development followed a similar path. By tracing the descendants of individual stem cells in cultured human foetal brain tissue, his team found that radial glia, the brain's builder cells, first produced neurons that activate signals, then those that quiet them.

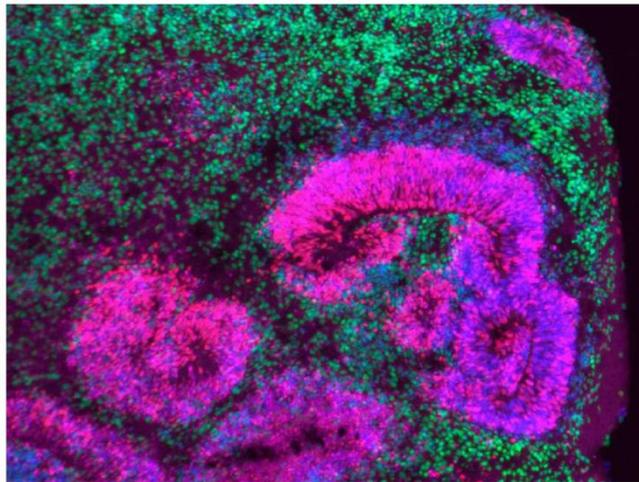
This gradual shift — which previous single-timepoint maps couldn't see — confirmed that neurons don't acquire their adult identity all at once. Specifically, the two studies together showed that developing neurons don't hold a single, stable identity. Their gene activity shifts gradually as they mature, passing through intermediate stages rather than jumping from one defined type to another.

Cells' journeys

Dr. Nowakowski used viral barcoding to trace cell lineages in cultured human foetal brain tissue. The technique relies on harmless viruses that tag each stem cell with a unique genetic label, allowing researchers to follow all of its descendants.

His team then applied single-cell RNA sequencing to measure which genes were active in each developing neuron. The team also used spatial profiling to place those gene readouts back into their exact locations within the tissue, almost like returning pins to a 3D map. Together, these methods created a time-resolved record showing how individual cells divided, differentiated and settled into their developmental paths.

Each of these steps began to show how one cell becomes many. Dr. Nowakowski said DNA analyses from postmortem human brains showed the same developmental shift his team observed in the culture, confirming that the pattern was not an artefact of the laboratory system. Dr. Zeng's computational atlas added a way to define developmental transitions more precisely. Her team used algorithms to detect when a neuron's



An eight-week human cortical organoid with rosette structures (in pink and blue) surrounded by neuronal populations (green). JOSE SOTO FROM UCLA; NANO ET AL., NATURE NEUROSCIENCE (CC BY)

gene-activity profile had changed enough to qualify as a different cell stage, replacing earlier subjective judgments with quantitative criteria.

Finally, Yale University professor Rong Fan's team added the missing dimension: place. In their spatial tri-omics atlas, the researchers measured three kinds of molecular information in thin, preserved slices of developing brain tissue: which genes were active, how accessible the surrounding DNA was, and which proteins each cell produced. Then they linked each measurement to the exact location of the cell within the tissue. This made it possible to see where different molecular patterns appeared and how neighbouring cells changed together over time. Taken together, these approaches allowed the researchers to follow developing cells across both time and space, rather than capturing them at isolated moments.

Reading the new atlas

Together, these atlases have opened the door to understanding how billions of individual cell decisions shape the brain's extraordinary diversity.

Cindy van Velthoven, an investigator at the Allen Institute, was part of a mouse study that tracked how inhibitory neurons, the cells that calm or balance brain activity, diversify and migrate as the forebrain forms. The team found inhibitory lineages that diversified at different times, some appeared later and were distributed across several regions, suggesting late-acting roles.

Building on his work, Dr. Nowakowski's human atlas traced the complementary side of this circuitry: excitatory neurons, which increase neural activity. Read together, the two studies reveal how the brain's opposing systems of excitation and inhibition take shape through continuous, overlapping pathways of gene expression.

Those same molecular networks also appear to have deep evolutionary roots, an idea explored by Alex Pollen, an associate professor at University of



California, San Francisco. In a cross-species analysis, Dr. Pollen and his colleagues compared gene activity across mammals and found that a neuron type once thought unique to primates, the PAC3 interneuron, which helps regulate emotion and hormonal signalling, is present across many mammalian lineages, though its abundance and molecular profile vary.

"The strongest evidence for shared ancestry came from looking broadly, from marsupials to primates," Dr. Pollen said.

All these findings show that evolution tends to modify existing neuron types rather than create entirely new ones. In humans, similar developmental pathways are present but progress over a longer time, giving cells more time to diversify and form complex circuits.

Across species, the underlying pattern is consistent: developmental programmes are reused and adjusted, not replaced, to build the brain's wiring.

Bringing it all together

With the individual atlases in place, the consortium took one final step. In the meta-atlas project led by Dr. Nowakowski, Dr. Zeng, and training programme mentor Aparna Bhaduri at the University of California, Los Angeles, the researchers aligned developmental data from mouse, marmoset, and human brains to create a shared reference that allows cell states to be compared across species.

Dr. Zeng acknowledged that "a lack of brain tissue, especially human samples from key stages of development, may be the biggest limitation for now."

She said overcoming such gaps means constantly improving both the data and the tools used to analyse it: "We should not treat taxonomies rigidly, but continue to refine them as we gain new knowledge."

For Dr. Bhaduri, the goal is to build a shared resource the entire field can use.

"Having this reference data is a fantastic opportunity for the field," she said. "It will empower us to have common gene signatures, cell names, and analytical tools to move the field forward."

Their project treats brain mapping as a collective, ongoing effort rather than as a finished product. As Dr. Zeng put it, the aim isn't to finish the map but to ensure everyone is using the same coordinates.

From maps to medicine

For neuroscientists, these maps offer a clearer view of how early development sets the conditions for later brain

function. They show when key genetic pathways switch on or off during gestation and how those shifts guide cells into specific roles.

The atlases highlight periods of development in which many genes associated with neurodevelopmental disorders are highly active, which could help researchers pinpoint when small disruptions are most likely to have long-term effects. Conditions such as autism or epilepsy are thought to involve changes in early developmental timing rather than damage that occurs later in life.

Dr. Nowakowski said the next step is to test whether the developmental switches his team observed also occur in other systems. Non-human primates, he noted, "may be the closest *in-vivo* model" while "organoids are another emerging model," and he said he looks forward to seeing if the results align.

Beyond genetics and timing, the surrounding tissue environment also affects how cells mature. In the spatial atlas prepared by Fan *et al.*, the team compared maps of gene and protein activity and found that cells in regions with stronger developmental signalling matured sooner while those in quieter regions developed more slowly. When they examined injured tissue, the brain activated patterns of gene activity similar to those seen during early development, suggesting shared mechanisms between growth and repair.

Researchers increasingly believe many neurological conditions arise when developmental events occur at the wrong time or in the wrong place, such as cells arriving too early, maturing too quickly or settling in an unusual location. The new atlases make these vulnerable periods easier to identify, pointing to specific stages in which small disruptions may have long-term consequences.

Work still ahead

Some neuron types appear only briefly or only switch on their defining genes in specific conditions, such as after recent activity or during particular behavioural states. Dr. Van Velthoven said such fleeting or condition-specific neurons "likely remain unseen" in today's datasets.

Dr. Zeng agreed the journey is far from over: "Extending our work to the whole brain, including both the cortex, the brain's outer layer, and the deeper subcortical regions that coordinate movement and emotion, would be the first step."

"We need more timepoints and brain regions to construct a much more detailed framework for how the brain ultimately emerges," Dr. Bhaduri said.

Together, these gaps define the next steps for the field: broader brain regions, more developmental stages, and denser sampling to capture cell types that current methods miss.

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Groundbreaking brain atlases capture development in motion

विकास को गतिशील रूप में प्रदर्शित करने वाले क्रांतिकारी मस्तिष्क एटलस

Brain development studies and atlases मस्तिष्क विकास अध्ययन और एटलस

- Imagine watching the brain not as a finished organ but as a city under construction, where every neuron is a worker changing jobs as the skyline rises.

मस्तिष्क को एक पूर्ण अंग की तरह नहीं बल्कि निर्माणाधीन शहर की तरह देखने की कल्पना करें, जहाँ हर neuron एक कामगार है जो skyline के उठने के साथ अपना काम बदलता है।

- A series of papers in *Nature* published on November 5 has captured exactly that. *Nature* में 5 November को प्रकाशित शोधपत्रों की एक श्रृंखला ने ठीक यही चित्रित किया है।

- Led by researchers at the Allen Institute for Brain Science in the U.S., together with partners across the US BRAIN Initiative, scientists have charted how the brain's main cells — neurons and their supporting glia — form, migrate, and specialise across species from mouse to human.

अमेरिका के Allen Institute for Brain Science के शोधकर्ताओं और US BRAIN Initiative के साझेदारों के नेतृत्व में वैज्ञानिकों ने दर्शाया है कि मस्तिष्क की मुख्य कोशिकाएँ — neurons और उनकी सहायक glia — mouse से human तक विभिन्न प्रजातियों में कैसे बनती, प्रवास करती और विशिष्ट होती हैं।

- Instead of treating the



brain as a fixed catalogue of parts, the new maps portray it as a **living continuum**, a **time-lapse** of genetic patterns flickering on and off as cells mature, connect, and build networks. मस्तिष्क को स्थिर भागों की सूची की तरह मानने की बजाय, नए मानचित्र इसे एक **living continuum** के रूप में दिखाते हैं, एक **time-lapse** की तरह जहाँ genetic patterns कोशिकाओं के **mature, connect**, और नेटवर्क बनाने के साथ **on-off** होती रहती हैं।

- For the first time these studies offer a **unified view** of brain development across time and species.
पहली बार इन अध्ययनों ने समय और प्रजातियों के पार मस्तिष्क विकास का एक **unified view** प्रस्तुत किया है।
- Previous efforts were hard to compare because labs used different methods, sampled different stages or focused on separate regions.
पहले किए गए प्रयासों की तुलना कठिन थी क्योंकि अलग-अलग प्रयोगशालाएँ अलग तरीकों, चरणों और क्षेत्रों का उपयोग करती थीं।
- The **BRAIN Initiative** teams solved this by standardising protocols, building new sequencing and imaging tools, and creating shared computational pipelines to align data from **mouse, marmoset, and human** tissue.
BRAIN Initiative टीमों ने प्रोटोकॉल मानकीकरण, नए sequencing और imaging उपकरण बनाने, और **mouse, marmoset, human** ऊतकों के डेटा को संरेखित करने हेतु साझा computational pipelines बनाकर इस समस्या को हल किया।
- Together, they now provide a **common reference** for how neurons and glia emerge and assemble into circuits.
संयुक्त रूप से, वे अब यह दिखाने के लिए एक **common reference** प्रदान करते हैं कि neurons और glia कैसे उभरते और सर्किट में संगठित होते हैं।
- **Hongkui Zeng**, director of the Allen Institute, described it as ushering in a “**new era of developmental neuroscience**”, one that unifies data across space, time, and species.
Hongkui Zeng, Allen Institute की निदेशक, ने इसे “**new era of developmental neuroscience**” की शुरुआत बताया, जो स्थान, समय और प्रजातियों के पार डेटा को एकीकृत करता है।
- The six coordinated studies offer what she calls a “**common reference**” for how genes assemble the brain’s intricate circuitry, a guide likely to steer neuroscience for years to come.
छह समन्वित अध्ययनों ने वह प्रस्तुत किया जिसे वह “**common reference**” कहती हैं, जो दर्शाता है कि genes मस्तिष्क की जटिल circuitry को कैसे बनाते हैं, और यह आने वाले वर्षों तक neuroscience का मार्गदर्शन करेगा।

