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CONTACT: 9971932488



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### 25 DECEMBER 2025

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**25 December 2025**

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क्या एक प्राचीन बाढ़ ने कीझड़ी के परित्याग में योगदान दिया?

Address : 3rd Floor, KV Tower, Padleyganj Road, Gorakhpur  
Email Id : [info@patrioticias.in](mailto:info@patrioticias.in)  
Contact Number : 9971932488  
Website : [patrioticias.in](http://patrioticias.in)



# Did an ancient flood contribute to Keezhadi's abandonment?

According to new research, some urban-like structures at Keezhadi were likely buried over a thousand years ago – around 1,155 years before present in scientists' phrasing – and this burial was related to a **high-energy flood event that deposited sands and then finer silts and clays on the floodplain**

**OSL History**

Vasudevan Mukunth

**A**long the Vaigai river in southern Tamil Nadu, archaeologists have been excavating an old settlement at Keezhadi. They have already found brick walls, channels that look like drains or small canals, floors made of fine clay, and many pieces of pottery. These finds matter because Tamil poems from the Sangam period talk about busy towns and trade in this region, but the poems don't give firm dates. To connect the stories, the structures, and the river's history, researchers need a reliable timeline for when different layers of sediment were laid down and when the buildings were buried.

A recent study by researchers from the Physical Research Laboratory in Ahmedabad and the Department of Archaeology of Tamil Nadu has now reported when flood sediments covered the Keezhadi structures. The authors focused on the fact that Keezhadi, which is in Sivaganga district, sits on a mound on the Vaigai floodplain and that the buildings are not exposed at the surface. Instead, they lie under layers of sand, silt, and clay that the river likely deposited when it flooded. If the team could date the burial sediments, they figured, they'd be able to estimate when the settlement was damaged or abandoned and then covered up.

## Telling time with light

To do this, the team used a method called optically stimulated luminescence (OSL) dating. The basic idea is simple, even if the lab work is not. Small grains of minerals, especially quartz, sit in the ground and slowly collect energy from natural radiation in the surrounding sediment. Sunlight "resets" this stored energy when the grains are exposed at the surface. Later, if the grains are buried and kept away from light, they start storing energy again. In an OSL lab, scientists stimulate the grains with light and measure the glow (or luminescence) they give off. That glow helps estimate how long it has been since the grains last saw sunlight, which is usually close to the time they were buried by new sediment.

The team collected four sediment samples from two excavation pits at Keezhadi, called KDI-1 and KDI-2, each from a different depth and layer. They hammered light-tight metal tubes horizontally into the sediment so that sunlight couldn't reach the grains. In the



A brick structure resembling an antechamber found at an excavation site at Keezhadi, near Madurai. G. MOORTHY/THE HINDU

laboratory, they opened the tubes under red light, removed the outer part that might have been exposed during collection, and kept the inner part for the actual dating measurements. Then they cleaned and separated quartz grains using chemical and magnetic methods designed to remove other minerals and contamination.

Their measurements used a standard procedure (called the single aliquot regeneration protocol) to estimate the radiation dose stored in the quartz since it was buried. They also measured the natural radioactivity of the sediment (from the uranium, thorium, and potassium in it) to estimate the yearly dose rate the grains received in the ground. Finally, using the stored dose and the dose rate, they calculated the burial age for each layer.

The authors reported that their quartz signals behaved well in the tests and that the spread in the dose measurements suggested the grains had been bleached enough by sunlight before burial for the dating to be reliable.

## High-energy flood

This way, the team reported that the four OSL ages spanned roughly the last 1,200 years and that they vary with depth in a way that fits the idea of layered flood deposits. In the KDI-1 pit, one sample from a depth of 80 cm depth was aged to about 670 years, while a deeper sample from 150 cm down was aged to about 1,170 years. In the KDI-2 pit, a sample from 290 cm deep was aged to around 940

years and another from 380 cm to around 1,140 years.

## Climate context

The study also placed this finding in a broader climate context. The authors noted that in the climate of the late Holocene period (around 5,000 years ago to today), conditions in the Indian subcontinent weren't stable and that South Indian rivers showed signs of fluctuating through wet and dry periods over time. They also discussed how rivers could shift course and floods plus channel changes, could damage or cut off settlements that depend on river water.

The Vaigai is today a few kilometres away from the Keezhadi site, supporting the idea that the river has moved across the floodplain over long periods.

Archaeology isn't only about digging up objects; it's also about reading landscapes and sediments like a history book. A brick wall reveals that people built something. A layer of sand and silt above it reveals that something happened later in the environment. A dating method like OSL helps place that environmental event on a timeline.

In this case, the timeline suggests that parts of the Keezhadi settlement were buried by flood deposits roughly a millennium ago. That doesn't automatically mean climate change in the modern sense caused it even if it also supports a simpler point: that big river floods and shifts can reshape where people live. Indeed, they have been doing so for a long time.

The study also has practical implications for how historians and archaeologists interpret Keezhadi. Many discussions about the site have focused on how old it is and the period to which it belongs. The new work doesn't date the construction of the bricks themselves; instead, it dates the sediment that covered the remains.

Knowing that can help archaeologists separate the "time people lived here" from the "time nature buried what they left behind". It can also guide future excavation plans: if different parts of the mound accumulated sediment at different rates, as the paper suggests when comparing the thickness of layers in the two pits, then some areas may preserve older layers better than others.

The study was published in *Current Science* on October 25.

[mukunth.v@thehindu.co.in](mailto:mukunth.v@thehindu.co.in)



The different litho-stratigraphic layers at the Keezhadi site. DOI: 10.18520/CS/V129/18/712-718



A "well-planned brick structure" (left) and a canal used to transport water, both at the Keezhadi site. DOI: 10.18520/CS/V129/18/712-718

## Did an ancient flood contribute to Keezhadi's abandonment?

क्या एक प्राचीन बाढ़ ने कीझड़ी के परित्याग में योगदान दिया?

- Along the **Vaigai river in southern Tamil Nadu**, archaeologists have been excavating an old settlement at **Keezhadi**  
दक्षिणी तमिलनाडु में **वैगई नदी** के किनारे, पुरातत्वविद **कीझड़ी** में एक पुराने बसाव स्थल की खुदाई कर रहे हैं
- They have already found **brick walls, channels that look like drains or small canals, floors made of fine clay, and many pieces of pottery**



उन्हें पहले ही ईंटों की दीवारें, नालियों या छोटे नहरों जैसे चैनल, बारीक मिट्टी से बने फर्श, और मिट्टी के बर्तनों के कई टुकड़े मिले हैं

- **These finds matter** because Tamil poems from the **Sangam period** talk about **busy towns and trade** in this region, but the poems don't give **firm dates**  
ये **खोजें महत्वपूर्ण** हैं क्योंकि **संगम काल** की तमिल कविताएँ इस क्षेत्र में **व्यस्त नगरों और व्यापार** की बात करती हैं, लेकिन वे **पक्की तिथियाँ** नहीं देती
- To connect the **stories**, the **structures**, and the **river's history**, researchers need a **reliable timeline** for when different layers of **sediment** were laid down and when the buildings were **buried**  
**कथाओं, संरचनाओं और नदी के इतिहास** को जोड़ने के लिए शोधकर्ताओं को यह जानने हेतु एक **विश्वसनीय समयरेखा** चाहिए कि विभिन्न **अवसादी परतों** कब जमीं और इमारतें कब **दबीं**
- A **recent study** by researchers from the **Physical Research Laboratory in Ahmedabad** and the **Department of Archaeology of Tamil Nadu** has now reported when **flood sediments** covered the **Keezhadi structures**  
**अहमदाबाद स्थित फिजिकल रिसर्च लेबोरेटरी और तमिलनाडु के पुरातत्व विभाग** के शोधकर्ताओं द्वारा किए गए एक **हालिया अध्ययन** ने बताया है कि कब **बाढ़ की अवसाद परतों** ने **कीझड़ी की संरचनाओं** को ढका
- The authors focused on the fact that **Keezhadi**, which is in **Sivaganga district**, sits on a  **mound** on the **Vaigai floodplain** and that the buildings are **not exposed** at the surface  
लेखकों ने इस तथ्य पर ध्यान दिया कि **कीझड़ी**, जो **शिवगंगा ज़िले** में स्थित है, **वैगई की बाढ़-भूमि** पर एक **टीले** पर स्थित है और इमारतें सतह पर **दिखाई नहीं देती**
- Instead, they lie under layers of **sand, silt, and clay** that the river likely deposited when it **flooded**  
इसके बजाय, वे **रेत, गाद, और मिट्टी** की परतों के नीचे स्थित हैं, जिन्हें नदी ने संभवतः **बाढ़** के दौरान जमा किया
- If the team could date the **burial sediments**, they figured, they'd be able to estimate when the settlement was **damaged or abandoned** and then **covered up**  
टीम ने सोचा कि यदि वे **दबी हुई अवसादी परतों** की तिथि निर्धारित कर सकें, तो यह अनुमान लगाया जा सकेगा कि बसाव स्थल कब **क्षतिग्रस्त** हुआ या **त्याग दिया गया** और फिर कब **ढक गया**

### Telling time with light

#### प्रकाश के माध्यम से समय का निर्धारण

- To do this, the team used a method called **optically stimulated luminescence (OSL) dating**  
इसके लिए टीम ने **ऑप्टिकली स्टिम्युलेटेड ल्यूमिनेसेंस (OSL) डेटिंग** नामक विधि का उपयोग किया
- The basic idea is simple, even if the lab work is not  
मूल विचार सरल है, भले ही प्रयोगशाला का कार्य जटिल हो
- Small grains of minerals, especially **quartz**, sit in the ground and slowly collect **energy** from natural **radiation** in the surrounding sediment  
खनिजों के छोटे कण, विशेष रूप से **क्वार्ट्ज**, ज़मीन में रहते हुए आसपास की अवसादी परतों से **प्राकृतिक विकिरण** की **ऊर्जा** धीरे-धीरे जमा करते हैं
- **Sunlight** 'resets' this stored energy when the grains are exposed at the surface  
जब ये कण सतह पर आते हैं, तो **सूर्य का प्रकाश** इस संचित ऊर्जा को 'रीसेट' कर देता है
- Later, if the grains are **buried** and kept away from light, they start storing energy again  
बाद में, जब ये कण **दफन** हो जाते हैं और प्रकाश से दूर रहते हैं, तो वे फिर से ऊर्जा जमा करने लगते हैं
- In an **OSL lab**, scientists stimulate the grains with **light** and measure the **glow** or **luminescence** they give off  
**OSL प्रयोगशाला** में वैज्ञानिक कणों को **प्रकाश** से उत्तेजित करते हैं और उनसे निकलने वाली **चमक** या **ल्यूमिनेसेंस** को मापते हैं
- That glow helps estimate how long it has been since the grains last saw **sunlight**, which is usually close to the time they were **buried** by new sediment  
यह चमक यह अनुमान लगाने में मदद करती है कि कणों ने आखिरी बार **सूर्य का प्रकाश** कब देखा था, जो आमतौर पर उनके **दफन होने** के समय के करीब होता है
- The team collected **four sediment samples** from **two excavation pits** at Keezhadi, called **KDI-1** and **KDI-2**, each from a different **depth and layer**



टीम ने कीझड़ी में दो खुदाई गड्डों KDI-1 और KDI-2 से अलग-अलग गहराई और परतों से चार अवसादी नमूने एकत्र किए

- They hammered **light-tight metal tubes** horizontally into the sediment so that **sunlight** couldn't reach the grains  
उन्होंने अवसाद में क्षैतिज रूप से **प्रकाश-रोधी धातु ट्यूब** ठोकीं ताकि **सूर्य का प्रकाश** कणों तक न पहुँच सके
- In the laboratory, they opened the tubes under **red light**, removed the outer part that might have been exposed during collection, and kept the inner part for the actual dating measurements  
प्रयोगशाला में उन्होंने ट्यूबों को **लाल प्रकाश** में खोला, संग्रह के दौरान उजागर हो सकने वाले बाहरी हिस्से को हटाया, और अंदरूनी हिस्से को वास्तविक डेटिंग मापन के लिए रखा
- Then they cleaned and separated **quartz grains** using **chemical and magnetic methods** designed to remove other minerals and **contamination**  
इसके बाद उन्होंने अन्य खनिजों और **दूषण** को हटाने के लिए **रासायनिक और चुंबकीय विधियों** से **क्वार्ट्ज कणों** को साफ़ और अलग किया
- Their measurements used a standard procedure called the **single aliquot regeneration protocol** to estimate the **radiation dose** stored in the quartz since it was buried  
उनके मापों में **सिंगल एलिक्वॉट रीजेनेरेशन प्रोटोकॉल** नामक मानक प्रक्रिया का उपयोग किया गया ताकि क्वार्ट्ज में दफन होने के बाद से संचित **विकिरण मात्रा** का अनुमान लगाया जा सके
- They also measured the **natural radioactivity** of the sediment from **uranium, thorium, and potassium** to estimate the **yearly dose rate** the grains received in the ground  
उन्होंने अवसाद में मौजूद **यूरेनियम, थोरियम, और पोटैशियम** से उत्पन्न **प्राकृतिक रेडियोधर्मिता** को भी मापा ताकि कणों को मिलने वाली वार्षिक **डोज दर** का अनुमान लगाया जा सके
- Finally, using the stored dose and the dose rate, they calculated the **burial age** for each layer  
अंततः, संचित डोज और डोज दर का उपयोग करके उन्होंने प्रत्येक परत की **दफन आयु** की गणना की
- The authors reported that their **quartz signals** behaved well in the tests and that the spread in the dose measurements suggested the grains had been **bleached enough by sunlight before burial for the dating to be reliable**  
लेखकों ने बताया कि परीक्षणों में उनके **क्वार्ट्ज संकेत** अच्छे रहे और डोज मापों में फैलाव से संकेत मिला कि दफन होने से पहले कण **सूर्य के प्रकाश से पर्याप्त रूप से ब्लीच** हो चुके थे, जिससे डेटिंग **विश्वसनीय** है

### High-energy flood उच्च-ऊर्जा बाढ़

- This way, the team reported that the **four OSL ages** spanned roughly the last **1,200 years** and that they vary with depth in a way that **fits the idea of layered flood deposits**  
इस प्रकार, टीम ने बताया कि **चार OSL आयु** लगभग पिछले **1,200 वर्षों** तक फैली हुई हैं और वे गहराई के साथ इस तरह बदलती हैं जो **परतदार बाढ़ जमाव** की अवधारणा से मेल खाती हैं
- In the **KDI-1 pit**, one sample from a depth of **80 cm** depth was aged to about **670 years**, while a deeper sample from **150 cm** down was aged to about **1,170 years**  
**KDI-1 गड्डे** में, **80 सेमी** गहराई से लिए गए एक नमूने की आयु लगभग **670 वर्ष** आँकी गई, जबकि **150 सेमी** नीचे से लिए गए गहरे नमूने की आयु लगभग **1,170 वर्ष** पाई गई
- In the **KD-2 pit**, a sample from **290 cm** deep was aged to around **940 years** and another from **380 cm** to around **1,140 years**  
**KD-2 गड्डे** में, **290 सेमी** गहराई से लिए गए नमूने की आयु लगभग **940 वर्ष** और **380 सेमी** से लिए गए दूसरे नमूने की आयु लगभग **1,140 वर्ष** आँकी गई
- The paper described **fine silty-clay layers** sitting over **brick structures** and **coarse sand layers** deeper down  
शोध पत्र में **ईंटों की संरचनाओं** के ऊपर स्थित **बारीक सिल्टी-क्ले परतों** और नीचे की ओर मौजूद **मोटी रेत की परतों** का वर्णन किया गया है
- It also noted **potsherd layers** and **fragments of roof tiles** at some levels and describes the **brick features** as **organised, planned construction**  
इसमें कुछ स्तरों पर **मिट्टी के बर्तन के टुकड़ों की परतें** और **छत की टाइलों के अवशेष** भी दर्ज किए गए हैं तथा **ईंटों की संरचनाओं** को **संगठित और योजनाबद्ध निर्माण** के रूप में बताया गया है
- The authors also pointed to **canals of different widths**, suggesting **water management** that could include different kinds of **flow**, e.g. **freshwater and wastewater**



लेखकों ने विभिन्न चौड़ाई वाली नहरों की ओर भी संकेत किया, जो जल प्रबंधन की ओर इशारा करती हैं, जिसमें प्रवाह के अलग-अलग प्रकार जैसे मीठा पानी और अपशिष्ट जल शामिल हो सकते हैं

- Taking all these details together, the authors concluded that the **burial of the “urban-like” structures at Keezhadi likely happened a little over a thousand years ago around 1,155 years before present** in their phrasing and this burial was related to a **high-energy flood event** that deposited **sands** and then **finer silts and clays** on the **floodplain**  
इन सभी विवरणों को एक साथ देखते हुए, लेखकों ने निष्कर्ष निकाला कि कीझाडी में स्थित “शहरी-जैसी” संरचनाओं का दफन होना संभवतः हजार वर्ष से कुछ अधिक पहले हुआ था जिसे उन्होंने वर्तमान से लगभग 1,155 वर्ष पूर्व बताया और यह दफन प्रक्रिया एक उच्च-ऊर्जा बाढ़ घटना से जुड़ी थी जिसने बाढ़-भूमि पर पहले रेत और फिर बारीक गाद व मिट्टी जमा की
- In other words, the **Vaigai river seemed to have delivered enough sediment during major floods to cover parts of the settlement, and this process may have forced the settlement to be abandoned or its residents to relocate**  
दूसरे शब्दों में, वैगई नदी ने बड़ी बाढ़ों के दौरान इतना अवसाद पहुँचाया कि उसने बसाव स्थल के कुछ हिस्सों को ढक दिया और इस प्रक्रिया ने संभवतः बसाव को त्यागने या उसके निवासियों को स्थानांतरित होने के लिए मजबूर किया

### Climate context जलवायु परिप्रेक्ष्य

- The study also placed this **finding** in a broader **climate context**  
अध्ययन ने इस निष्कर्ष को एक व्यापक जलवायु परिप्रेक्ष्य में भी रखा
- The authors noted that in the **climate of the late Holocene period around 5,000 years ago to today, conditions in the Indian subcontinent weren't stable and that South Indian rivers showed signs of fluctuating through wet and dry periods over time**  
लेखकों ने उल्लेख किया कि लेट होलोसीन काल में लगभग 5,000 वर्ष पूर्व से वर्तमान तक, भारतीय उपमहाद्वीप की परिस्थितियाँ स्थिर नहीं थीं और दक्षिण भारतीय नदियों में समय के साथ आर्द्र और शुष्क अवधियों के बीच उतार-चढ़ाव के संकेत मिलते हैं
- They also discussed how rivers could **shift course** and **floods plus channel changes** could **damage or cut off settlements** that depend on **river water**  
उन्होंने यह भी चर्चा की कि नदियाँ कैसे अपना मार्ग बदल सकती हैं और बाढ़ तथा चैनल परिवर्तन कैसे नदी जल पर निर्भर बसावों को क्षति पहुँचा सकते हैं या उनसे संपर्क तोड़ सकते हैं
- The **Vaigai** is today a few **kilometres away** from the **Keezhadi site**, supporting the idea that the river has **moved across the floodplain over long periods**  
आज वैगई नदी, कीझाडी स्थल से कुछ किलोमीटर दूर है, जो इस विचार का समर्थन करता है कि नदी ने लंबे समय में बाढ़-भूमि के पार अपना स्थान बदला है
- **Archaeology isn't only about digging up objects** it's also about **reading landscapes and sediments like a history book**  
पुरातत्व केवल वस्तुओं की खुदाई तक सीमित नहीं है बल्कि यह परिदृश्यों और अवसादों को एक इतिहास की पुस्तक की तरह पढ़ने के बारे में भी है
- A **brick wall** reveals that people **built something**  
एक ईंट की दीवार यह दर्शाती है कि लोगों ने कुछ बनाया था
- A layer of **sand and silt** above it reveals that **something happened later in the environment**  
उसके ऊपर रेत और गाद की परत यह दर्शाती है कि बाद में पर्यावरण में कुछ घटित हुआ
- A **dating method** like **OSL** helps place that **environmental event** on a **timeline**  
**OSL** जैसी डेटिंग विधि उस पर्यावरणीय घटना को एक समयरेखा पर रखने में मदद करती है
- In this case, the **timeline** suggests that **parts of the Keezhadi settlement were buried by flood deposits roughly a millennium ago**  
इस मामले में, समयरेखा यह संकेत देती है कि कीझाडी बसाव के कुछ हिस्से लगभग एक सहस्राब्दी पूर्व बाढ़ जमाव से दब गए थे
- That doesn't automatically mean **climate change** in the **modern sense** caused it even if it also supports a simpler point that **big river floods and shifts** can **reshape where people live**



इसका यह अर्थ नहीं है कि **आधुनिक अर्थों में जलवायु परिवर्तन** ही इसका कारण था, हालांकि यह एक सरल तथ्य का समर्थन करता है कि **बड़ी नदी बाढ़ें और मार्ग परिवर्तन** यह तय कर सकते हैं कि **लोग कहाँ रहते हैं**