Where old maps fell short पुराने मानचित्र कहाँ कम पड़े

- For decades, brain atlases treated neurons as if they came in fixed categories.
दशकों तक, brain atlases ने neurons को ऐसे माना जैसे वे **fixed categories** में आते हों।
- The new datasets have overturned this view by showing that developing cells move through gradual transitions, with gene-activity patterns that change step by step rather than in sharp jumps.
नए datasets ने इस धारणा को तोड़ते हुए दिखाया कि विकसित होती कोशिकाएँ **gradual transitions** से गुजरती हैं जहाँ gene-activity patterns धीरे-धीरे बदलते हैं, अचानक नहीं।
- In one of **Dr. Zeng’s** studies, her team found that as the mouse brain matured, young neurons passed through intermediate stages where they showed a mix of features from both earlier and forthcoming cell types.
Dr. Zeng के एक अध्ययन में पाया गया कि जैसे-जैसे mouse brain परिपक्व होता है, युवा neurons **intermediate stages** से गुजरते हैं जहाँ वे पहले और आगे आने वाले cell types की विशेषताओं का मिश्रण दिखाते हैं।
- “The boundaries are never clear-cut,” **Dr. Zeng** said.
“**boundaries कभी clear-cut नहीं होतीं**,” **Dr. Zeng** ने कहा।
- **Tomasz Nowakowski**, an associate professor at the University of California, San Francisco, showed in his **human lineage atlas** that human brain development followed a similar path.
Tomasz Nowakowski, University of California, San Francisco के associate professor, ने अपने **human lineage atlas** में दिखाया कि मानव मस्तिष्क विकास भी इसी मार्ग का अनुसरण करता है।



- By tracing the descendants of individual stem cells in cultured human foetal brain tissue, his team found that radial glia, the brain's builder cells, first produced neurons that activate signals, then those that quiet them.

मानव भ्रूणीय मस्तिष्क ऊतक में व्यक्तिगत stem cells के वंशजों को ट्रेस करके, उनकी टीम ने पाया कि **radial glia**, जो मस्तिष्क की builder cells हैं, पहले **activate करने वाले neurons**, फिर **signal quiet करने वाले neurons** बनाती हैं।
- This gradual shift — which previous single-timepoint maps couldn't see — confirmed that neurons don't acquire their adult identity all at once.

यह **gradual shift** — जिसे पहले के single-timepoint maps नहीं देख पाए — यह पुष्टि करता है कि neurons एक साथ अपनी वयस्क पहचान प्राप्त नहीं करते।
- Specifically, the two studies together showed that developing neurons don't hold a single, stable identity. Their gene activity shifts gradually as they mature, passing through intermediate stages rather than jumping from one defined type to another.

विशेष रूप से, दोनों अध्ययनों ने दिखाया कि विकसित होते neurons की कोई **single stable identity** नहीं होती। उनकी gene activity धीरे-धीरे बदलती है, **intermediate stages** से गुजरती हुई, बजाय एक cell type से दूसरे पर अचानक कूदने के।
- Cells' journeys**
कोशिकाओं की यात्राएँ
- Dr. Nowakowski used **viral barcoding** to trace cell lineages in cultured human foetal brain tissue. The technique relies on harmless viruses that tag each stem cell with a **unique genetic label**, allowing researchers to follow all of its descendants.

डॉ. Nowakowski ने cultured मानव भ्रूणीय मस्तिष्क ऊतक में कोशिका वंश का पता लगाने के लिए **viral barcoding** का उपयोग किया। यह तकनीक हानिरहित वायरस पर निर्भर करती है जो प्रत्येक stem cell को एक **unique genetic label** देता है, जिससे शोधकर्ताओं को उसके सभी वंशजों को ट्रैक करना संभव होता है।
- His team then applied **single-cell RNA sequencing** to measure which genes were active in each developing neuron.

उनकी टीम ने यह मापने के लिए **single-cell RNA sequencing** लागू की कि प्रत्येक विकसित होते neuron में कौन से genes सक्रिय थे।
- The team also used **spatial profiling** to place those gene readouts back into their exact locations within the tissue, almost like returning pins to a **3D map**. Together, these methods created a **time-resolved record** showing how individual cells divided, differentiated and settled into their developmental paths.

टीम ने **spatial profiling** का भी उपयोग किया ताकि gene readouts को ऊतक में उनकी सटीक स्थिति पर वापस रखा जा सके, लगभग एक **3D map** पर पिन वापस लगाने जैसा। साथ में, इन तरीकों ने एक **time-resolved record** बनाया, जो दिखाता है कि व्यक्तिगत कोशिकाएँ कैसे विभाजित, विभेदित और अपने विकास मार्गों पर स्थापित हुईं।
- Each of these steps began to show how one cell becomes many. Dr. Nowakowski said DNA analyses from **postmortem human brains** showed the same developmental shift his team observed in the culture, confirming that the pattern was not an artefact of the laboratory system.

इनमें से प्रत्येक चरण यह दिखाने लगा कि एक कोशिका कैसे कई बनती है। डॉ. Nowakowski ने कहा कि **postmortem मानव मस्तिष्क** के DNA विश्लेषणों ने वही विकासात्मक परिवर्तन दिखाया जो उनकी टीम ने संस्कृति में देखा था, यह पुष्टि करते हुए कि यह पैटर्न प्रयोगशाला प्रणाली का कृत्रिम परिणाम नहीं था।
- Dr. Zeng's **computational atlas** added a way to define developmental transitions more precisely.

डॉ. Zeng के **computational atlas** ने विकासात्मक संक्रमणों को और अधिक सटीक रूप से परिभाषित करने का तरीका जोड़ा।
- Her team used algorithms to detect when a **neuron's gene-activity profile had changed enough to qualify as a different cell stage, replacing earlier subjective judgments with quantitative criteria.**

उनकी टीम ने algorithms का उपयोग यह पता करने के लिए किया कि कब किसी neuron की **gene-activity profile** इतनी बदल गई है कि उसे एक अलग कोशिका चरण के रूप में योग्य माना जा सके, जिससे पहले के subjective निर्णयों को **quantitative criteria** से बदल दिया गया।



- Finally, Yale University professor **Rong Fan's** team added the missing dimension: **place**. अंत में, Yale University के प्रोफेसर **Rong Fan** की टीम ने गायब आयाम जोड़ा: **स्थान**।
- In their **spatial tri-omics atlas**, the researchers measured three kinds of molecular information in thin, preserved slices of developing brain tissue: which genes were active, how accessible the surrounding DNA was, and which proteins each cell produced. अपने **spatial tri-omics atlas** में, शोधकर्ताओं ने विकसित होते मस्तिष्क ऊतक की पतली संरक्षित स्लाइसों में तीन प्रकार की आणविक जानकारी मापी: कौन से genes सक्रिय थे, आसपास का DNA कितना accessible था, और प्रत्येक कोशिका कौन से proteins बनाती थी।
- Then they linked each measurement to the exact location of the cell within the tissue. This made it possible to see where different molecular patterns appeared and how neighbouring cells changed together over time. फिर उन्होंने प्रत्येक माप को ऊतक के भीतर कोशिका की सटीक स्थिति से जोड़ा। इससे यह देखना संभव हुआ कि विभिन्न molecular patterns कहाँ दिखाई दिए और समय के साथ पड़ोसी कोशिकाएँ कैसे साथ में बदलीं।
- Taken together, these approaches allowed the researchers to follow developing cells across both **time and space**, rather than capturing them at isolated moments. सामूहिक रूप से, इन तरीकों ने शोधकर्ताओं को विकसित होती कोशिकाओं को **समय और स्थान** दोनों में ट्रैक करने की अनुमति दी, न कि केवल अलग-अलग क्षणों में।

Reading the new atlas

नया एटलस पढ़ना

- Together, these atlases have opened the door to understanding how billions of individual cell decisions shape the brain's extraordinary diversity. सामूहिक रूप से, इन atlases ने यह समझने का मार्ग खोला कि अरबों कोशिकाओं के निर्णय मस्तिष्क की असाधारण विविधता कैसे बनाते हैं।
- **Cindy van Velthoven**, an investigator at the Allen Institute, was part of a mouse study that tracked how **inhibitory neurons**, the cells that calm or balance brain activity, diversify and migrate as the forebrain forms. **Cindy van Velthoven**, Allen Institute की एक शोधकर्ता, एक mouse अध्ययन का हिस्सा थीं जिसने यह ट्रैक किया कि **inhibitory neurons**, जो मस्तिष्क गतिविधि को संतुलित करते हैं, **forebrain** के निर्माण के दौरान कैसे विविध और प्रवास करते हैं।
- The team found inhibitory lineages that diversified at different times, some appeared later and were distributed across several regions, suggesting **late-acting roles**. टीम ने inhibitory lineages पाए जो विभिन्न समय पर विविध हुईं, कुछ बाद में दिखाई दीं और कई क्षेत्रों में वितरित थीं, जो **late-acting roles** का संकेत देती हैं।
- Building on his work, Dr. Nowakowski's human atlas traced the complementary side of this circuitry: **excitatory neurons**, which increase neural activity. अपने कार्य पर आगे बढ़ते हुए, डॉ. Nowakowski के human atlas ने इस circuitry का पूरक पक्ष ट्रेस किया: **excitatory neurons**, जो तंत्रिका गतिविधि बढ़ाते हैं।
- Read together, the two studies reveal how the brain's opposing systems of **excitation and inhibition** take shape through continuous, overlapping pathways of gene expression. दोनों अध्ययनों को एक साथ पढ़ने पर यह पता चलता है कि मस्तिष्क की **excitation और inhibition** प्रणालियाँ gene expression के निरंतर, overlapping pathways के माध्यम से कैसे आकार लेती हैं।



Channel state information from WiFi signals can be used to identify people in a room but is harder to obtain and needs specialised hardware and firmware. PAUL HANAOKA/UNSPLASH

WiFi signals can quietly surveil you, says study

GS III: S&T

Vasudevan Mukunth

Modern WiFi standards have a feature called beamforming that helps routers push signals more efficiently towards connected devices. To do this, phones and laptops regularly broadcast short reports describing how they “see” the wireless channel. These reports are unencrypted and can be picked up by any other device in range.

Are these reports rich enough for someone to recognise who is moving through a room just from how their body disturbs the WiFi field? A new study by researchers at the Karlsruhe Institute of Technology in Germany has found the answer is “yes.”

Previous work had already shown that channel state information (CSI) from WiFi signals can be used to identify people in a room but CSI is harder to obtain and needs specialised hardware and firmware. Beamforming feedback information (BFI) is however, available on off-the-shelf hardware. The authors thus treated BFI as a potentially more serious privacy risk and measured how far an attacker could go with it in a realistic setting.

They built a WiFi setup with two access points and four “listening” perspectives, all operating in the 6 GHz band. They asked 197 volunteers to walk back and forth through the WiFi field normally, briskly, through a turnstile, and while carrying a backpack or a crate. The system recorded both BFI and CSI traces, which the team then fed into a relatively simple neural network that could learn patterns directly from the raw data.

Thus they found that BFI alone was strongly identifying. When the model was trained and tested on normal walks, it recognised more than 160 individuals with 99.5% accuracy. CSI, which has higher time resolution but is harder to obtain in practice, was less accurate on the same dataset.

The model also transferred reasonably well across walking styles: BFI could still identify people when they wore a backpack, carried a crate, walked faster or passed through a turnstile, although the performance dipped somewhat for more unusual motions. It also outperformed CSI.

BFI recognised 160 individuals with 99.5% accuracy. CSI, which has a higher time resolution, was less accurate on the same dataset

According to the researchers, the results change how we should think about the privacy consequences of everyday WiFi use. They’ve shown that inferring one’s identity doesn’t necessarily require hacking firmware or networks but only a device within listening range. They don’t even need the WiFi password.

The ability is doubly insidious because BFI is produced by normal WiFi networks and, unlike CCTV cameras, doesn’t advertise its role in surveillance. People who might avoid visible cameras might still ignore access points mounted in ceilings or corners. In this sense, WiFi-based tracking can create an “inverse panopticon” where individuals behave as if unobserved while being silently profiled.

Once a system can stably recognise individuals from their gait, any other WiFi-based task, such as recognising activities or estimating occupancy, can be linked to those identities. This makes the harm cumulative because activity and movement logs can be tied to the same person over time, even if their real-world name is not immediately known.

Finally, the researchers noted that current mitigation ideas like adding noise to training fields are immature, often require special hardware, and mainly target CSI instead of BFI.



WiFi signals can quietly surveil you, says study अध्ययन कहता है कि WiFi संकेत चुपचाप आपकी निगरानी कर सकते हैं

- Modern WiFi standards have a feature called **beamforming** that helps routers push signals more efficiently towards connected devices.
आधुनिक वाईफाई मानकों में **बीमफॉर्मिंग** नामक एक सुविधा होती है जो राउटर को जुड़े उपकरणों की ओर संकेत अधिक कुशलता से भेजने में मदद करती है।
- To do this, phones and laptops regularly broadcast short reports describing how they “see” the wireless channel.
ऐसा करने के लिए, फोन और लैपटॉप नियमित रूप से छोटे रिपोर्ट प्रसारित करते हैं कि वे वायरलेस चैनल को कैसे “देखते” हैं।
- These reports are unencrypted and can be picked up by any other device in range.
ये रिपोर्ट **अनएन्क्रिप्टेड** होती हैं और सीमा के भीतर कोई भी उपकरण इन्हें पकड़ सकता है।
- Are these reports rich enough for someone to recognise who is moving through a room just from how their body disturbs the WiFi field?
क्या ये रिपोर्ट इतनी समृद्ध हैं कि कोई व्यक्ति केवल यह देखकर पहचान सके कि कमरे में कौन चल रहा है, कि उनका शरीर वाईफाई क्षेत्र को कैसे बाधित करता है?
- A new study by researchers at the **Karlsruhe Institute of Technology** in Germany has found the answer is “yes.”
जर्मनी के कार्ल्स्रूहे इंस्टिट्यूट ऑफ टेक्नोलॉजी के शोधकर्ताओं के एक नए अध्ययन ने पाया है कि उत्तर “हाँ” है।
- Previous work had already shown that **channel state information (CSI)** from WiFi signals can be used to identify people in a room but CSI is harder to obtain and needs specialised hardware and firmware.
पहले के कार्यों ने पहले ही दिखाया था कि वाईफाई संकेतों से प्राप्त **चैनल स्टेट इंफॉर्मेशन (CSI)** का उपयोग कमरे में लोगों की पहचान करने के लिए किया जा सकता है, लेकिन CSI प्राप्त करना कठिन होता है और इसके लिए विशेष **हार्डवेयर** और **फर्मवेयर** की आवश्यकता होती है।
- **Beamforming feedback information (BFI)** is however, available on off-the-shelf hardware.
हालाँकि **BFI (बीमफॉर्मिंग फीडबैक इंफॉर्मेशन)** सामान्य हार्डवेयर पर उपलब्ध होता है।
- The authors thus treated BFI as a potentially more serious **privacy risk** and measured how far an attacker could go with it in a realistic setting.
लेखकों ने BFI को एक संभावित गंभीर **गोपनीयता जोखिम** माना और यह मापा कि वास्तविक परिस्थितियों में एक हमलावर इससे कितनी दूर जा सकता है।
- They built a WiFi setup with **two access points and four “listening” perspectives, all operating in the 6 GHz band.**
उन्होंने **दो एक्सेस पॉइंट्स** और **चार “लिसनिंग” पर्सपेक्टिव्स** के साथ वाईफाई सेटअप बनाया, जो सभी **6 गीगाहर्ट्ज़ बैंड** में संचालित हो रहे थे।
- They asked **197 volunteers** to walk back and forth through the WiFi field normally, briskly, through a turnstile, and while carrying a backpack or a crate.
उन्होंने **197 स्वयंसेवकों** से सामान्य रूप से, तेज़ी से, टर्नस्टाइल से होकर, और एक **बैकपैक** या **क्रेट** लेकर वाईफाई क्षेत्र से गुजरने के लिए कहा।
- The system recorded both **BFI** and **CSI** traces, which the team then fed into a relatively simple **neural network** that could learn patterns directly from the raw data.
सिस्टम ने **BFI** और **CSI** दोनों ट्रेसज़ रिकॉर्ड किए, जिन्हें टीम ने एक साधारण **न्यूरल नेटवर्क** में डाला जो कच्चे डेटा से सीधे पैटर्न सीख सकता था।
- Thus they found that **BFI alone** was strongly identifying.
इस प्रकार उन्होंने पाया कि **सिर्फ BFI** ही पहचान के लिए बहुत शक्तिशाली था।



- When the model was trained and tested on normal walks, it recognised **more than 160 individuals** with **99.5% accuracy**.
जब मॉडल को सामान्य चालों पर प्रशिक्षित और परीक्षण किया गया, तो उसने **160 से अधिक व्यक्तियों को 99.5% सटीकता** के साथ पहचाना।
- CSI, which has higher time resolution but is harder to obtain in practice, was less accurate on the same dataset.
CSI, जिसका समय-रिज़ॉल्यूशन अधिक होता है लेकिन व्यावहारिक रूप से प्राप्त करना कठिन होता है, उसी डेटासेट पर कम सटीक था।
- The model also transferred reasonably well across walking styles:
मॉडल ने चाल-शैली बदलने पर भी उचित प्रदर्शन किया:
- BFI could still identify people when they wore a backpack, carried a crate, walked faster or passed through a turnstile, although the performance dipped somewhat for more unusual motions.
BFI अभी भी लोगों को पहचान सकता था, भले ही वे बैकपैक पहनें, क्रेट उठाएँ, तेज़ चलें, या टर्नस्टाइल से गुजरें, हालांकि असामान्य हरकतों पर सटीकता थोड़ी कम हो गई।
- It also outperformed CSI.
यह CSI से बेहतर भी था।
- According to the researchers, the results change how we should think about the **privacy consequences** of everyday WiFi use.
शोधकर्ताओं के अनुसार, ये परिणाम यह बदलते हैं कि हमें रोज़मर्रा के वाईफाई उपयोग के **गोपनीयता परिणामों** के बारे में कैसे सोचना चाहिए।
- They've shown that inferring one's identity doesn't necessarily require hacking firmware or networks but only a device within listening range.
उन्होंने दिखाया कि किसी की पहचान जानने के लिए फ़र्मवेयर या नेटवर्क को हैक करने की आवश्यकता नहीं है—सिर्फ **लिसनिंग रेंज** में एक उपकरण काफी है।
- They don't even need the WiFi password.
उन्हें वाईफाई **पासवर्ड** की भी आवश्यकता नहीं होती।
- The ability is doubly insidious because BFI is produced by normal WiFi networks and, unlike **CCTV cameras**, doesn't advertise its role in surveillance.
यह क्षमता दोहरे रूप से खतरनाक है क्योंकि BFI सामान्य वाईफाई नेटवर्क द्वारा उत्पन्न होता है और **CCTV कैमरों** की तरह अपनी निगरानी भूमिका का विज्ञापन नहीं करता।
- People who might avoid visible cameras might still ignore access points mounted in ceilings or corners.
जो लोग दिखाई देने वाले कैमरों से बचते हैं, वे छतों या कोनों में लगे एक्सेस पॉइंट्स को नज़रअंदाज़ कर सकते हैं।
- In this sense, WiFi-based tracking can create an **"inverse panopticon"** where individuals behave as if unobserved while being silently profiled.
इस अर्थ में, वाईफाई-आधारित ट्रैकिंग एक **"इनवर्स पैनाप्टिकन"** बना सकती है जिसमें लोग अनदेखे होने जैसा व्यवहार करते हैं, लेकिन उन्हें चुपचाप प्रोफ़ाइल किया जाता है।
- Once a system can stably recognise individuals from their gait, any other WiFi-based task such as recognising activities or estimating occupancy can be linked to those identities.
एक बार जब सिस्टम चाल से व्यक्तियों को स्थिर रूप से पहचान सकता है, तो उनके **गतिविधि-पहचान** या **उपस्थिति-आकलन** जैसे अन्य वाईफाई-आधारित कार्य भी उसी पहचान से जुड़े जा सकते हैं।
- This makes the harm cumulative because activity and movement logs can be tied to the same person over time, even if their real-world name is not immediately known.
इससे नुकसान **संचयी** हो जाता है क्योंकि गतिविधि और गति लॉग समय के साथ उसी व्यक्ति से जुड़े रह सकते हैं, भले ही उनका वास्तविक नाम तुरंत ज्ञात न हो।
- Finally, the researchers noted that current **mitigation ideas** like adding noise to training fields are immature, often require special hardware, and mainly target CSI instead of BFI.
अंततः शोधकर्ताओं ने नोट किया कि वर्तमान **शमन उपाय**, जैसे प्रशिक्षण क्षेत्रों में शोर जोड़ना, अपरिपक्व हैं, अक्सर विशेष हार्डवेयर की आवश्यकता होती है, और मुख्य रूप से CSI को लक्ष्य करते हैं, BFI को नहीं।



The INO that wasn't and the JUNO that is

GS III: S&T

China has finished building its Jiangmen Underground Neutrino Observatory (JUNO), a bittersweet development given that the India-based Neutrino Observatory (INO) has been in limbo for years. Both JUNO and INO were designed to study subatomic particles called neutrinos, which are very hard to catch because they rarely interact with matter. This is why both INO and JUNO are huge: the more matter there is, the more interactions there will be between neutrinos and matter, and thus more opportunities for study.