- Indeed, they have been doing so for a **long time**  
वास्तव में, वे यह कार्य **लंबे समय** से करते आ रहे हैं
- The study also has **practical implications** for how **historians and archaeologists** interpret **Keezhadi**  
इस अध्ययन के **व्यावहारिक निहितार्थ** भी हैं कि **इतिहासकार और पुरातत्वविद कीझड़ी** की व्याख्या कैसे करते हैं
- Many discussions about the site have focused on **how old it is** and the **period** to which it belongs  
इस स्थल पर हुई कई चर्चाएँ इस पर केंद्रित रही हैं कि यह **कितना पुराना है** और किस **काल** से संबंधित है
- The new work doesn't date the **construction of the bricks themselves** instead, it dates the **sediment that covered the remains**  
यह नया कार्य **ईंटों के निर्माण** की तिथि निर्धारित नहीं करता बल्कि उन **अवसादों** की तिथि निर्धारित करता है जिन्होंने अवशेषों को ढका
- That could help answer a different question when did the **covering happen**  
यह एक अलग प्रश्न का उत्तर देने में मदद कर सकता है कि **ढकने की प्रक्रिया कब हुई**
- Knowing that can help archaeologists separate the **"time people lived here"** from the **"time nature buried what they left behind"**  
यह जानना पुरातत्वविदों को **"यहाँ लोगों के रहने का समय"** और **"प्रकृति द्वारा छोड़ी गई वस्तुओं के दफन होने का समय"** अलग करने में मदद कर सकता है
- It can also guide **future excavation plans**  
यह **भविष्य की खुदाई योजनाओं** का भी मार्गदर्शन कर सकता है
- If different parts of the **mound** accumulated **sediment at different rates**, as the paper suggests when comparing the **thickness of layers** in the **two pits**, then some areas may **preserve older layers better** than others  
यदि **टीले** के विभिन्न हिस्सों में **अवसाद** अलग-अलग **दर** से जमा हुआ हो, जैसा कि शोध पत्र **दो गड्ढों में परतों की मोटाई** की तुलना करते हुए संकेत करता है, तो कुछ क्षेत्र अन्य की तुलना में **पुरानी परतों को बेहतर संरक्षित** कर सकते हैं
- The study was published in **Current Science** on **October 25**  
यह अध्ययन **25 अक्टूबर** को **करंट साइंस** में प्रकाशित हुआ

<b>GS Paper 1: Society</b>	
<b>TOPICS COVERED</b>	<b>25 December 2025</b>
1.	<b>Dowry is a cross-cultural evil, says Supreme Court</b> <b>दहेज एक अंतर-सांस्कृतिक बुराई है, सुप्रीम कोर्ट ने कहा</b>
2.	<b>Jat panchayat bans smartphone use by married women</b> <b>जाट पंचायत ने विवाहित महिलाओं द्वारा स्मार्टफोन उपयोग पर प्रतिबंध लगाया</b>



# Dowry is a cross-cultural evil, says Supreme Court

The court directed States and Union govt. to consider curriculum changes, reinforcing that parties to a marriage are equal; and ordered the prompt appointment of Dowry Prohibition Officers

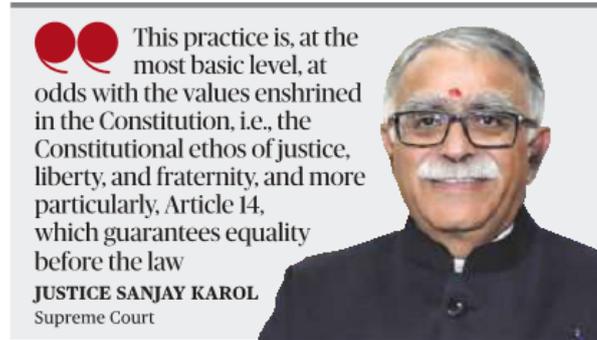
GS I: Society

**Krishnadas Rajagopal**  
NEW DELHI

Terming dowry a “cross-cultural evil” cutting across religions, the Supreme Court has said in a judgment that the “social strategy” to marry daughters to “higher status families” has come at a great cost to the rights of women.

In the present case, a 20-year-old girl died as her parents could not meet the demand for a colour television, a motorcycle, and ₹15,000. The judgment by a Bench of Justices Sanjay Karol and N.K. Singh said “she was apparently only worth that much” for her in-laws.

“This practice of marrying ‘higher up’ traces its origins to caste and kinship along with, to use a colloquial term, the ‘baggage of the *samaj*’ (society) that comes with it. Since lineage is traced through the patriarchal line, the desire to marry daughters into equal or higher status families ensured that their offspring retained or enhanced the family’s standing. **Hypergamy** thus be-



came both a social strategy and a religiously sanctioned norm,” Justice Karol, who authored the recent judgment, observed.

Noting that although the Dowry Prohibition Act, 1961 sought to prohibit the practice, dowry has persisted in society. This social evil, the court said, has slipped through the statutory definition cloaked as “gifts” and “social expectations”.

“This practice is, at the most basic level, at odds with the values enshrined in the Constitution, i.e., the Constitutional ethos of justice, liberty, and fraternity, and more particularly, Article 14, which guarantees equality before the law and equal protection

of the laws, a principle directly undermined by a system that treats women as a source of financial extraction,” Justice Karol said.

The court also detailed how Muslim families, particularly in urban centres, have begun adopting dowry as a “status marker and as part of competitive marriage negotiations”.

Dowry has replaced or overshadowed *mehr*, with Muslim women losing an important bargaining tool to face greater economic vulnerability.

“This undermines the original Islamic intention of empowering women through property ownership, as the dowry frequently ends up under the

control of the husband or his family,” Justice Karol wrote.

## Directives to govt.

The court directed the States and the Union government to consider changes to educational curricula across levels, reinforcing the Constitutional position that parties to a marriage are equal to one another, and one was not subservient to the other as sought to be established by giving and taking of money and/or articles at the time of marriage.

The court ordered the prompt appointment of Dowry Prohibition Officers in States, and public access to their details. It said police officers and judicial officers dealing with dowry cases must undergo periodic training and sensitisation.

The court requested the High Courts to take stock, ascertain the number of pending dowry cases, and enable their expeditious disposal. The court ordered the copy of the judgment to be circulated among the High Courts.

## Dowry is a cross-cultural evil, says Supreme Court दहेज एक अंतर-सांस्कृतिक बुराई है, सुप्रीम कोर्ट ने कहा

- The court directed **States** and **Union govt.** to consider **curriculum changes**, reinforcing that parties to a marriage are **equal**; and ordered the prompt appointment of **Dowry Prohibition Officers**.



अदालत ने राज्यों और केंद्र सरकार को पाठ्यक्रम में बदलाव पर विचार करने का निर्देश दिया, यह दोहराते हुए कि विवाह के पक्षकार समान हैं; और दहेज निषेध अधिकारियों की शीघ्र नियुक्ति का आदेश दिया।

- Terming dowry a “**cross-cultural evil**” cutting across religions, the **Supreme Court** has said in a judgment that the “social strategy” to marry daughters to “**higher status families**” has come at a great cost to the **rights of women**.  
दहेज को धर्मों से परे एक “अंतर-सांस्कृतिक बुराई” बताते हुए सुप्रीम कोर्ट ने अपने फैसले में कहा कि बेटियों की शादी “उच्च सामाजिक दर्जे वाले परिवारों” में करने की “सामाजिक रणनीति” ने महिलाओं के अधिकारों को भारी नुकसान पहुँचाया है।
- In the present case, a **20-year-old girl** died as her parents could not meet the demand for a **colour television**, a **motorcycle**, and **₹15,000**.  
वर्तमान मामले में, एक **20 वर्षीय लड़की** की मृत्यु इसलिए हो गई क्योंकि उसके माता-पिता **रंगीन टीवी**, **मोटरसाइकिल** और **₹15,000** की मांग पूरी नहीं कर सके।
- The judgment by a Bench of Justices **Sanjay Karol** and **N.K. Singh** said “she was apparently only worth that much” for her in-laws.  
न्यायमूर्ति **संजय करोल** और **एन.के. सिंह** की पीठ ने कहा कि ससुराल वालों के लिए वह “शायद उतनी ही कीमत की थी।”
- “This practice of marrying ‘higher up’ traces its origins to **caste and kinship** along with, to use a colloquial term, the ‘**baggage of the samaj**’ (**society**) that comes with it.  
‘ऊपर के परिवारों’ में शादी करने की यह प्रथा **जाति और कुटुंब** से जुड़ी है, और इसके साथ बोलचाल की भाषा में कहें तो ‘**समाज का बोझ**’ भी आता है।
- Since lineage is traced through the **patriarchal line**, the desire to marry daughters into equal or higher status families ensured that their offspring retained or enhanced the family’s standing.  
चूंकि वंश **पितृसत्तात्मक परंपरा** से तय होता है, इसलिए बेटियों को समान या उच्च दर्जे वाले परिवारों में ब्याहने की इच्छा से परिवार की प्रतिष्ठा बनी रहती या बढ़ती है।
- **Hypergamy** thus became both a **social strategy** and a **religiously sanctioned norm**,” Justice Karol observed.  
इस प्रकार **हाइपरगैमी** एक **सामाजिक रणनीति** और **धार्मिक रूप से स्वीकृत मानक** बन गई,” न्यायमूर्ति करोल ने कहा।
- Noting that although the **Dowry Prohibition Act, 1961** sought to prohibit the practice, dowry has **persisted** in society.  
अदालत ने कहा कि यद्यपि **दहेज निषेध अधिनियम, 1961** ने इस प्रथा पर रोक लगाने का प्रयास किया, फिर भी दहेज समाज में **जारी** है।
- This social evil, the court said, has slipped through the statutory definition cloaked as “**gifts**” and “**social expectations**”.  
अदालत ने कहा कि यह सामाजिक बुराई “**उपहारों**” और “**सामाजिक अपेक्षाओं**” के रूप में कानूनी परिभाषा से बच निकलती है।
- “This practice is, at the most basic level, at odds with the values enshrined in the **Constitution**, i.e., the Constitutional ethos of **justice, liberty, and fraternity**, and more particularly, **Article 14**,” Justice Karol said.  
“यह प्रथा मूल रूप से **संविधान** में निहित **न्याय, स्वतंत्रता और बंधुत्व** के मूल्यों तथा विशेष रूप से **अनुच्छेद 14** के विपरीत है,” न्यायमूर्ति करोल ने कहा।
- The court said the system treats women as a source of **financial extraction**.  
अदालत ने कहा कि यह व्यवस्था महिलाओं को **आर्थिक शोषण** का स्रोत मानती है।
- The court also detailed how **Muslim families**, particularly in **urban centres**, have begun adopting dowry as a “**status marker**” and as part of **competitive marriage negotiations**.  
अदालत ने यह भी बताया कि विशेष रूप से **शहरी क्षेत्रों** में **मुस्लिम परिवारों** ने दहेज को “**प्रतिष्ठा का प्रतीक**” और **प्रतिस्पर्धी विवाह वार्ताओं** का हिस्सा बना लिया है।
- Dowry has replaced or overshadowed **mehr**, with **Muslim women** losing an important bargaining tool and facing greater **economic vulnerability**.  
दहेज ने **मेहर** को पीछे छोड़ दिया है, जिससे **मुस्लिम महिलाओं** ने एक महत्वपूर्ण सौदेबाज़ी का साधन खो दिया और वे अधिक **आर्थिक असुरक्षा** का सामना कर रही हैं।
- “This undermines the original **Islamic intention** of empowering women through **property ownership**,” Justice Karol wrote.



“यह महिलाओं को संपत्ति के स्वामित्व के माध्यम से सशक्त बनाने की मूल इस्लामी मंशा को कमजोर करता है,” न्यायमूर्ति करोल ने लिखा।

### Directives to govt. सरकार के लिए निर्देश

- The court directed the **States** and the **Union government** to consider changes to **educational curricula**, reinforcing that parties to a marriage are **equal**.  
अदालत ने राज्यों और केंद्र सरकार को शैक्षिक पाठ्यक्रमों में बदलाव पर विचार करने का निर्देश दिया, यह दोहराते हुए कि विवाह के पक्षकार समान हैं।
- The court ordered the prompt appointment of **Dowry Prohibition Officers** in States, and **public access** to their details.  
अदालत ने राज्यों में दहेज निषेध अधिकारियों की शीघ्र नियुक्ति और उनके विवरण तक सार्वजनिक पहुंच का आदेश दिया।
- It said **police officers** and **judicial officers** dealing with dowry cases must undergo **periodic training and sensitisation**.  
अदालत ने कहा कि दहेज मामलों से निपटने वाले पुलिस अधिकारियों और न्यायिक अधिकारियों को नियमित प्रशिक्षण और संवेदनशीलता कार्यक्रमों से गुजरना चाहिए।
- The court requested the **High Courts** to take stock of **pending dowry cases** and enable their **expeditious disposal**.  
अदालत ने उच्च न्यायालयों से लंबित दहेज मामलों की स्थिति की समीक्षा कर उनके शीघ्र निपटारे को सुनिश्चित करने का अनुरोध किया।

PATRIOTIC IAS



# Jat panchayat bans smartphone use by married women

GS I: Society

The Hindu Bureau  
JAIPUR

When the world is racing on the highway of connectivity, smartphones will be prohibited for married women belonging to a sect of the Jat community in Rajasthan's Jalore district from Republic Day in 2026. The diktat was issued at a caste panchayat held in Ghazipur village on December 21.

The panchayat ordered that no daughter-in-law or young woman from 15 villages in the Bhinmal-Khanpur area carry camera-enabled mobile phones to weddings, public gatherings, and even while visiting neighbours, from January 26. They can use only basic keypad phones for voice calls.

The Sundhamata Patti panchayat of the Chaudhary clan took the decision "with consensus", citing

concerns of mobile addiction and the impact of screentime on children's eyesight. Panch Himmataram read out the proposal, which was passed as a resolution after discussions among all panchayat members and elders, who agreed to implement the rule.

Community head Sujanaram Chaudhary presided over the panchayat meeting. The resolution stated that girls pursuing education would be allowed to use smartphones at home "strictly for academic purposes", but would be barred from carrying the devices to social events, weddings or neighbourhood visits.

A video footage of the proclamation being read out at the panchayat meeting was circulated online, drawing sharp criticism from social activists and women's rights groups.

## Jat panchayat bans smartphone use by married women

जाट पंचायत ने विवाहित महिलाओं द्वारा स्मार्टफोन उपयोग पर प्रतिबंध लगाया

When the world is racing on the highway of connectivity, smartphones will be prohibited for married women belonging to a sect of the Jat community in Rajasthan's Jalore district from Republic Day in 2026.

जब दुनिया कनेक्टिविटी के राजमार्ग पर दौड़ रही है, तब राजस्थान के जालोर ज़िले में जाट समुदाय के एक वर्ग से संबंधित विवाहित महिलाओं के लिए 2026 के गणतंत्र दिवस से स्मार्टफोन प्रतिबंधित कर दिए जाएंगे।

The diktat was issued at a caste panchayat held in Ghazipur village on December 21.

यह फरमान 21 दिसंबर को गाजीपुर गांव में आयोजित जाति पंचायत में जारी किया गया।

The panchayat ordered that no daughter-in-law or young woman from 15 villages in the Bhinmal-Khanpur area carry camera-enabled mobile phones to weddings, public gatherings, and even while visiting neighbours, from January 26.

पंचायत ने आदेश दिया कि भीनमाल-खानपुर क्षेत्र के 15 गांवों की कोई भी बहू या युवती 26 जनवरी से शादियों, सार्वजनिक सभाओं और यहां तक कि पड़ोसियों के यहां जाते समय भी कैमरा युक्त मोबाइल फोन नहीं रखेगी।

They can use only basic keypad phones for voice calls.

वे केवल वॉइस कॉल के लिए बेसिक कीपैड फोन का उपयोग कर सकती हैं।

The Sundhamata Patti panchayat of the Chaudhary clan took the decision "with consensus", citing concerns of mobile addiction and the impact of screentime on children's eyesight.

चौधरी वंश की सुंधामाता पट्टी पंचायत ने "सर्वसम्मति" से यह निर्णय लिया, और मोबाइल लत तथा स्क्रीन टाइम के बच्चों की आंखों की रोशनी पर प्रभाव को कारण बताया।

- Panch Himmataram read out the proposal, which was passed as a resolution after discussions among all panchayat members and elders, who agreed to implement the rule. पंच हिम्मताराम ने प्रस्ताव पढ़कर सुनाया, जिसे सभी पंचायत सदस्यों और बुजुर्गों की चर्चा के बाद प्रस्ताव के रूप में पारित किया गया, जिन्होंने नियम लागू करने पर सहमति जताई।
- Community head Sujanaram Chaudhary presided over the panchayat meeting. समुदाय प्रमुख सुजानाराम चौधरी ने पंचायत बैठक की अध्यक्षता की।
- The resolution stated that girls pursuing education would be allowed to use smartphones at home "strictly for academic purposes", but would be barred from carrying the devices to social events, weddings or neighbourhood visits. प्रस्ताव में कहा गया कि शिक्षा प्राप्त कर रही लड़कियों को घर पर "केवल शैक्षणिक उद्देश्यों" के लिए स्मार्टफोन उपयोग की अनुमति होगी, लेकिन सामाजिक आयोजनों, शादियों या पड़ोस में जाने के दौरान उपकरण ले जाने पर रोक रहेगी।
- A video footage of the proclamation being read out at the panchayat meeting was circulated online, drawing sharp criticism from social activists and women's rights groups.



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



पंचायत बैठक में घोषणा पढ़े जाने की वीडियो फुटेज ऑनलाइन प्रसारित हुई, जिस पर सामाजिक कार्यकर्ताओं और महिला अधिकार समूहों की तीखी आलोचना हुई।

<b>GS Paper 1: Geography</b>	
<b>TOPICS COVERED</b>	<b>25 December 2025</b>
1.	<b>Four trends redefining the North Indian Ocean's storm cycle</b> उत्तर हिंद महासागर के तूफान चक्र को पुनर्परिभाषित करने वाले चार रुझान

PATRIOTIC IAS



# Four trends redefining the North Indian Ocean's storm cycle

While the number of total disturbances has decreased, storms are becoming more severe and arriving later in the year

**GS I: Geography**

**DATA POINT**

**Devvanshi Bihani**  
**Vignesh Radhakrishnan**

**T**he cyclonic disturbances over the North Indian Ocean, which include the Arabian Sea, the Bay of Bengal, and the land area in between, have changed drastically over the last century.

Broadly, there are four major trends. First, the frequency of cyclonic disturbances has shifted significantly. **Chart 1** plots annual disturbances (left axis) alongside a 10-year rolling average (right axis) from 1900 to 2025. While annual figures are often volatile, the 10-year rolling average smooths out this "noise", making it easier to identify whether the long-term trend is actually rising or falling.

The chart reveals a distinct inverted U-shaped trend in the past century. Between 1900 and 1920, the 10-year rolling average of cyclonic disturbances remained below 10. This figure surged to over 15 by the 1930s, initiating a period of relative stability that lasted through the 1970s. However, the 1980s and 1990s saw a sharp decline, culminating in a new low in the 2000s when the average dropped to eight. While activity rebounded in the 2010s and continues to climb in the 2020s, current levels remain significantly lower than the mid-century peaks.

Second, the overall decline in disturbances in recent years is driven almost entirely by a sharp drop in activity within the Bay of Bengal. **Chart 2** breaks down the 10-year rolling average of cyclonic disturbances by origin: the Bay of Bengal, the Arabian Sea, and inland/other areas. While the Bay remains the primary cradle for disturbances in the North Indian Ocean, its output has dwindled significantly, dragging down the total as seen in **Chart 1**. Conversely, the Arabian Sea has seen a marked increase in activity, though its fre-

quency remains lower than that of the Bay even in recent years.

Third, while the number of disturbances has decreased, their severity has intensified. Typically, a disturbance begins as a low-pressure area (winds <31 kmph) and can intensify into a depression (31-49 kmph) or a deep depression (50-61 kmph). Beyond this point, they are classified as cyclonic storms (62-88 kmph) or severe cyclonic storms (89-117 kmph). The most destructive stages follow: very severe (118-166 kmph), extremely severe (167-221 kmph), and super cyclonic storms (>222 kmph).

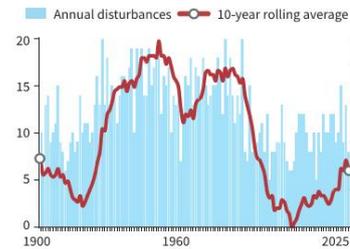
**Chart 3** illustrates the percentage of disturbances that intensify into severe cyclonic storms or higher. In the Bay of Bengal, the share of these storms has risen notably since the 1970s. Interestingly, disturbances originating in the Arabian Sea are historically more likely to reach these severe levels than those in the Bay. Given the increasing frequency of disturbances in the Arabian Sea (as noted in **Chart 2**), this higher rate of intensification marks a critical shift in the region's risk profile.

Generally, warmer oceans provide more energy to tropical storms, making cyclones stronger and their paths harder to predict. Data show that the Arabian Sea is heating up more than average, leading to more intense, tougher-to-predict cyclones.

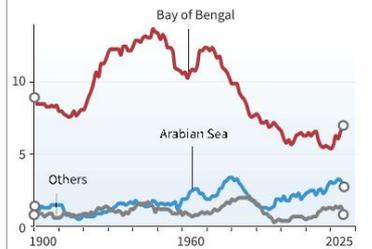
Fourth, there has been a significant shift in the seasonality of these storms. In the Bay of Bengal, disturbances are increasingly originating in the final quarter of the year (October-December) rather than in the July-September window. **Chart 4** illustrates this shift, plotting the percentage share of disturbances by their month of origin across different decades. Prior to the 1980s, activity was concentrated between July and September (indicated by the higher density of red squares). Since then, the focus has shifted to the final quarter of the year (red square density shifting to October to November).