Progress on JUNO

However, this size was perhaps the original trigger of the INO's downfall, so to speak, in India. Because the INO detector was so massive (weighing 50 kilotonnes), it could not be operated from inside a lab nor could scientists situate its detector in an existing facility. Instead, the INO collaboration had planned to install the detector inside a mountain in Theni in Tamil Nadu, together with other research facilities. The mountain's rock was to serve as a natural shield for the detector, obviating the need for a separate structure, which would have been expensive.

However, the scale of the construction activity in the area and the involvement of the Department of Atomic Energy, which was helping fund the project, spooked local leaders and spurred local leaders to draw political mileage from that. The INO collaboration also erred (in hindsight) by not following procedure and by not estimating how controversial the project could become, which, if it had done, would have helped it respond to and manage certain public sentiments better.

In the late 2010s, these delays were painful as China moved in leaps to realise JUNO. The 'pain' was because the INO collaboration was hoping to secure a limited pool of grants and investments from foreign governments to



Vasudevan Mukunth

India had the wherewithal in the previous decade to help crack an important scientific mystery, but now China has surged ahead

operate the detector. China expected to complete JUNO by 2020 but that turned out to be five years too soon. If it had said it would aim for 2025, would the INO have had a better chance by no longer having a tight deadline? Maybe not but it wouldn't have been implausible either.

While the INO remains stalled, JUNO has released its first analyses. The team uploaded two preprint papers on November 18. One reported the "initial performance results of the JUNO detector". Its author list reveals the sort of international collaboration India was hoping for, with researchers from Russia, the U.S., the U.K., Chile, Armenia, Belgium, Brazil, Taiwan, Finland, France, Germany, Italy, Pakistan, Slovakia, the Czech Republic, and Thailand participating.

It is not clear why there are no researchers from India. Journalist Jatan Mehta has documented a similar issue in the space science sphere: researchers from India were conspicuous by their absence in the (first) list of applications to access the rocks China had brought back from the moon on its Chang'e-5 mission in 2020. India has a long history in neutrino physics and analysing lunar samples, and boasts of many excellent scholars in these fields.

The second preprint paper reported the object of INO's study. Even though neutrinos are so elusive, physicists have discovered that they come in three types, or flavours, and that they can oscillate between these as they travel through space.

Figuring out how the three neutrino masses are ordered is an important open question – and it is related to neutrino oscillations, which are in turn described by three figures called θ_{12} ("theta one two"), θ_{13} , and θ_{23} . Previous experiments have pinned down θ_{13} , and JUNO and INO were conceived to use this prior knowledge to determine the neutrino mass ordering. In the second paper, the JUNO collaboration reported that it had measured θ_{12} very precisely, in a

way broadly consistent with previous findings.

On the back of this, Institute of High Energy Physics scientist and JUNO project manager and spokesperson Yifang Wang had said, "With this level of accuracy, JUNO will soon determine the neutrino mass ordering, test the three-flavour oscillation framework, and search for new physics beyond it."

Rising bar

While we can debate the way the INO collaboration (at times), bureaucrats, political leaders, and some activists conducted themselves during the saga, one must acknowledge that in this domain, missing the bus on one occasion does not mean you can catch the next one; it means the next one has to be something more sophisticated than a bus for your efforts to mean anything. India had the wherewithal in the previous decade to help crack an important scientific mystery. But if JUNO helps surmount this challenge, India may not have the resources to take a shot at the next big mystery because it will be more specialised and need more sophisticated technologies. Then again, only a fool would bet against the ingenuity and resourcefulness of young scientists to come up with a way.

What grates more is the spectre of "resource constraints" – sometimes all too real, sometimes a bogeyman that administrators invoke to not fund research or, crucially, the skills and materials required to manage its consequences for local communities. Still, there is no room for the notion that India is not ready for a Big Science project. Both the large ground-based telescopes of astronomy and the protected areas of conservation constitute Big Science, and India has many. Perhaps the bigger lesson is that we should not attempt such a project solely by whether scientists alone are ready; we should also check whether the conditions beyond science and on the ground are ready as well.



The INO that wasn't and the JUNO that is वह INO जो नहीं बन पाया और वह JUNO जो है

China and JUNO vs India and INO चीन और JUNO बनाम भारत और INO

- **China has finished building its Jiangmen Underground Neutrino Observatory (JUNO), a bittersweet development given that the India-based Neutrino Observatory (INO) has been in limbo for years.**
चीन ने अपना **Jiangmen Underground Neutrino Observatory (JUNO)** बनाना पूरा कर लिया है, जो एक bittersweet विकास है क्योंकि **India-based Neutrino Observatory (INO)** वर्षों से limbo में है।
- **Both JUNO and INO were designed to study subatomic particles called neutrinos, which are very hard to catch because they rarely interact with matter.**
JUNO और INO दोनों को **neutrinos** नामक subatomic कणों का अध्ययन करने के लिए डिज़ाइन किया गया था, जिन्हें पकड़ना बहुत मुश्किल होता है क्योंकि वे matter के साथ बहुत कम interact करते हैं।
- **This is why both INO and JUNO are huge: the more matter there is, the more interactions there will be between neutrinos and matter, and thus more opportunities for study.**
यही कारण है कि INO और JUNO दोनों विशाल हैं: जितना अधिक matter होगा, **neutrinos** और matter के बीच उतने ही अधिक interactions होंगे, और अध्ययन के अधिक अवसर मिलेंगे।

Progress on JUNO JUNO पर प्रगति

- However, this size was perhaps the original trigger of the **INO's downfall**, so to speak, in India.
हालांकि, यही आकार भारत में **INO's downfall** का मूल trigger था, यूँ कहें।
- **Because the INO detector was so massive (weighing 50 kilotonnes), it could not be operated from inside a lab nor could scientists situate its detector in an existing facility.**
क्योंकि INO डिटेक्टर अत्यंत विशाल था (**50 kilotonnes** वजन), इसे किसी लैब के अंदर चलाना संभव नहीं था और न ही वैज्ञानिक इसे किसी मौजूदा संरचना में स्थापित कर सकते थे।
- **Instead, the INO collaboration had planned to install the detector inside a mountain in Theni in Tamil Nadu, together with other research facilities.**
इसके बजाय, INO सहयोग ने डिटेक्टर को **Theni, Tamil Nadu की एक mountain** के अंदर, अन्य research सुविधाओं के साथ स्थापित करने की योजना बनाई थी।
- **The mountain's rock was to serve as a natural shield for the detector, obviating the need for a separate structure, which would have been expensive.**
पर्वत की चट्टान डिटेक्टर के लिए एक **natural shield** का कार्य करने वाली थी, जिससे एक अलग संरचना की आवश्यकता नहीं पड़ती जो महंगी होती।
- However, the scale of the construction activity in the area and the involvement of the **Department of Atomic Energy**, which was helping fund the project, spooked the locals and spurred local leaders to draw political mileage from that.
हालांकि, क्षेत्र में निर्माण गतिविधि के पैमाने और **Department of Atomic Energy** की भागीदारी, जो परियोजना को fund कर रहा था, ने स्थानीय लोगों को डराया और स्थानीय नेताओं को इससे political mileage लेने के लिए प्रेरित किया।
- The INO collaboration also erred (in hindsight) by not following procedure and by not estimating how controversial the project could become, which, if it had done, would have helped it respond to and manage certain public sentiments better.
INO सहयोग ने भी (बाद में समझ आया) प्रक्रिया का पालन न करके और यह अनुमान न लगाकर गलती की कि परियोजना कितनी **controversial** हो सकती है, जो यदि किया होता तो सार्वजनिक भावनाओं को बेहतर ढंग से संभालने में मदद करता।
- In the **late 2010s**, these delays were painful as China moved in leaps to realise JUNO.
late 2010s में ये देरी कष्टदायक थीं क्योंकि चीन JUNO को पूरा करने में तेजी से आगे बढ़ रहा था।
- The 'pain' was because the INO collaboration was hoping to secure a limited pool of **grants and investments from foreign governments** to operate the detector.



यह 'pain' इसलिए थी क्योंकि INO सहयोग डिटेक्टर को संचालित करने के लिए विदेशी सरकारों से **grants और investments** की सीमित पूल की उम्मीद कर रहा था।

- China expected to complete JUNO by 2020 but that turned out to be **five years** too soon. चीन उम्मीद कर रहा था कि JUNO 2020 तक पूरा हो जाएगा, लेकिन यह **पांच वर्ष** पहले का अनुमान साबित हुआ।
- If it had said it would aim for 2025, would the INO have had a better chance by no longer having a tight deadline?
यदि उसने कहा होता कि लक्ष्य 2025 है, तो क्या INO के पास बेहतर मौका होता क्योंकि deadline tight नहीं होती?
- Maybe not but it wouldn't have been implausible either.
शायद नहीं, लेकिन यह असंभव भी नहीं होता।

JUNO's first analyses

JUNO के पहले विश्लेषण

- While the INO remains stalled, **JUNO has released its first analyses**. जबकि INO stalled है, **JUNO ने अपने पहले analyses** जारी किए हैं।
- The team uploaded **two preprint papers** on **November 18**. टीम ने **November 18** को **two preprint papers** अपलोड किए।
- One reported the "initial performance results of the JUNO detector". एक में "JUNO detector के प्रारंभिक प्रदर्शन परिणाम" रिपोर्ट किए गए।
- Its author list reveals the sort of **international collaboration** India was hoping for, with researchers from **Russia, the U.S., the U.K., Chile, Armenia, Belgium, Brazil, Taiwan, Finland, France, Germany, Italy, Pakistan, Slovakia, the Czech Republic, and Thailand** participating.
इसकी author list वह **international collaboration** दर्शाती है जिसकी उम्मीद भारत कर रहा था, जिसमें **Russia, U.S., U.K., Chile, Armenia, Belgium, Brazil, Taiwan, Finland, France, Germany, Italy, Pakistan, Slovakia, Czech Republic, Thailand** के शोधकर्ता शामिल हैं।

Absence of Indian Researchers and Neutrino Mass Studies

भारतीय शोधकर्ताओं की अनुपस्थिति और न्यूट्रिनो द्रव्यमान अध्ययन

- It is not clear why there are no researchers from India.
यह स्पष्ट नहीं है कि भारत से कोई **researchers** क्यों नहीं हैं।
- Journalist Jatan Mehta has documented a similar issue in the space science sphere: researchers from India were conspicuous by their absence in the (first) list of applications to access the rocks China had brought back from the moon on its **Chang'e-5 mission in 2020**.
पत्रकार **Jatan Mehta** ने अंतरिक्ष विज्ञान क्षेत्र में इसी प्रकार की समस्या दर्ज की है: भारत के शोधकर्ता **2020 के Chang'e-5 mission** से चंद्रमा से लाई गई चट्टानों तक पहुँच के लिए आवेदन की पहली सूची में अनुपस्थित थे।
- India has a long history in **neutrino physics** and analysing **lunar samples**, and boasts of many excellent scholars in these fields.
भारत का **neutrino physics** और **lunar samples** के विश्लेषण में लंबा इतिहास है, और इन क्षेत्रों में कई उत्कृष्ट विद्वान मौजूद हैं।
- **Second Preprint Paper and Neutrino Oscillations**
दूसरा प्रीप्रिंट पेपर और न्यूट्रिनो ऑसिलेशन
- The second preprint paper reported the object of INO's study.
दूसरे **preprint paper** ने INO के अध्ययन के विषय की रिपोर्ट की।
- **Even though neutrinos are so elusive, physicists have discovered that they come in three types, or flavours, and that they can oscillate between these as they travel through space.**
यद्यपि neutrinos अत्यंत **elusive** हैं, भौतिकविदों ने पाया है कि वे **three types/flavours** के होते हैं और अंतरिक्ष में यात्रा करते समय इनके बीच **oscillate** कर सकते हैं।