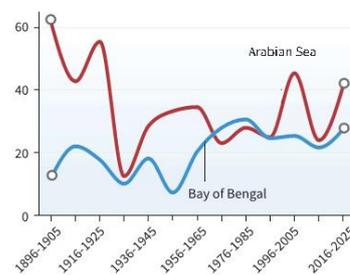
**CHART 1:** The annual disturbances (left axis) alongside a 10-year rolling average (right axis) from 1900 to 2025



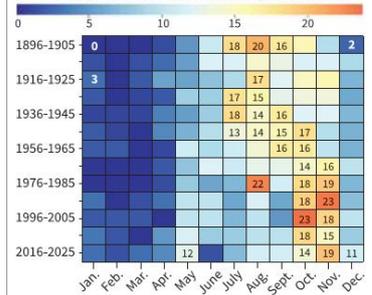
**CHART 2:** The 10-year rolling average of cyclonic disturbances by origin from 1900 to 2025



**CHART 3:** The share (%) of disturbances that intensified into severe cyclonic storms or higher, across different decades



**CHART 4:** The share (%) of disturbances by their month of origin across different decades. Each row adds up to 100%



## Four trends redefining the North Indian Ocean's storm cycle

### उत्तर हिंद महासागर के तूफान चक्र को पुनर्परिभाषित करने वाले चार रुझान

- While the **number of total disturbances has decreased, storms are becoming more severe and arriving later in the year**  
जबकि कुल विकोभों की संख्या में कमी आई है, तूफान अधिक गंभीर हो रहे हैं और वर्ष के बाद के समय में आ रहे हैं

### Cyclonic Disturbances over the North Indian Ocean

#### उत्तरी हिंद महासागर में चक्रवाती विकोभ

- The **cyclonic disturbances over the North Indian Ocean, which include the Arabian Sea, the Bay of Bengal, and the land area in between, have changed drastically over the last century**

उत्तरी हिंद महासागर में होने वाले चक्रवाती विकोभ, जिनमें अरब सागर, बंगाल की खाड़ी और इनके बीच का स्थलीय क्षेत्र शामिल है, पिछले एक शताब्दी में तेजी से बदल गए हैं



- Broadly, there are **four major trends**  
व्यापक रूप से, इसमें **चार प्रमुख प्रवृत्तियाँ** देखी जा सकती हैं
- First, the **frequency of cyclonic disturbances has shifted significantly**  
पहला, **चक्रवाती विक्षोभों की आवृत्ति में महत्वपूर्ण परिवर्तन** आया है
- **Chart 1 plots annual disturbances alongside a 10-year rolling average from 1900 to 2025**  
चार्ट 1 में **1900 से 2025** के बीच **वार्षिक विक्षोभों** के साथ **10-वर्षीय रोलिंग औसत** दर्शाया गया है
- While annual figures are often **volatile**, the **10-year rolling average** smooths out this **noise**  
जहाँ वार्षिक आँकड़े अक्सर **अस्थिर** होते हैं, वहीं **10-वर्षीय रोलिंग औसत** इस **शोर** को संतुलित करता है
- This makes it easier to identify whether the **long-term trend** is actually **rising or falling**  
इससे यह पहचानना आसान हो जाता है कि **दीर्घकालिक प्रवृत्ति** वास्तव में **बढ़ रही है या घट रही है**
- The **chart reveals a distinct inverted U-shaped trend over the past century**  
चार्ट पिछले एक शताब्दी में एक **स्पष्ट उल्टे U-आकार की प्रवृत्ति** दर्शाता है
- Between **1900 and 1920**, the **10-year rolling average** remained **below 10**  
**1900 से 1920** के बीच **10-वर्षीय रोलिंग औसत 10 से नीचे** रहा
- This figure **surged to over 15 by the 1930s**, initiating a period of **relative stability** lasting through the **1970s**  
यह आँकड़ा **1930 के दशक तक 15 से अधिक** हो गया, जिससे **1970 के दशक तक सापेक्ष स्थिरता** का दौर शुरू हुआ
- The **1980s and 1990s** saw a **sharp decline**, culminating in a **new low in the 2000s** when the average **dropped to eight**  
**1980 और 1990 के दशक में तेज गिरावट** देखी गई, जो **2000 के दशक में नए न्यूनतम स्तर** तक पहुँची, जब औसत **आठ** रह गया
- While activity **rebounded in the 2010s** and continues to **climb in the 2020s**, current levels remain **lower than mid-century peaks**  
हालाँकि **2010 के दशक में गतिविधि में पुनरुत्थान** हुआ और **2020 के दशक में वृद्धि** जारी है, फिर भी वर्तमान स्तर **मध्य-शताब्दी के शिखर से कम** हैं
- Second, the **overall decline in disturbances in recent years is driven almost entirely by a sharp drop in the Bay of Bengal**  
दूसरा, हाल के वर्षों में कुल गिरावट का मुख्य कारण **बंगाल की खाड़ी में तेज गिरावट** है
- Chart 2 breaks down the **10-year rolling average** by origin  
चार्ट 2 **10-वर्षीय रोलिंग औसत** को उसके **उत्पत्ति क्षेत्र** के अनुसार विभाजित करता है
- These origins include the **Bay of Bengal**, the **Arabian Sea**, and **inland or other areas**  
इनमें **बंगाल की खाड़ी**, **अरब सागर**, और **आंतरिक या अन्य क्षेत्र** शामिल हैं
- **While the Bay of Bengal remains the primary cradle of disturbances, its output has dwindled significantly**  
हालाँकि **बंगाल की खाड़ी** अभी भी विक्षोभों का **मुख्य केंद्र** है, लेकिन इसकी संख्या **काफी घट गई है**
- This decline has **dragged down the total**, as seen in Chart 1  
इस गिरावट ने कुल आँकड़ों को **नीचे खींचा है**, जैसा कि चार्ट 1 में दिखता है
- Conversely, the **Arabian Sea has seen a marked increase in activity**  
इसके विपरीत, **अरब सागर में गतिविधि में स्पष्ट वृद्धि** देखी गई है
- **However, its frequency remains lower than the Bay of Bengal, even in recent years**  
फिर भी, इसकी आवृत्ति हाल के वर्षों में भी **बंगाल की खाड़ी से कम** बनी हुई है
- Third, **while the number of disturbances has decreased, their severity has intensified**  
तीसरा, यद्यपि विक्षोभों की **संख्या घटी है**, उनकी **तीव्रता बढ़ी है**
- **A disturbance typically begins as a low-pressure area with winds below 31 kmph**  
एक विक्षोभ सामान्यतः **निम्न दबाव क्षेत्र** के रूप में शुरू होता है, जहाँ पवन गति **31 किमी प्रति घंटा से कम** होती है
- **It can intensify into a depression (31–49 kmph) or a deep depression (50–61 kmph)**  
यह आगे बढ़कर **डिप्रेशन (31–49 किमी/घं)** या **डीप डिप्रेशन (50–61 किमी/घं)** बन सकता है
- **Beyond this, it is classified as a cyclonic storm (62–88 kmph) or a severe cyclonic storm (89–117 kmph)**  
इसके बाद इसे **चक्रवाती तूफान (62–88 किमी/घं)** या **प्रचंड चक्रवाती तूफान (89–117 किमी/घं)** कहा जाता है
- The most destructive stages are **very severe (118–166 kmph)**, **extremely severe (167–221 kmph)**, and **super cyclonic storms (≥222 kmph)**



सबसे विनाशकारी अवस्थाएँ अत्यंत प्रचंड (118–166 किमी/घं), अति-प्रचंड (167–221 किमी/घं) और सुपर चक्रवाती तूफान ( $\geq 222$  किमी/घं) होती हैं

- Chart 3 illustrates the **percentage of disturbances** that intensify into **severe cyclonic storms or higher**  
चार्ट 3 उन विकोभों का प्रतिशत दर्शाता है जो प्रचंड या उससे अधिक तीव्र तूफानों में बदलते हैं
- **In the Bay of Bengal, the share of such storms has risen notably since the 1970s**  
**बंगाल की खाड़ी में ऐसे तूफानों का अनुपात 1970 के दशक से काफी बढ़ा है**
- **Disturbances in the Arabian Sea are historically more likely to reach severe levels than those in the Bay**  
ऐतिहासिक रूप से, अरब सागर में उत्पन्न विकोभों के अधिक तीव्र होने की संभावना बंगाल की खाड़ी से अधिक रही है
- **Given the increasing frequency in the Arabian Sea, this intensification marks a critical shift in regional risk**  
अरब सागर में बढ़ती आवृत्ति को देखते हुए, यह तीव्रता क्षेत्रीय जोखिम प्रोफाइल में महत्वपूर्ण बदलाव को दर्शाती है
- **Generally, warmer oceans provide more energy to tropical storms**  
सामान्यतः गरम महासागर उष्णकटिबंधीय तूफानों को अधिक ऊर्जा प्रदान करते हैं
- **This makes cyclones stronger and harder to predict**  
इससे चक्रवात अधिक शक्तिशाली और अनुमान से परे हो जाते हैं
- Data show that the **Arabian Sea is heating up more than average**  
आँकड़े दर्शाते हैं कि अरब सागर औसत से अधिक गर्म हो रहा है
- **This leads to more intense and tougher-to-predict cyclones**  
इससे अधिक तीव्र और कठिन-पूर्वानुमान वाले चक्रवात उत्पन्न हो रहे हैं
- **Fourth, there has been a significant shift in seasonality**  
चौथा, चक्रवातों की ऋतु-प्रवृत्ति में महत्वपूर्ण बदलाव आया है
- **In the Bay of Bengal, disturbances are increasingly originating in October–December**  
**बंगाल की खाड़ी में अब विकोभ अधिकतर अक्टूबर–दिसंबर में उत्पन्न हो रहे हैं**
- **Earlier, activity was concentrated in the July–September window**  
पहले गतिविधि मुख्यतः जुलाई–सितंबर के बीच केंद्रित रहती थी
- Chart 4 illustrates this shift across **different decades**  
चार्ट 4 विभिन्न दशकों में इस बदलाव को दर्शाता है
- Prior to the **1980s**, activity was concentrated between **July and September**  
**1980 के दशक से पहले**, गतिविधि जुलाई से सितंबर के बीच केंद्रित थी
- Since then, the focus has shifted to the **final quarter of the year**, especially **October to November**  
उसके बाद से फोकस वर्ष की अंतिम तिमाही, विशेषकर अक्टूबर से नवंबर, की ओर स्थानांतरित हो गया है

## GS Paper II: Governance,

### TOPICS COVERED

25 December

1. **Public grievances disposed during good governance week**  
सुशासन सप्ताह के दौरान सार्वजनिक शिकायतों का निपटान
2. **What is the Bureau of Port Security and its role?**  
ब्यूरो ऑफ पोर्ट सिक्योरिटी क्या है और इसकी भूमिका क्या है?



## NEWS IN NUMBERS

### Public grievances disposed during good governance week

#### GS II: Governance

**17** In lakh. Over 17 lakh public grievances have been disposed of across States/Union territories during the ongoing good governance week, the Personnel Ministry said on Wednesday. The week is celebrated every year from December 19 to 25 to further good governance in every part of the country. PTI

### Public grievances disposed during good governance week

#### सुशासन सप्ताह के दौरान सार्वजनिक शिकायतों का निपटान

• Over 17 lakh public grievances have been disposed of across States/Union territories during the ongoing good governance week, the Personnel Ministry said on Wednesday.

लाख में। चल रहे सुशासन सप्ताह के दौरान राज्यों/केंद्र शासित प्रदेशों में 17 लाख से अधिक सार्वजनिक शिकायतों का निपटान किया गया है, कार्मिक मंत्रालय ने बुधवार को कहा।

• The week is celebrated every year from December 19 to 25 to further good governance in every part of the country.

यह सप्ताह हर वर्ष 19 दिसंबर से 25 दिसंबर तक देश के हर हिस्से में सुशासन को आगे बढ़ाने के लिए मनाया जाता है।

## What is the Bureau of Port Security and its role?

What challenges in coastal security does India face and how will BoPS address them?

#### GS II: Governance

#### MOB

Saeed Pande

#### The story so far:

The Centre has constituted the Bureau of Port Security (BoPS) as a statutory body under Section 13 of the newly established Merchant Shipping Act 2025. Modelled on the Bureau of Civil Aviation Security, it will function under the Ministry of Ports, Shipping and Waterways and will be responsible for regulatory oversight functions relating to the security of ships and port facilities.

#### Why was BoPS created?

Currently, coastal security responsibilities are shared among multiple agencies such as the Coast Guard, Central Industrial Security Force (CISF), State maritime police, and the Navy. This leads to challenges in coordination and communication, and also leads to possible security gaps. The BoPS will be a single statutory body for regulatory oversight and coordination. The BoPS will also address security

concerns such as maritime terrorism, smuggling of arms, drug trafficking, human trafficking and other illicit trafficking, poaching, illegal migration via waterways, piracy, and cybersecurity threats. It is expected to include a dedicated division to protect port IT infrastructure from digital threats, with a special focus on cybersecurity, and the collection and exchange of security-related information. The BoPS will monitor, counter, and deter such intrusions and coordinate with national cybersecurity agencies.

As a statutory body under the Merchant Shipping Act, the BoPS will have the legal authority to enforce compliance with international standards such as the International Ship and Port Facility Security (ISPS) Code. Under the BoPS, the CISF is designated as a recognised Security Organisation to prepare standardised plans, conduct security assessments, and train private agencies across all major and non-major ports. Security measures are to be implemented in a graded manner.

#### What is India's maritime growth so far?

According to the Ministry of Shipping, Ports and Waterways, the last decade has been transformative in terms of Maritime surge. Cargo growth increased from 974 million tonnes (MMT) in 2014 to 1,594 MMT in 2025. Port capacity has expanded by 57%, enhancing efficiency and volume. Ship turnaround time has reduced by half, to 48 hours, aligning with global standards. Coastal shipping volumes rose 118%, reflecting stronger domestic connectivity, while cargo movement through inland waterways surged eightfold from 18.1 MMT in 2014 to 145.5 MMT by 2025, unlocking new logistic corridors. Nine Indian ports featured in the World Bank's Container Port Performance Index, signalling rising international recognition.

In 2021, India launched its strategy for Maritime India Vision 2030 to ensure a safe, sustainable, and secure maritime future. At the top of the 2030 Maritime vision list is 'to develop best-in-class port infrastructure'. The BoPS has been

defined in line with this vision.

#### How have port laws been modernised?

These developments called for a revival and strengthening of Port security infrastructure, defined security measures and conservation of the coastal environment with an impetus for ease of business. This led to the replacement of the century-old Indian Ports Act of 1908 with the Indian Ports Act of 2025, along with additional legislation like the Coastal Shipping Act of 2025, the Modernised Merchant Shipping Legislation 2025, and the Bureau of Port Security 2025. These laws aim to modernise the framework for coastal trade, encourage Indian ownership and operation of vessels, simplify licensing and regulatory processes, and promote cost-efficient and eco-friendly sea transport.

#### What criticisms exist?

The new legislation has granted the Union government more authority over non-major (State-owned) ports. Some coastal States have criticised it as a "silent cost to maritime federalism." The Indian Ports Act has also been criticised for granting port officers, conservators, and health officers extensive powers for entry and inspection without clearly specifying judicial procedural safeguards. These criticisms are aimed at the legislation rather than BoPS itself.

Saeed Pande is a freelance writer with a focus on politics, current affairs, international relations, and geopolitics

#### THE GIST

The Centre has set up the Bureau of Port Security under the Merchant Shipping Act 2025 to ensure regulatory oversight, coordination, and compliance with international security standards amid growing maritime and cybersecurity threats.

India's maritime sector has seen a sharp surge in cargo and port capacity, alongside new port laws that have also drawn criticism over increased Union control of non-major ports.

### What is the Bureau of Port Security and its role?

#### ब्यूरो ऑफ पोर्ट सिक्योरिटी क्या है और इसकी भूमिका क्या है?

- What challenges in coastal security does India face and how will BoPS address them? भारत तटीय सुरक्षा में किन चुनौतियों का सामना करता है और BoPS उन्हें कैसे संबोधित करेगा?

#### Bureau of Port Security (BoPS)

#### ब्यूरो ऑफ पोर्ट सिक्योरिटी (BoPS)

- The Centre has constituted the Bureau of Port Security (BoPS) as a statutory body under Section 13 of the newly established Merchant Shipping Act 2025



केंद्र सरकार ने नव स्थापित मर्चेट शिपिंग एक्ट 2025 की धारा 13 के तहत ब्यूरो ऑफ पोर्ट सिक््योरिटी (BoPS) को एक वैधानिक निकाय के रूप में गठित किया है

- Modelled on the **Bureau of Civil Aviation Security**, it will function under the **Ministry of Ports, Shipping and Waterways** and will be responsible for **regulatory oversight functions relating to the security of ships and port facilities**

ब्यूरो ऑफ सिविल एविएशन सिक््योरिटी की तर्ज पर यह पोर्ट्स शिपिंग और जलमार्ग मंत्रालय के अंतर्गत कार्य करेगा और जहाजों तथा बंदरगाह सुविधाओं की सुरक्षा से संबंधित नियामक निगरानी कार्यों के लिए जिम्मेदार होगा

### Why was BoPS created

#### BoPS का गठन क्यों किया गया

- Currently **coastal security responsibilities** are shared among multiple agencies such as the **Coast Guard, Central Industrial Security Force (CISF), State maritime police, and the Navy**

वर्तमान में तटीय सुरक्षा की जिम्मेदारियाँ कोस्ट गार्ड, केंद्रीय औद्योगिक सुरक्षा बल (CISF), राज्य समुद्री पुलिस और नौसेना जैसी कई एजेंसियों के बीच बंटी हुई हैं

- This leads to **challenges in coordination and communication**, and also leads to possible **security gaps**

इससे समन्वय और संचार में चुनौतियाँ उत्पन्न होती हैं और सुरक्षा में संभावित अंतराल भी बनते हैं

- The **BoPS will be a single statutory body for regulatory oversight and coordination**

BoPS नियामक निगरानी और समन्वय के लिए एक एकल वैधानिक निकाय होगा

- The **BoPS will also address security concerns such as maritime terrorism, smuggling of arms, drug trafficking, human trafficking and other illicit trafficking, poaching, illegal migration via waterways, piracy, and cybersecurity threats**

BoPS समुद्री आतंकवाद, हथियारों की तस्करी, मादक पदार्थों की तस्करी, मानव तस्करी और अन्य अवैध तस्करी, अवैध शिकार, जलमार्गों के माध्यम से अवैध प्रवासन, समुद्री डकैती और साइबर सुरक्षा खतरों जैसी चिंताओं का भी समाधान करेगा

- It is expected to include a **dedicated division to protect port IT infrastructure from digital threats**, with a special focus on **cybersecurity**, and the **collection and exchange of security-related information**

इसमें डिजिटल खतरों से बंदरगाह IT अवसंरचना की रक्षा के लिए एक समर्पित प्रभाग शामिल होने की अपेक्षा है जिसमें साइबर सुरक्षा तथा सुरक्षा संबंधी सूचनाओं के संग्रह और आदान-प्रदान पर विशेष ध्यान होगा

- The **BoPS will monitor, counter, and deter such intrusions and coordinate with national cybersecurity agencies**

BoPS ऐसे हस्तक्षेपों की निगरानी, प्रतिकार और निरोध करेगा तथा राष्ट्रीय साइबर सुरक्षा एजेंसियों के साथ समन्वय करेगा

- As a **statutory body under the Merchant Shipping Act**, the **BoPS will have the legal authority to enforce compliance with international standards** such as the **International Ship and Port Facility Security (ISPS) Code**

मर्चेट शिपिंग एक्ट के अंतर्गत एक वैधानिक निकाय होने के कारण BoPS को अंतरराष्ट्रीय मानकों जैसे इंटरनेशनल शिप एंड पोर्ट फैसिलिटी सिक््योरिटी (ISPS) कोड के अनुपालन को लागू करने का कानूनी अधिकार प्राप्त होगा

- Under the **BoPS**, the **CISF is designated as a recognised Security Organisation to prepare standardised plans, conduct security assessments, and train private agencies across all major and non-major ports**

BoPS के अंतर्गत CISF को मान्यता प्राप्त सुरक्षा संगठन के रूप में नामित किया गया है जो मानकीकृत योजनाएँ तैयार करेगा, सुरक्षा आकलन करेगा और सभी प्रमुख तथा गैर-प्रमुख बंदरगाहों पर निजी एजेंसियों को प्रशिक्षण देगा