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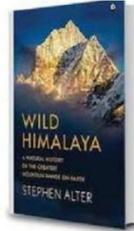
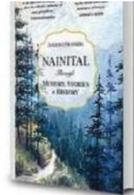


- Figuring out how the **three neutrino masses** are ordered is an important open question — and it is related to **neutrino oscillations**, which are in turn described by three figures called **$\theta-12$** , **$\theta-13$** , and **$\theta-23$** .
यह समझना कि **three neutrino masses** कैसे क्रमबद्ध हैं, एक महत्वपूर्ण open question है — और यह **neutrino oscillations** से जुड़ा है, जिसे **$\theta-12$** , **$\theta-13$** , और **$\theta-23$** से वर्णित किया जाता है।
- Previous experiments have pinned down **$\theta-13$** , and JUNO and INO were conceived to use this prior knowledge to determine the **neutrino mass ordering**.
पूर्व प्रयोगों ने **$\theta-13$** को निर्धारित किया है, और JUNO तथा INO को **neutrino mass ordering** निर्धारित करने के लिए इस पूर्व ज्ञान का उपयोग करने हेतु विकसित किया गया था।
- In the second paper, the JUNO collaboration reported that it had measured **$\theta-12$** very precisely, in a way broadly consistent with previous findings.
दूसरे पेपर में JUNO सहयोग ने रिपोर्ट किया कि उसने **$\theta-12$** को अत्यंत सटीक रूप से मापा है, जो पूर्व निष्कर्षों के broadly consistent है।

PATRIOTIC IAS



Clear contrast: A view of the snow covered Himalayas, as seen from Shimla, in 2022. PT



Why telling stories from the Himalaya is ‘an argument against extinction’

Stephen Alter, who recently won the Himalayan Echoes Nature Prize, has often put the young, fold mountains at the centre of his writing. Other chroniclers, from Peter Matthiessen to Namita Gokhale, have written about the reality of living in a region which inspires both awe and fear

GS III, S&T
Sudipta Datta

Writer and naturalist Stephen Alter has been honoured with the inaugural Radisson Himalayan Echoes Nature Prize 2025 for his contribution to Himalayan literature and conservation. Alter has often put the Himalaya at the centre of his books, and it's the perfect time to read up on the world's tallest mountain range on earth, and why as Alter contends, the focus must not be on altitude alone.

In his *Wild Himalaya: A Natural History of the Greatest Mountain Range* (Aleph), he says that at times, "these mountains seem almost alive for they are always changing." The Himalaya, he notes, contains places of terrifying beauty, vertiginous terrain and extremes of weather that inspire both awe and fear. Alter maps the Himalaya, which spans a distance of roughly 2,500 kilometres in length and between 350 and 150 kilometres in breadth and stretches across five nations – China, Bhutan, India, Nepal and Pakistan.

Over eight sections, Alter goes through the origins of the range, its weather systems, flora and fauna, expeditions of other mountaineers and travellers, and myths and legends associated with the mountains. For him, the simple act of retelling these stories becomes an affirmation of nature's diversity and an argument against extinction.

Goat dung 'soft as a mattress'

In the section, 'Flora Himalensis', he "stalks" the carnivorous sundew or the *Drosera peltata* at the Jabarkhet Nature Reserve near Landour in Uttarakhand.

Drosera means "dew of the sun" and it gets this name, says Alter, because the mucilage on its leaves is similar to tiny drops of dew. The saliva-like substance traps insects, and after the victim is captured, the leaf closes around it and consumes the insects.

He writes about encountering a tiger barely 10 metres away on the banks of the Ram Ganga river in Corbett National Park and sleeping on a "layer of goat dung, 15 cm deep and soft as a foam mattress" at Shingo La in Ladakh while trekking through Zaskar Valley.

On the eastern flank of the mountain range, he spots blood pheasants in Kanchenjunga, the takin, an animal related to goat antelopes, in Bhutan, and black-necked migrating cranes at Phobjhika. Amid the treasure trove, are photographs, say of the magnolia blooming in Arunachal Pradesh and the Machapuchere at sunset, and the books trail he leaves, from George Schaller's *Tibet Wild*, Maharaj K. Pandit's *Life in the Himalaya: An Ecosystem at Risk*, D.N. Wadia's *Geology of India, Asia ke Peeth Par* (On the Shoulders of Asia) by Shekhar Pathak and Uma Bhatt and many others.

Alter mentions Schaller's "special affinity" for snow leopards, the highest roaming of the big cats. Schaller had once come face-to-face with a snow leopard that left him with a "haunting sense of its elusive beauty and the way in which it seemed to dissolve into rocks and snow."

Elusive leopards

Leopards find place in Janhavi Prasad's wonderful new book, *Nainital Through Memory, Stories & History* (Roli Books). Walking in the scenic hillsides across the Himalaya region "calls for the alertness of

a leopard," she says. In the forest, keep talking – even if it means talking to yourself, she advises, because the murmur keeps lurking wild animals at bay. "Unlike the tiger which kills in daylight, leopards fear humans in the day, but after dark they prowl in search of prey." In the hills, not a day goes by without mentioning a leopard.

In 'Faces of Nainital: Past and Present', we run into Corbett, the Bakshis who came from Pakistan, four prominent Parsi families, Mrs. Bastien, the last Anglo-Indian in town, others from the Christian community, the women from the mountains, icons like Sundar Lal Bahuguna, and Shekhar Pathak who has "dedicated his life to understanding the past, present and future of the Himalaya." He is trekking the same trail for the third time to catalogue the river paths of the Himalaya, "an exercise done every decade to study the impact of climate change over the years." Digvijay Singh's illustrations add to this profile of a town's layered history and culture.

The many raconteurs of the Himalaya, from Peter Matthiessen, Bill Aitken, Ruskin Bond to Anuradha Roy, Namita Gokhale, Manjushree Thapa and Bulbul Sharma, have written about the reality of life in the mountains. In *Himalaya: Adventures, Meditations, Life* (Speaking Tiger), edited by Bond and Gokhale, Bond writes in the Preface that living in the mountains is not a romance for everyone. "Even so, the mountains have become very personal to me, as they have to other writers who have made their homes here [in the Himalaya]." The Himalaya's foremost teaching? Bond says it's perhaps humility; "We know that just living, and helping our fellow creatures through life,

is enough; it is greater than any art."

Women of the hills

The last in the excellent Zubaan series on lives of women in the Northeast features writings from Sikkim and Darjeeling Hills. *Beneath Magnolia Skies*, edited by Mona Chettri and Prava Rai, includes the voices of homemakers, students, teachers, professionals, artists who ask pertinent questions, as articulated by the editors.

"As Himalayan women move between tradition and modernity, how do culture, tradition, and patriarchy reconcile with their futures? What shapes and forms do inequality, violence, and prejudice take? How do culture, politics, and society make them invisible? How do women claim space, agency, and voice within a society that keeps them marginalised?"

Anshu Chettri wonders why we seldom see women loitering around alone, as she goes walking around the Himalayan town of Kalimpong. She relishes her freedom to walk at her own pace. The town made her aware of its struggles like the water scarcity in almost every household.

Talking to *The Hindu* about his book *Himalaya: Exploring the Roof of the World* (Bloomsbury), John Key said the Himalaya region is a distinct eco-zone and must be protected. Alter is disturbed at seeing hundreds of greater adjutant storks perched on huge piles of burning rubbish on the outskirts of Guwahati. "...the grim birds look like creatures out of an apocalyptic image."

Learn from the mountains, urges Gokhale. "...what remains in the end is the sense of intimacy, the exhilaration, and yes, the desolation, of these rugged mountains, the 'self born mockers of man's enterprise'."



Why telling stories from the Himalaya is 'an argument against extinction' हिमालय की कहानियाँ सुनाना 'विलुप्ति के विरुद्ध एक तर्क' क्यों है

- **Stephen Alter**, who recently won the **Himalayan Echoes Nature Prize**, has often put the **young, fold mountains** at the centre of his writing.
स्टीफन आल्टर, जिन्होंने हाल ही में **हिमालयन इकोज़ नेचर प्राइज़** जीता है, ने अक्सर इन युवा, मोड़दार पर्वतों को अपनी लेखनी के केंद्र में रखा है।
- Other chroniclers, from **Peter Matthiessen** to **Namita Gokhale**, have written about the reality of living in a region which inspires both **awe** and **fear**
अन्य लेखकों ने, **पीटर मैथीसन** से लेकर **नमिता गोखले** तक, एक ऐसे क्षेत्र में रहने की वास्तविकता पर लिखा है जो **आश्चर्य** और **भय** दोनों उत्पन्न करता है।

Writer and naturalist Stephen Alter लेखक और प्रकृतिवेत्ता स्टीफन आल्टर

- **Writer and naturalist Stephen Alter** has been honoured with the inaugural **Radisson Himalayan Echoes Nature Prize 2025** for his contribution to Himalayan literature and conservation.
लेखक और प्रकृतिवेत्ता स्टीफन आल्टर को हिमालयी साहित्य और संरक्षण में उनके योगदान के लिए पहला **Radisson Himalayan Echoes Nature Prize 2025** प्रदान किया गया है।
- Alter has often put the Himalaya at the centre of his books, and it's the perfect time to read up on the world's tallest mountain range on earth, and why as Alter contends, the focus must not be on altitude alone.
आल्टर ने अक्सर अपनी पुस्तकों के केंद्र में **हिमालय** को रखा है, और यह पृथ्वी की सबसे ऊँची पर्वत श्रृंखला के बारे में पढ़ने का सही समय है, और जैसा कि आल्टर कहते हैं, ध्यान केवल **altitude** पर नहीं होना चाहिए।
- In his **Wild Himalaya: A Natural History of the Greatest Mountain Range (Aleph)**, he says that at times, "these mountains seem almost alive for they are always changing."
अपनी पुस्तक **Wild Himalaya: A Natural History of the Greatest Mountain Range (Aleph)** में वे लिखते हैं कि कभी-कभी "ये पहाड़ लगभग जीवित लगते हैं क्योंकि ये हमेशा बदलते रहते हैं।"
- The Himalaya, he notes, contains places of terrifying beauty, vertiginous terrain and extremes of weather that inspire both awe and fear.
वह लिखते हैं कि हिमालय में **भयावह सुंदरता**, **खड़ी ढलान**, और **चरम मौसम** वाले स्थान हैं जो विस्मय और डर दोनों उत्पन्न करते हैं।
- Alter maps the Himalaya, which spans a distance of roughly **2,500 kilometres** in length and between **350 and 150 kilometres** in breadth and stretches across **five nations — China, Bhutan, India, Nepal and Pakistan**.
आल्टर हिमालय को मानचित्रित करते हैं, जो लगभग **2,500 किलोमीटर** लंबाई और **350 से 150 किलोमीटर** चौड़ाई में फैला है और **चीन, भूटान, भारत, नेपाल और पाकिस्तान** पाँच देशों में विस्तृत है।
- Over eight sections, Alter goes through the origins of the range, its weather systems, flora and fauna, expeditions of other mountaineers and travellers, and myths and legends associated with the mountains.
आठ खंडों में, आल्टर हिमालय की उत्पत्ति, इसके **मौसम तंत्र**, **वनस्पति और जीव-जंतु**, अन्य पर्वतारोहियों और यात्रियों के अभियानों, और पर्वतों से जुड़े **कथाओं और दंतकथाओं** का वर्णन करते हैं।
- For him, the simple act of retelling these stories becomes an affirmation of nature's diversity and an argument against **extinction**.
उनके लिए, इन कहानियों का पुनःकथन **प्रकृति की विविधता** की पुष्टि और **extinction** के विरुद्ध तर्क बन जाता है।