- Security measures are to be implemented in a graded manner**

सुरक्षा उपायों को चरणबद्ध तरीके से लागू किया जाना है

### What is India's maritime growth so far

अब तक भारत की समुद्री वृद्धि क्या रही है



- According to the **Ministry of Shipping, Ports and Waterways**, the last decade has been **transformative** in terms of **maritime surge**  
शिपिंग पोर्ट्स और जलमार्ग मंत्रालय के अनुसार पिछले एक दशक में समुद्री क्षेत्र में उल्लेखनीय परिवर्तन हुआ है
- **Cargo growth increased from 974 million tonnes (MMT) in 2014 to 1,594 MMT in 2025**  
कार्गो वृद्धि 2014 में 974 मिलियन टन (MMT) से बढ़कर 2025 में 1,594 MMT हो गई
- **Port capacity has expanded by 57%, enhancing efficiency and volume**  
बंदरगाह क्षमता में 57% की वृद्धि हुई है जिससे दक्षता और मात्रा में सुधार हुआ है
- **Ship turnaround time has reduced by half to 48 hours, aligning with global standards**  
जहाज टर्नअराउंड समय आधा होकर 48 घंटे रह गया है जो वैश्विक मानकों के अनुरूप है
- **Coastal shipping volumes rose 118%, reflecting stronger domestic connectivity**  
तटीय शिपिंग की मात्रा में 118% की वृद्धि हुई है जो मजबूत घरेलू संपर्क को दर्शाती है
- **Cargo movement through inland waterways surged eightfold from 18.1 MMT in 2014 to 145.5 MMT by 2025, unlocking new logistic corridors**  
आंतरिक जलमार्गों के माध्यम से कार्गो परिवहन 2014 में 18.1 MMT से बढ़कर 2025 तक 145.5 MMT हो गया जिससे नए लॉजिस्टिक कॉरिडोर खुले
- **Nine Indian ports featured in the World Bank's Container Port Performance Index, signalling rising international recognition**  
नौ भारतीय बंदरगाह विश्व बैंक के कंटेनर पोर्ट परफॉर्मेंस इंडेक्स में शामिल हुए जो बढ़ती अंतरराष्ट्रीय मान्यता का संकेत है
- **In 2021, India launched its strategy for Maritime India Vision 2030 to ensure a safe, sustainable, and secure maritime future**  
2021 में भारत ने समुद्री भारत विजन 2030 की रणनीति शुरू की ताकि सुरक्षित, सतत और सुरक्षित समुद्री भविष्य सुनिश्चित किया जा सके
- **At the top of the 2030 Maritime vision list is to develop best-in-class port infrastructure**  
2030 समुद्री विजन सूची में शीर्ष प्राथमिकता विश्व स्तरीय बंदरगाह अवसंरचना का विकास है
- The **BoPS** has been defined in line with this vision  
BoPS को इसी विजन के अनुरूप परिभाषित किया गया है

#### How have port laws been modernised बंदरगाह कानूनों का आधुनिकीकरण कैसे किया गया

- These developments called for a **revival and strengthening of port security infrastructure, defined security measures and conservation of the coastal environment with an impetus for ease of business**  
इन विकासों ने बंदरगाह सुरक्षा अवसंरचना के पुनरुद्धार और सुदृढ़ीकरण, स्पष्ट सुरक्षा उपायों और तटीय पर्यावरण के संरक्षण की आवश्यकता को रेखांकित किया, साथ ही ईज़ ऑफ़ डूइंग बिजनेस पर बल दिया
- This led to the **replacement of the Indian Ports Act of 1908 with the Indian Ports Act of 2025**, along with additional legislation like the **Coastal Shipping Act of 2025**, the **Modernised Merchant Shipping Legislation 2025**, and the **Bureau of Port Security 2025**  
इसके परिणामस्वरूप 1908 के भारतीय बंदरगाह अधिनियम को भारतीय बंदरगाह अधिनियम 2025 से प्रतिस्थापित किया गया, साथ ही कोस्टल शिपिंग एक्ट 2025, आधुनिकीकरण मर्चेण्ट शिपिंग कानून 2025 और ब्यूरो ऑफ़ पोर्ट सिक्योरिटी 2025 जैसे अतिरिक्त कानून लाए गए
- These laws aim to **modernise the framework for coastal trade, encourage Indian ownership and operation of vessels, simplify licensing and regulatory processes, and promote cost-efficient and eco-friendly sea transport**  
इन कानूनों का उद्देश्य तटीय व्यापार ढांचे का आधुनिकीकरण, भारतीय स्वामित्व और जहाज संचालन को प्रोत्साहन, लाइसेंसिंग और नियामक प्रक्रियाओं को सरल बनाना, तथा कम लागत और पर्यावरण अनुकूल समुद्री परिवहन को बढ़ावा देना है

#### What criticisms exist क्या आलोचनाएँ मौजूद हैं

- The new legislation has granted the **Union government more authority over non-major (State-owned) ports**



नए कानूनों ने गैर-प्रमुख (राज्य स्वामित्व वाले) बंदरगाहों पर केंद्र सरकार को अधिक अधिकार प्रदान किए हैं

- Some coastal States have criticised it as a “silent cost to maritime federalism”  
कुछ तटीय राज्यों ने इसे “समुद्री संघवाद की मौन लागत” के रूप में आलोचना की है
- The Indian Ports Act has also been criticised for granting port officers, conservators, and health officers extensive powers for entry and inspection without clearly specifying judicial procedural safeguards  
भारतीय बंदरगाह अधिनियम की यह कहकर भी आलोचना की गई है कि यह पोर्ट अधिकारियों, कंज़र्वेटर्स और स्वास्थ्य अधिकारियों को प्रवेश और निरीक्षण के लिए व्यापक अधिकार देता है जबकि न्यायिक प्रक्रियात्मक सुरक्षा उपाय स्पष्ट रूप से परिभाषित नहीं हैं
- These criticisms are aimed at the legislation rather than BoPS itself  
ये आलोचनाएँ BoPS के बजाय संबंधित कानूनों पर केंद्रित हैं

## GS Paper II: International Relations

### TOPICS COVERED

25 December

#### 1. 'China using LAC disengagement to reset India ties, curb U.S. alignment'

‘चीन LAC से तनाव घटाकर भारत के साथ संबंध पुनर्स्थापित करने और U.S. के साथ नज़दीकी सीमित करने की कोशिश में’

‘China using LAC disengagement to reset India ties, curb U.S. alignment’  
‘चीन LAC से तनाव घटाकर भारत के साथ संबंध पुनर्स्थापित करने और U.S. के साथ

## ‘China using LAC disengagement to reset India ties, curb U.S. alignment’

GS II: IR: India-China

Saurabh Trivedi  
NEW DELHI

China is attempting to leverage the disengagement from remaining stand-off sites along the Line of Actual Control (LAC) to ease tensions and stabilise its relationship with India, a U.S. Department of War report said on Wednesday. The report further notes that China has likely explored potential options for bases in several countries, including Bangladesh, Pakistan, Sri Lanka, and other regions, underscoring its growing strategic reach.

The October 2024 agreement, the report notes, may be part of a broader Chinese strategy to prevent deeper strategic alignment between New Delhi and Washington.



The report says China is attempting to leverage the reduction in tensions along the LAC to prevent deepening of U.S.-India ties. AFP

China’s expanding military footprint in South Asia has also drawn attention. According to the report, Beijing has delivered 36 J-10C fighter aircraft to Pakistan in two separate orders over the past five years, along with four frigates.

It further reads that the

announcement by the Indian leadership came just two days before a meeting between Chinese President Xi Jinping and Prime Minister Narendra Modi on the sidelines of the BRICS summit, signalling a calibrated diplomatic thaw after years of military and political strain.

management mechanisms, and explored steps to stabilise broader bilateral ties.

China is likely attempting to leverage the reduction in tensions along LAC to stabilise relations with India and prevent further deepening of U.S.-India strategic ties, the report states.

However, India is believed to remain cautious, viewing Beijing’s overtures through the lens of past actions and unresolved disputes. Persistent mutual distrust and multiple strategic irritants are expected to continue constraining the relationship.

नज़दीकी सीमित करने की कोशिश में’



- China is attempting to leverage the disengagement from remaining stand-off sites along the **Line of Actual Control (LAC)** to ease tensions and stabilise its relationship with **India**, a **U.S. Department of War report** said on Wednesday.  
एक **U.S. Department of War रिपोर्ट** के अनुसार, चीन **लाइन ऑफ़ एक्चुअल कंट्रोल (LAC)** पर शेष गतिरोध स्थलों से **डिसएंगेजमेंट** का उपयोग कर तनाव कम करने और **भारत** के साथ अपने संबंधों को स्थिर करने का प्रयास कर रहा है।
- The report further notes that **China** has likely explored potential options for bases in several countries, including **Bangladesh, Pakistan, Sri Lanka**, and other regions, underscoring its growing **strategic reach**.  
रिपोर्ट में आगे कहा गया है कि **चीन** ने **बांग्लादेश, पाकिस्तान, श्रीलंका** और अन्य क्षेत्रों सहित कई देशों में संभावित सैन्य ठिकानों के विकल्पों की तलाश की है, जो उसकी बढ़ती **रणनीतिक पहुंच** को दर्शाता है।
- The **October 2024 agreement**, the report notes, may be part of a broader Chinese strategy to prevent deeper strategic alignment between **New Delhi** and **Washington**.  
रिपोर्ट के अनुसार, **अक्टूबर 2024 का समझौता नई दिल्ली** और **वॉशिंगटन** के बीच गहरे रणनीतिक गठजोड़ को रोकने की व्यापक चीनी रणनीति का हिस्सा हो सकता है।
- China's expanding **military footprint** in **South Asia** has also drawn attention.  
**दक्षिण एशिया** में चीन की बढ़ती **सैन्य मौजूदगी** ने भी ध्यान आकर्षित किया है।
- According to the report, **Beijing** has delivered **36 J-10C fighter aircraft** to **Pakistan** in two separate orders over the past **five years**, along with **four frigates**.  
रिपोर्ट के अनुसार, **बीजिंग** ने पिछले **पाँच वर्षों** में दो अलग-अलग आदेशों के तहत **पाकिस्तान** को **36 J-10C लड़ाकू विमान** और **चार फ्रिगेट** प्रदान किए हैं।
- It further reads that the announcement by the **Indian leadership** came just **two days** before a meeting between **Chinese President Xi Jinping** and **Prime Minister Narendra Modi** on the sidelines of the **BRICS summit**, signalling a calibrated **diplomatic thaw** after years of military and political strain.  
रिपोर्ट में आगे कहा गया है कि **भारतीय नेतृत्व** द्वारा यह घोषणा **BRICS शिखर सम्मेलन** के दौरान **चीनी राष्ट्रपति शी जिनपिंग** और **प्रधानमंत्री नरेंद्र मोदी** की बैठक से केवल **दो दिन** पहले हुई, जो वर्षों के सैन्य और राजनीतिक तनाव के बाद एक संतुलित **कूटनीतिक नरमी** का संकेत देती है।
- The **Xi-Modi interaction** marked the beginning of **monthly high-level engagements** between the two countries.  
**शी-मोदी बातचीत** ने दोनों देशों के बीच **मासिक उच्च-स्तरीय संपर्कों** की शुरुआत को चिह्नित किया।
- These discussions have focused on **border management mechanisms**, and explored steps to stabilise broader **bilateral ties**.  
इन चर्चाओं का केंद्र **सीमा प्रबंधन तंत्र** रहा है और व्यापक **द्विपक्षीय संबंधों** को स्थिर करने के उपायों की पड़ताल की गई है।
- China is likely attempting to leverage the reduction in tensions along **LAC** to stabilise relations with **India** and prevent further deepening of **U.S.-India strategic ties**, the report states.  
रिपोर्ट के अनुसार, चीन **LAC** पर तनाव में कमी का लाभ उठाकर **भारत** के साथ संबंध स्थिर करने और **U.S.-India रणनीतिक संबंधों** को और गहरा होने से रोकने की कोशिश कर रहा है।
- However, **India** is believed to remain cautious, viewing **Beijing's overtures** through the lens of past actions and unresolved disputes.  
हालांकि, माना जाता है कि **भारत** सतर्क बना हुआ है और **बीजिंग के प्रयासों** को उसके पिछले कदमों और अनसुलझे विवादों के संदर्भ में देख रहा है।
- Persistent **mutual distrust** and multiple **strategic irritants** are expected to continue constraining the relationship.  
लगातार बना **पारस्परिक अविश्वास** और कई **रणनीतिक बाधाएँ** संबंधों को सीमित करती रहने की संभावना है।

### GS Paper III: Economy,

#### TOPICS COVERED

25 12 2025

- The deliberate unmaking of India's 'right to work**  
**भारत के 'काम के अधिकार' का जानबूझकर क्षरण**



2.	<b>Magnetic moment</b> मैग्नेटिक मोमेंट
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## The deliberate unmaking of India's 'right to work'

GS III: Economy: Inclusive Growth

MQB

One of the world's largest rights-based public employment programme has been dismantled and superseded by the Viksit Bharat-Guarantee for Rozgar and Ajeevika Mission (Gramin) (VB-G RAM G) Act, 2025. Enacted in 2005 as the National Rural Employment Guarantee Act (NREGA) and renamed in October 2009 as the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), the law established a legally enforceable, demand-driven right to employment for rural citizens across the country.