Goat dung 'soft as a mattress' बकरी की लीद 'गढ़े जितनी मुलायम'

- In the section, '**Flora Himalensis**', he "stalks" the carnivorous sundew or the **Drosera peltata** at the Jabarkhet Nature Reserve near Landour in Uttarakhand.
'**Flora Himalensis**' खंड में, वे उत्तराखंड के लैंसडौन के पास जबरखेत नेचर रिज़र्व में मांसाहारी पौधे **Drosera peltata** (संड्यू) का "पिछा" करते हैं।



- Drosera means “dew of the sun” and it gets this name, says Alter, because the mucilage on its leaves is similar to tiny drops of dew.
Drosera का अर्थ “**dew of the sun**” है और यह नाम इसे इसलिए मिला क्योंकि इसकी पत्तियों पर मौजूद पदार्थ ओस की बूंदों जैसा दिखता है।
- The saliva-like substance traps insects, and after the victim is captured, the leaf closes around it and consumes the insects.
यह लार जैसा पदार्थ कीड़ों को फँसाता है, और पकड़े जाने के बाद पत्ती बंद होकर उन्हें खा जाती है।
- He writes about encountering a **tiger barely 10 metres away** on the banks of the Ram Ganga river in **Corbett National Park** and sleeping on a “layer of **goat dung**, 15 cm deep and soft as a foam mattress” at **Shingo La in Ladakh** while trekking through Zaskar Valley.
वे लिखते हैं कि **कोर्बेट राष्ट्रीय उद्यान** में रामगंगा नदी के किनारे **सिर्फ 10 मीटर दूर** एक बाघ से उनका सामना हुआ, और ज़ास्कर घाटी में ट्रेकिंग करते समय **लद्दाख के शिंगो ला** में उन्होंने **15 सेमी गहरी बकरी की लीद**, जो गद्दे की तरह मुलायम थी, पर सोया।
- On the eastern flank of the mountain range, he spots **blood pheasants** in Kanchenjunga, the **takin** in Bhutan, and **black-necked migrating cranes** at Phobjhika.
पर्वत श्रृंखला के पूर्वी भाग में वे कंचनजंगा में **blood pheasant**, भूटान में **takin**, और फोब्जिखा में **black-necked cranes** देखते हैं।
- Amid the treasure trove, are photographs, say of the **magnolia blooming in Arunachal Pradesh and the Machapuchere at sunset**, and the books trail he leaves, from **George Schaller's Tibet Wild**, **Maharaj K. Pandit's Life in the Himalaya**, **D.N. Wadia's Geology of India**, **Asia ke Peeth Par** by Shekhar Pathak and Uma Bhatt and many others.
इस खजाने में **अरुणाचल प्रदेश में मैग्नोलिया के फूल**, **माछापुच्छरे का सूर्यास्त**, और पुस्तकों की एक लड़ी शामिल है—जैसे **George Schaller's Tibet Wild**, **Life in the Himalaya**, **Geology of India**, और **Asia ke Peeth Par**।
- Alter mentions Schaller's “special affinity” for **snow leopards**, the highest roaming of the big cats.
आल्टर शैलर की **snow leopards** के प्रति “विशेष लगाव” का उल्लेख करते हैं, जो सबसे ऊँचाई वाले बड़े बिल्लियों में शामिल हैं।
- Schaller had once come face-to-face with a **snow leopard that left him with a “haunting sense of its elusive beauty and the way in which it seemed to dissolve into rocks and snow.”**
शैलर एक बार एक **snow leopard** के आमने-सामने आए थे, जिसने उन्हें उसकी “अदृश्य सुंदरता और चट्टानों व बर्फ में घुल जाने की क्षमता” के एहसास से भर दिया।

Elusive leopards रहस्यमयी तेंदुए

- Leopards find place in Janhavi Prasad's wonderful new book, **Nainital Through Memory, Stories & History (Roli Books)**.
तेंदुए जाहवी प्रसादा की नई पुस्तक **Nainital Through Memory, Stories & History (Roli Books)** में स्थान पाते हैं।
- Walking in the scenic hillsides across the Himalaya region “calls for the alertness of a **leopard**,” she says.
हिमालय क्षेत्र की सुंदर ढलानों पर चलना “तेंदुए जैसी सतर्कता” की मांग करता है, वह कहती हैं।
- **In the forest, keep talking — even if it means talking to yourself, she advises, because the murmur keeps lurking wild animals at bay.**
जंगल में चलते समय बात करते रहना चाहिए — चाहे खुद से ही क्यों न बात करनी पड़े, क्योंकि यह धीमी आवाज़ जंगली जानवरों को दूर रखती है।
- **“Unlike the tiger which kills in daylight, leopards fear humans in the day, but after dark they prowl in search of prey.”**
“बाघ के विपरीत, जो दिन में मारता है, तेंदुए दिन में मनुष्यों से डरते हैं, लेकिन अंधेरा होते ही शिकार की तलाश में घूमते हैं।”
- In the hills, not a day goes by without mentioning a **leopard**.
पहाड़ों में ऐसा कोई दिन नहीं जाता जब तेंदुए का ज़िक्र न हो।
- In ‘Faces of Nainital: Past and Present’, we run into **Corbett**, the **Bakshis** who came from Pakistan, four prominent **Parsi families**, Mrs. Bastien, the last **Anglo-Indian** in town, others



from the Christian community, the women from the mountains, icons like **Sundar Lal Bahuguna**, and **Shekhar Pathak** who has “dedicated his life to understanding the past, present and future of the Himalaya.”

PM Modi opens Safran's MRO for LEAP engines in Hyderabad

GS III: S&T

N. Ravi Kumar
HYDERABAD

Prime Minister Narendra Modi on Wednesday virtually inaugurated the largest maintenance, repair and overhaul (MRO) facility, France's Safran has established globally for LEAP engines in Hyderabad. Mr. Modi urged the firm to explore possibilities of aircraft engine and component design in India. A LEAP engine is a modern, fuel-efficient engine that powers several narrow-body aircraft.

Stating that the country is keen on promoting 'Design in India' on a large scale across every sector, the Prime Minister said India's vast Micro, Small and Medium Enterprise (MSME) network and its young talent pool will provide significant support for such efforts.

Safran Aerospace, which works extensively in aerospace propulsion systems, should also leverage India's talent and opportunities for propulsion design and manufacturing, he said, participating through video conferencing in the function, which was attended by Telangana's Chief Minister A. Revanth Reddy, Union Minister K. Ram Mohan Naidu, and the top leadership of Safran among others.

India is “dreaming big, doing bigger and delivering best” on the back of some of the biggest reforms the country has un-



Prime Minister Narendra Modi speaks during the virtual inauguration of the facility.

dertaken since independence to attract global investment and industries, Mr. Modi said.

“Today in most sectors, 100% foreign direct investment is possible through automatic routes. Even in sectors like defence, where earlier the private sector had no space, 74% FDI has now been opened through automatic routes. [Like-wise] A major approach has also been adopted in the space sector,” Mr. Modi said, adding such steps have sent a clear message to the world that India welcomes investments and innovation.

The government's production linked incentive (PLI) schemes have attracted global manufacturers towards 'Make in India', he added.

With the opening of the 45,000 sq.m Safran facility, set up with an initial investment ₹1,300 crore, at the GMR Aerospace and Industrial Park in Hyderabad, India's aviation sector is taking a new flight.

PM Modi opens Safran's MRO for LEAP engines in Hyderabad

प्रधानमंत्री मोदी ने हैदराबाद में LEAP इंजन के लिए सफरान के MRO का उद्घाटन किया

Prime Minister inaugurates Safran's Global Largest MRO Facility for LEAP Engines

प्रधानमंत्री ने LEAP इंजनों के लिए सफ़रान की वैश्विक सबसे बड़ी MRO सुविधा का उद्घाटन किया

- Prime Minister Narendra Modi on Wednesday virtually inaugurated the **largest maintenance, repair and overhaul (MRO) facility** France's Safran has established globally for **LEAP engines in Hyderabad**.

प्रधानमंत्री नरेंद्र मोदी ने बुधवार को हैदराबाद में फ़्रांस की Safran द्वारा स्थापित LEAP इंजनों के लिए वैश्विक सबसे बड़ी MRO सुविधा का वर्चुअल उद्घाटन किया।

- Mr. Modi urged the firm to explore possibilities of **aircraft engine and component design in India**.

श्री मोदी ने कंपनी से विमान इंजन और कंपोनेंट डिजाइन भारत में विकसित करने की संभावनाओं को तलाशने का आग्रह किया।

- A **LEAP engine** is a modern, **fuel-efficient** engine that powers several **narrow-body aircraft**.

LEAP इंजन एक आधुनिक, ईंधन-कुशल इंजन है जो कई नैरो-बॉडी विमान को शक्ति देता है।

- Stating that the country is keen on promoting '**Design in India**' on a large scale, the Prime Minister said India's vast **MSME network** and young talent pool will provide significant support.

यह बताते हुए कि देश बड़े पैमाने पर '**Design in India**' को बढ़ावा देना चाहता है, प्रधानमंत्री ने कहा कि भारत का विशाल **MSME नेटवर्क** और युवा प्रतिभा बड़ा सहयोग देगा।

- **Safran Aerospace**, which works extensively in **aerospace propulsion systems**, should also leverage India's talent and opportunities for **propulsion design and manufacturing**, he said.

उन्होंने कहा कि **Safran Aerospace**, जो **एयरोस्पेस प्रोपल्शन सिस्टम** पर व्यापक काम करती है, उसे भी **प्रोपल्शन डिजाइन और मैनुफैक्चरिंग** के लिए भारत की प्रतिभा और अवसरों का उपयोग करना चाहिए।

- Mr. Modi participated through **video conferencing** in the function attended by **Telangana Chief Minister A. Revanth Reddy**, Union Minister **K. Ram Mohan Naidu**, and top leadership of Safran.

श्री मोदी ने **वीडियो कॉन्फ्रेंसिंग** के माध्यम से कार्यक्रम में सहभागिता की, जहां **तेलंगाना के मुख्यमंत्री ए. रेवंत रेड्डी**, केंद्रीय मंत्री के. **राम मोहन Naidu**, और सफ़रान के शीर्ष नेतृत्व मौजूद थे।



TELEGRAM CHANNEL: <https://t.me/patrioticIAS>

YOUTUBE CHANNEL: <https://www.youtube.com/@PatrioticIAS>

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- India is “dreaming big, doing bigger and delivering best” due to major reforms undertaken to attract **global investment and industries**, the Prime Minister said.
प्रधानमंत्री ने कहा कि भारत “बड़े सपने देख रहा है, उससे भी बड़ा कर रहा है और सर्वश्रेष्ठ दे रहा है”, क्योंकि देश ने वैश्विक निवेश और उद्योगों को आकर्षित करने के लिए बड़े सुधार किए हैं।
- “Today in most sectors, **100% FDI** is possible through **automatic routes**. Even in **defence**, where earlier private sector had no space, **74% FDI** has now been opened through automatic routes. Likewise in the **space sector**,” Mr. Modi said.
उन्होंने कहा, “आज अधिकांश क्षेत्रों में **100% FDI ऑटोमैटिक रूट** से संभव है। यहां तक कि **रक्षा क्षेत्र** में, जहां पहले निजी क्षेत्र की कोई भूमिका नहीं थी, अब **74% FDI ऑटोमैटिक रूट** से खोला गया है। इसी तरह **अंतरिक्ष क्षेत्र** में भी बड़ा बदलाव हुआ है।”
- He added that these steps send a clear message that **India welcomes investment and innovation**.
उन्होंने जोड़कर कहा कि इन कदमों ने दुनिया को स्पष्ट संदेश दिया है कि **भारत निवेश और नवाचार का स्वागत करता है**।
- The government’s **Production Linked Incentive (PLI)** schemes have attracted global manufacturers towards ‘**Make in India**’.
सरकार की **PLI योजना** ने वैश्विक निर्माताओं को ‘**Make in India**’ की ओर आकर्षित किया है।
- With the opening of the **45,000 sq.m Safran facility**, set up with an initial investment of **₹1,300 crore** at the **GMR Aerospace & Industrial Park, Hyderabad**, India’s aviation sector is taking a new flight.
45,000 वर्गमीटर की Safran सुविधा के उद्घाटन के साथ, जिसे **₹1,300 करोड़** के निवेश से **GMR एयरोस्पेस एंड इंडस्ट्रियल पार्क, हैदराबाद** में स्थापित किया गया है, भारत का विमानन क्षेत्र नई उड़ान भर रहा है।

PATRIOTIC



Environment

26/11/2025

SC panel suggests creation of a Goa tiger reserve in phases

Panel proposes that 468.6 sq. km area, which contains 102 households, be notified as 'core' and buffer areas of the reserve in the first phase; another 208 sq. km, with 612 households, can be considered later

GS III: Environment

Jacob Koshy
NEW DELHI

A Supreme Court-appointed committee has recommended the creation of a tiger reserve in Goa, but in a phased manner, so as to first incorporate areas with a lower human presence.

The top court is expected to consider the report of its Central Empowered Committee (CEC) in the next hearing of the case that involves the Goa government and the Goa Foundation, a non-government organisation.

The CEC came into the picture after the Goa government challenged a Bombay High Court order of July 2023, which directed the State to notify five protected areas – the Mhadei Wildlife Sanctuary, Bhagwan Mahavir Wildlife Sanctuary, Bhagwan Mahavir National Park, Netravali Wildlife Sanctuary, and Cotigao Wildlife Sanctuary, collectively referred to as the "Mhadei WLS and Other Areas" – as a tiger reserve, within a period of three months.

The Goa government was reluctant to have the



The Goa government has adopted contradictory positions regarding the "resident" status of tigers in the State. FILE PHOTO

areas be declared as a tiger reserve on the grounds that nearly "one lakh people" would be affected, though it later conceded in its own affidavit that there were only about 1,274 households in the 33 villages within the five protected areas, translating to approximately 5,000 to 6,000 individuals. It also claimed that there were no "resident" tigers in Goa, arguing that the handful that pass through Goan forests were a "transient" population. *The Hindu* reported earlier this week that the Goa government had adopted contradictory positions regarding the "resident" status of tigers in the State.

The committee recommended that Goan parks and sanctuaries "directly contiguous" to the Kali Tig-

er Reserve in adjoining Karnataka, which is known to host a permanent tiger presence, form the "core" part of the Goa reserve. Those areas adjoining the buffer zone of the Kali Tiger Reserve can be considered for designation as the "buffer zone" of the proposed Goa reserve, it added.

"Such a phased approach is likely to minimise disturbance to local communities, while ensuring that the most ecologically sensitive and least inhabited areas are brought under enhanced protection at the earliest stage," it said.

This means that the Netravali Wildlife Sanctuary (50 households) and Cotigao Wildlife Sanctuary (41 households), adding up to a 296.7 sq. km. area, will be incorporated into the core

zone of the proposed Goa Tiger Reserve in the first phase. Protected areas contiguous with the Kali Tiger Reserve's buffer zone, which have minimal human habitation, namely, the northern part of the Bhagwan Mahavir Wildlife Sanctuary (nine households) and Bhagwan Mahavir National Park (two households), adding another 171 sq. km., will be considered as the buffer of the proposed Goa Tiger Reserve in the first phase.

"The total area proposed for notification as the Goa Tiger Reserve is 468.60 sq. km. This area is fully contiguous with the 1,345 sq. km core and buffer of the Kali Tiger Reserve, and together they form an integrated protected landscape of approximately 1,814 sq. km," the report noted.

The Mhadei Wildlife Sanctuary, spanning 208 sq. km and containing 612 households, shares only a "limited stretch of boundary" with the buffer of the Kali Tiger Reserve. "These areas may, therefore, be considered, if necessary, at a later stage, after adequate consultation," it said.



SC panel suggests creation of a Goa tiger reserve in phases सुप्रीम कोर्ट पैनल ने गोवा टाइगर रिज़र्व को अलग-अलग चरणों में बनाने का सुझाव दिया

Supreme Court Committee Recommends Phased Tiger Reserve in Goa सुप्रीम कोर्ट समिति ने गोवा में चरणबद्ध टाइगर रिज़र्व की सिफारिश की

- A Supreme Court-appointed committee has recommended the creation of a tiger reserve in Goa, but in a phased manner, so as to first incorporate areas with a lower human presence.
सुप्रीम कोर्ट द्वारा नियुक्त समिति ने गोवा में टाइगर रिज़र्व बनाने की सिफारिश की है, लेकिन चरणबद्ध तरीके से, ताकि पहले कम मानव उपस्थिति वाले क्षेत्रों को शामिल किया जा सके।
- The top court is expected to consider the report of its Central Empowered Committee (CEC) in the next hearing of the case that involves the Goa government and the Goa Foundation, a non-government organisation.
सर्वोच्च न्यायालय से अपेक्षा है कि वह अपनी सेंट्रल एम्पावर्ड कमेटी (CEC) की रिपोर्ट पर अगली सुनवाई में विचार करेगा, जिसमें गोवा सरकार और गैर-सरकारी संगठन गोवा फाउंडेशन शामिल हैं।
- The CEC came into the picture after the Goa government challenged a Bombay High Court order of July 2023, which directed the State to notify five protected areas — the Mhadei Wildlife Sanctuary, Bhagwan Mahavir Wildlife Sanctuary, Bhagwan Mahavir National Park, Netravali Wildlife Sanctuary, and Cotigao Wildlife Sanctuary, collectively referred to as the “Mhadei WLS and Other Areas” — as a tiger reserve, within a period of three months.
जुलाई 2023 के बाँम्बे हाई कोर्ट के आदेश के खिलाफ गोवा सरकार द्वारा चुनौती देने के बाद CEC सामने आया, जिसमें राज्य को तीन महीने के भीतर पाँच संरक्षित क्षेत्रों — म्हादई वन्यजीव अभयारण्य, भगवान महावीर वन्यजीव अभयारण्य, भगवान महावीर राष्ट्रीय उद्यान, नेत्रावली वन्यजीव अभयारण्य, और कोटिगाओ वन्यजीव अभयारण्य (समष्टिगत रूप से “म्हादई डब्ल्यूएलएस और अन्य क्षेत्र”) को टाइगर रिज़र्व घोषित करने का निर्देश दिया गया था।
- The Goa government was reluctant to have the areas be declared as a tiger reserve on the grounds that nearly “one lakh people” would be affected, though it later conceded in its own affidavit that there were only about 1,274 households in the 33 villages within the five protected areas, translating to approximately 5,000 to 6,000 individuals.
गोवा सरकार टाइगर रिज़र्व घोषित करने में अनिच्छुक थी, यह कहते हुए कि लगभग “एक लाख लोग” प्रभावित होंगे, जबकि बाद में उसने अपनी हलफनामा में स्वीकार किया कि पाँच संरक्षित क्षेत्रों के अंदर 33 गांवों में केवल 1,274 परिवार, यानी लगभग 5,000–6,000 लोग रहते हैं।
- It also claimed that there were no “resident” tigers in Goa, arguing that the handful that pass through Goan forests were a “transient” population.
सरकार ने यह भी दावा किया कि गोवा में कोई “स्थायी (resident)” बाघ नहीं हैं, और जो कुछ बाघ गोवा के जंगलों से गुजरते हैं, वे “अस्थायी (transient)” हैं।
- The Hindu reported earlier this week that the Goa government had adopted contradictory positions regarding the “resident” status of tigers in the State.
द हिंदू ने इस सप्ताह की शुरुआत में रिपोर्ट किया था कि गोवा सरकार ने राज्य में बाघों की “स्थायी स्थिति” को लेकर विरोधाभासी रुख अपनाया है।
- The committee recommended that Goan parks and sanctuaries “directly contiguous” to the Kali Tiger Reserve in adjoining Karnataka, which hosts a permanent tiger presence, form the “core” part of the Goa reserve.
समिति ने अनुशंसा की कि गोवा के वे पार्क और अभयारण्य जो पड़ोसी कर्नाटक के काली टाइगर रिज़र्व से “सीधे जुड़े (directly contiguous)” हैं, जहाँ स्थायी बाघ उपस्थिति है, वे गोवा टाइगर रिज़र्व के “कोर क्षेत्र” के रूप में चिन्हित किए जाएं।
- Those areas adjoining the buffer zone of the Kali Tiger Reserve can be considered for designation as the “buffer zone” of the proposed Goa reserve, it added.
इसके अतिरिक्त, काली टाइगर रिज़र्व के बफर ज़ोन से लगे क्षेत्रों को प्रस्तावित गोवा रिज़र्व के “बफर ज़ोन” के रूप में माना जा सकता है।
- “Such a phased approach is likely to minimise disturbance to local communities, while ensuring that the most ecologically sensitive and least inhabited areas are brought under enhanced protection at the earliest stage,” it said.
“ऐसी चरणबद्ध प्रक्रिया स्थानीय समुदायों के व्यवधान को कम करेगी, और यह सुनिश्चित करेगी कि सबसे पारिस्थितिक रूप से संवेदनशील और कम आबादी वाले क्षेत्र पहले चरण में ही संरक्षण में लाए जाएँ,” यह कहा गया।



- This means that the **Netravali Wildlife Sanctuary (50 households)** and **Cotigao Wildlife Sanctuary (41 households)**, adding up to **296.7 sq. km**, will be incorporated into the **core zone** of the proposed Goa Tiger Reserve in the **first phase**.
इसका अर्थ है कि नेत्रावली वन्यजीव अभयारण्य (50 परिवार) और कोटिगाओ वन्यजीव अभयारण्य (41 परिवार), कुल 296.7 वर्ग किमी, प्रस्तावित गोवा टाइगर रिज़र्व के प्रथम चरण के कोर ज़ोन में शामिल किए जाएंगे।
- Protected areas contiguous with the **Kali Tiger Reserve's buffer zone**, with **minimal human habitation**,

GS III: Environment

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Fighting the fire

COP30 sought to change the narrative by focusing on 'implementation'

The 30th edition of the Conference of Parties (COP) concluded in Belem, Brazil, a city chosen for its proximity to the Amazon rainforest. The symbolism was high this year. It is 10 years since the Paris Agreement was signed by 195 countries – a pact to ensure that the globe did not heat up beyond 2°C of pre-industrial times and, as far as possible, contain it to 1.5°C. That was a goal easier stated than done; 2024 ended up being the first time that temperatures breached the 1.5°C territory though it will require several more such transgressions for 1.5°C to be the 'new normal'. In all the years since, COPs have been about systematically getting all countries to move on the path of restructuring their economies away from their fossil-fuel hardwiring; apportioning responsibility – and finance – in ways to actualise these goals, and finally work towards addressing the damage that climate change had already done to societies, livelihoods and ecologies. While there has been success, in that most countries – even the United States – recognise that renewables are the future of energy, it has been challenging for countries to execute the transformation while also growing their economies and keeping their competitive edges sharp. This has led to the formation of the two broad blocs – one led by developed countries and affiliated allies that has pushed for hard targets and road maps to phase out fossil fuels, and the other by developing countries or petro states who reject such prescription and demand more money and action from the developed countries.

The Brazil COP sought to bring a change in the narrative by stressing 'implementation', and reminding the world that multilateralism and 'mutirão' (coming together) were indispensable to the Paris Agreement. While the absence of the U.S. weakened the developed country blocs, this year saw greater thrust on topics such as 'adaptation' and 'just transition' – concepts that acknowledge the everyday effects of climate change and stress practical preparatory steps and finance pledges to help countries burnish climate defences. India, which has been one of the prominent voices for developing country coalitions, was welcoming of the Brazil Presidency's acknowledgement of concerns but did not declare its updated Nationally Determined Contributions (actions on adopting clean energy). The COP's negotiation process often leaves one wondering about the net gains made, given that pollution, deforestation and climate denialism seem more voluble and visible but, as it is often said, this is humanity's only opportunity to mitigate a cataclysm of its making.

namely the northern part of the **Bhagwan Mahavir Wildlife Sanctuary (nine households)** and **Bhagwan Mahavir National Park (two households)**, adding another **171 sq. km**, will be considered as the **buffer** in the first phase.

काली टाइगर रिज़र्व के बफर ज़ोन से सटे और कम मानव आबादी वाले क्षेत्र — जैसे **भगवान महावीर वन्यजीव अभयारण्य** का उत्तरी भाग (9 परिवार) और **भगवान महावीर राष्ट्रीय उद्यान (2 परिवार)** — कुल **171 वर्ग किमी**, प्रथम चरण में **बफर क्षेत्र** के रूप में माना जाएगा।

- "The **total area** proposed for notification as the **Goa Tiger Reserve** is **468.60 sq. km**. This area is fully contiguous with the **1,345 sq. km core and buffer** of the **Kali Tiger Reserve**, and together they form an integrated protected landscape of approximately **1,814 sq. km**," the report noted.

रिपोर्ट के अनुसार, **गोवा टाइगर रिज़र्व** के रूप में अधिसूचित करने हेतु प्रस्तावित **कुल क्षेत्र 468.60 वर्ग किमी** है। यह क्षेत्र **काली टाइगर रिज़र्व** के **1,345 वर्ग किमी** के कोर और बफर से पूर्ण रूप से जुड़ा है, और मिलकर लगभग **1,814 वर्ग किमी** का एकीकृत संरक्षित परिदृश्य बनाते हैं।

- The **Mhadei Wildlife Sanctuary**, spanning **208 sq. km** and containing **612 households**, shares only a "**limited stretch of boundary**" with the **buffer** of the **Kali Tiger Reserve**. "These areas may, therefore, be considered, if necessary, at a **later stage**, after adequate consultation," it said.

म्हादेई वन्यजीव अभयारण्य, जो **208 वर्ग किमी** में फैला है और **612 परिवार** रहते हैं, **काली टाइगर रिज़र्व** के **बफर क्षेत्र** से केवल "**सीमित सीमा**" साझा करता है। इसलिए, इन क्षेत्रों को **बाद के चरण** में पर्याप्त परामर्श के बाद लिया जा सकता है।

Fighting the fire आग से लड़ना

- COP30 sought to change the narrative by focusing on 'implementation'
'कार्यान्वयन' पर ध्यान केंद्रित करके COP30 ने धारणा बदलने की कोशिश की

COP 30 in Belem, Brazil बेलेम, ब्राज़ील में COP 30

- The 30th edition of the Conference of Parties (COP) concluded in **Belem, Brazil**, a city chosen for its proximity to the **Amazon rainforest**.

पार्टियों के सम्मेलन (COP) का 30वां संस्करण **बेलेम, ब्राज़ील** में संपन्न हुआ, जो **अमेज़न वर्षावन** की निकटता के कारण चुना गया था।

- The symbolism was high this year.
इस वर्ष प्रतीकात्मकता काफी अधिक थी।

- It is **10 years** since the **Paris Agreement** was signed by **195 countries** — a pact to ensure that the globe did not heat up beyond **2°C** of pre-industrial times and, as far as possible, contain it to **1.5°C**.



10 वर्ष हो चुके हैं जब 195 देशों ने पेरिस समझौते पर हस्ताक्षर किए थे — जिसका लक्ष्य वैश्विक तापमान को पूर्व-औद्योगिक स्तरों से 2°C से अधिक न बढ़ने देना और संभव हो तो 1.5°C तक सीमित रखना था।

- That was a goal easier stated than done; 2024 ended up being the first time that temperatures breached the 1.5°C territory though it will require several more such transgressions for 1.5°C to be the 'new normal'.
यह लक्ष्य कहना आसान था, करना कठिन; 2024 पहला वर्ष रहा जब तापमान ने 1.5°C सीमा पार की, हालांकि इसे 'न्यू नॉर्मल' बनने के लिए और कई बार ऐसा होना होगा।
- In all the years since, COPs have been about systematically getting all countries to move on the path of restructuring their economies away from their **fossil-fuel hardwiring**.
तब से अब तक, COP का उद्देश्य सभी देशों को उनकी अर्थव्यवस्थाओं को **फॉसिल-फ्यूल निर्भरता** से दूर ले जाने की दिशा में ले जाना रहा है।
- Apportioning responsibility — and **finance** — in ways to actualise these goals, and finally work towards addressing the damage that **climate change** had already done to societies, livelihoods and ecologies.
जिम्मेदारियों — और **वित्त** — का निर्धारण, और अंततः **जलवायु परिवर्तन** से समाज, आजीविका और पारिस्थितिकी को हुए नुकसान का समाधान करने की दिशा में कार्य करना।
- While there has been success, in that most countries — even the **United States** — recognise that **renewables** are the future of energy, it has been challenging for countries to execute the transformation while also growing their economies and keeping their competitive edges sharp.
हालांकि कुछ सफलता मिली है, क्योंकि अधिकांश देश — यहाँ तक कि **संयुक्त राज्य अमेरिका** — भी **नवीकरणीय ऊर्जा** को भविष्य मानते हैं, लेकिन इस परिवर्तन को आर्थिक विकास और प्रतिस्पर्धा बनाए रखते हुए लागू करना चुनौतीपूर्ण रहा है।
- This has led to the formation of two broad blocs — one led by **developed countries** and allies pushing for hard targets and road maps to **phase out fossil fuels**, and the other by **developing countries** or **petro states** who reject such prescription and demand more money and action from developed countries.
इससे दो प्रमुख समूह बने — एक **विकसित देशों** द्वारा नेतृत्वित, जो **फॉसिल फ्यूल समाप्ति** के कड़े लक्ष्य मांगते हैं; और दूसरा **विकासशील देशों** या **तेल-निर्यातक देशों** का, जो ऐसे प्रावधानों को अस्वीकार करते हैं और अधिक वित्त व कार्रवाई की मांग करते हैं।
- The Brazil COP sought to bring a change in the narrative by stressing '**implementation**', and reminding the world that **multilateralism** and '**mutirão**' (**coming together**) were indispensable to the Paris Agreement.
ब्राज़ील COP ने '**कार्यान्वयन**' पर जोर देकर कथा बदलने का प्रयास किया और दुनिया को याद दिलाया कि **बहुपक्षवाद** और '**मुतिराओं**' (**एक साथ आना**) पेरिस समझौते के लिए अनिवार्य हैं।
- While the absence of the **U.S.** weakened the developed country blocs, this year saw greater thrust on topics such as '**adaptation**' and '**just transition**'.
जहाँ **अमेरिका** की अनुपस्थिति ने विकसित देशों के समूह को कमजोर किया, वहीं इस वर्ष '**अनुकूलन**' और '**न्यायसंगत संक्रमण**' जैसे विषयों पर अधिक ध्यान दिया गया।
- Concepts that acknowledge the everyday effects of climate change and stress practical preparatory steps and **finance pledges** to help countries burnish climate defences.
ये अवधारणाएँ जलवायु परिवर्तन के दैनिक प्रभावों को स्वीकार करती हैं और व्यावहारिक तैयारी एवं **वित्तीय प्रतिबद्धताओं** पर जोर देती हैं।
- India, which has been a prominent voice for developing country coalitions, was welcoming of the Brazil Presidency's acknowledgement of concerns but did not declare its updated **Nationally Determined Contributions (NDCs)**.
भारत, जो विकासशील देशों के समूहों का प्रमुख स्वर रहा है, ने ब्राज़ील की अध्यक्षता द्वारा उठाई गई चिंताओं का स्वागत किया लेकिन अपने नए **NDCs** की घोषणा नहीं की।
- The COP's negotiation process often leaves one wondering about the net gains made, given that pollution, deforestation and climate denialism seem more voluble and visible.
COP की बातचीत प्रक्रिया अक्सर यह सोचने को मजबूर करती है कि वास्तविक लाभ क्या मिला है, जबकि प्रदूषण, वनों की कटाई और जलवायु अस्वीकारवाद अधिक तेज़ और स्पष्ट दिखाई देते हैं।
- But, as it is often said, this is humanity's only opportunity to mitigate a cataclysm of its making.
लेकिन जैसा अक्सर कहा जाता है, यह मानवता का अपने द्वारा पैदा किए गए विनाश को रोकने का **एकमात्र अवसर** है।