The 2025 law inverts this core principle, replacing it with a supply-driven framework that gives the Centre the sweeping authority to determine allocations to States and to decide where and to what extent the programme will operate.

### A turn that is political and ideological

This shift is not a technical adjustment but a deliberate ideological rupture. The removal of Mahatma Gandhi's name and the rebranding of the scheme as VB-G RAM G offer the clearest indication of this unmistakable political and ideological turn. Gandhi's name anchored the right to work in a moral vision of justice for the poorest, lending the law both an ethical as well as historical legitimacy. The current law severs that association. The policy changes cap employment, centralise control and erode state autonomy. As Jean Drèze, one of the programme's principal architects, has observed, these changes amount to an effective end rather than reform, hollowing out both the legal force and the moral foundations of the original law.

The new law transfers significantly greater financing obligations to the States. Earlier, State governments had strong incentives to implement MGNREGA, since the Centre bore the full wage cost and over 90% of the total expenditure. Under the revised framework, the funding ratio between the Centre and the States has changed from 90:10 to 60:40, which, by some estimates, could place an additional financial burden on States, one that many may struggle to meet. This is likely to compel poorer States to curtail project approvals, directly suppressing demand for work. Devolving the scheme to States without corresponding fiscal support thus poses a serious threat to its continued viability.

This marks a critical break from one of the most consequential pieces of social legislation in independent India. To grasp the significance of this change, it is essential to understand the context in which the programme was introduced. It arose in response to the contradictions of post-liberalisation India, where rapid economic growth often coexisted with agrarian distress, jobless growth and widespread livelihood insecurity. These conditions exposed the limits of market-led development in generating employment or providing social protection. By the time the United Progressive Alliance (UPA)



Zoya Hasan

is Professor Emerita, Centre for Political Studies, Jawaharlal Nehru University

assumed office in 2004, rural distress had intensified, employment creation lagged behind growth, and inequalities widened, revealing the inadequacy of growth in the absence of inclusive social safeguards.

NREGA, along with the Right to Information Act and the Forest Rights Act, represented a rights-based response to these structural failures. Rather than rejecting economic liberalisation, these laws sought to temper its social consequences by embedding enforceable entitlements within an inclusive framework. They asserted that political equality requires both material security and institutional guarantees, and that the state should bear responsibility for ensuring basic livelihood security where economic growth alone falls short.

### A gradual retreat

Unlike targeted welfare schemes aimed at specific deprivations, MGNREGA addressed the foundational issue of livelihoods. It recognised employment as the most effective and dignified form of social protection in a country where the vast majority of workers remain outside formal labour markets and social security systems. This rights-based welfare architecture, however, provoked massive opposition from neoliberal interests, corporate capital and mainstream media, who framed such measures as fiscally reckless and economically distortive. Over the past 11 years, the consolidation of a far-right dispensation under the Bharatiya Janata Party (BJP) has decisively shifted the political balance in favour of these interests, paving the way for this process and, more broadly, for the erosion of the rights-based framework itself.

This retreat comes despite empirical evidence of the programme's positive impact on economic output, efficiency and rural wages, undermining claims of unproductivity. Operating at an unprecedented scale across every rural district, it employed tens of millions of households annually. Crucially, its universality and demand-driven strategy represented a democratic innovation: employment was a legal entitlement, delays attracted compensation, and social audits and grievance mechanisms strengthened grassroots accountability. It, thus, functioned not merely as a welfare scheme but as an institutional mechanism that enabled citizens to assert enforceable claims on the state.

For the BJP government, scrapping MGNREGA constitutes a pivotal repudiation of the UPA's social policy legacy, signalling the end of an era. That approach had sought, however imperfectly, to reconcile economic growth with redistribution and enforceable rights. It also gave political expression to the brief social-democratic experiment under the first term of the UPA, and was supported by Left parties, social movements and civil society groups.

The repeal signals an ideological realignment in which market imperatives and corporate

interests are privileged over the state's obligation to secure livelihoods for its most vulnerable citizens. Rights-based entitlements that empower workers, decentralise authority and institutionalise claims on the state sit uneasily with a political economy paradigm that concentrates wealth in corporate hands while relying on cultural and religious majoritarianism to manufacture consent. In their place, discretionary state benevolence and executive largesse are preferred, as they depoliticise structural economic injustice and transform welfare into a tool of political loyalty that delivers dividends to the ruling party, thereby compromising the integrity of rights-based policies.

### A divergence in legislative trajectories

When enacted, MGNREGA commanded unanimous parliamentary support, reflecting a rare moment of cross-party consensus. By contrast, the VB-G RAM G Bill was rushed through amid Opposition walkouts, without referral to a Parliamentary Standing Committee, and with no attempt to build consensus or accommodate dissent. It was introduced abruptly, leaving minimal time to mount a coordinated opposition. That the Cabinet approved, introduced, and passed such a far-reaching reversal in just a few days magnifies both its political and societal repercussions. The sharp divergence in the legislative trajectories of the two Bills underscores the political rupture now underway. The contrast extends beyond Parliament. The Bill was pushed through so hastily that those whose lives it directly affects were neither informed nor consulted. Recently, the NREGA Sangharsh Morcha was denied permission by the Delhi Police to protest the decision at Jantar Mantar on the grounds that it had failed to provide the 10-day notice requirement. An Act that has stood for over two decades can be overturned in two days, yet citizens must wait 10 days to oppose it. Rights can be undone overnight, while dissent is delayed by procedure.

Over the years, this landmark programme has attracted global attention for both its scale and its innovative, rights-based design. Its repeal, after it had demonstrably strengthened rural livelihoods particularly during the COVID-19 pandemic, and advanced social and economic justice more broadly, constitutes a historic error, enacting a systematic rollback – legal, fiscal, and institutional – of rights, constitutional guarantees, federal balance, and democratic accountability. More than the future of a single employment programme, what is at stake is the erosion of a foundational principle of India's democracy: that the state is obligated to secure dignity through work as a matter of right, rather than making livelihoods contingent on fiscal discretion or dispensing relief as an act of benevolence.

The repeal of MGNREGA marks the erosion of a foundational principle of India's democracy and a political transformation of welfare



## The deliberate unmaking of India's 'right to work' भारत के 'काम के अधिकार' का जानबूझकर क्षरण

### Rights-based public employment programme and its dismantling अधिकार-आधारित सार्वजनिक रोजगार कार्यक्रम और उसका विघटन

- One of the world's **largest rights-based public employment programme** has been dismantled and superseded by the **Viksit Bharat-Guarantee for Rozgar and Ajeevika Mission (Gramin) (VB-G RAM G) Act, 2025**  
दुनिया के सबसे बड़े अधिकार-आधारित सार्वजनिक रोजगार कार्यक्रमों में से एक को समाप्त कर विकसित भारत-रोज़गार और आजीविका गारंटी मिशन (ग्रामीण) (VB-G RAM G) अधिनियम, 2025 द्वारा प्रतिस्थापित कर दिया गया है
- Enacted in **2005 as the National Rural Employment Guarantee Act (NREGA)** and renamed in **October 2009 as the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)**, the law established a **legally enforceable, demand-driven right to employment for rural citizens across the country**  
2005 में राष्ट्रीय ग्रामीण रोजगार गारंटी अधिनियम (NREGA) के रूप में लागू और अक्टूबर 2009 में महात्मा गांधी राष्ट्रीय ग्रामीण रोजगार गारंटी अधिनियम (MGNREGA) नाम दिया गया यह कानून देश भर के ग्रामीण नागरिकों को कानूनी रूप से प्रवर्तनीय, मांग-आधारित रोजगार का अधिकार देता था
- The **2025 law** inverts this **core principle**, replacing it with a **supply-driven framework that gives the Centre sweeping authority to determine allocations to States and to decide where and to what extent the programme will operate**  
2025 का कानून इस मूल सिद्धांत को उलट देता है और इसे **आपूर्ति-आधारित ढाँचे** से बदल देता है, जिसमें केंद्र को राज्यों को आवंटन तय करने और यह निर्णय लेने की व्यापक शक्ति मिलती है कि कार्यक्रम कहाँ और कितनी सीमा तक चलेगा

### A turn that is political and ideological एक राजनीतिक और वैचारिक मोड़

- This shift is not a **technical adjustment** but a **deliberate ideological rupture**  
यह परिवर्तन कोई तकनीकी समायोजन नहीं बल्कि एक जानबूझकर किया गया वैचारिक विच्छेद है
- The removal of **Mahatma Gandhi's name** and the rebranding of the scheme as **VB-G RAM G** offer the clearest indication of this unmistakable **political and ideological turn**  
महात्मा गांधी के नाम को हटाना और योजना को **VB-G RAM G** के रूप में पुनर्ब्रांड करना इस स्पष्ट राजनीतिक और वैचारिक मोड़ का सबसे साफ़ संकेत है
- Gandhi's name anchored the **right to work** in a **moral vision of justice for the poorest**, lending the law both an **ethical** as well as **historical legitimacy**  
गांधी का नाम सबसे गरीबों के लिए न्याय की नैतिक दृष्टि में काम के अधिकार को स्थापित करता था, जिससे कानून को नैतिक और ऐतिहासिक वैधता मिलती थी
- The current law **severs that association**  
वर्तमान कानून उस संबंध को तोड़ देता है
- The policy changes **cap employment, centralise control** and **erode state autonomy**  
नीति परिवर्तन रोजगार पर सीमा लगाते हैं, नियंत्रण का केंद्रीकरण करते हैं और राज्य स्वायत्तता को कमजोर करते हैं
- As **Jean Drèze**, one of the programme's **principal architects**, has observed, these changes amount to an **effective end rather than reform**, hollowing out both the **legal force** and the **moral foundations** of the original law  
कार्यक्रम के **प्रमुख निर्माताओं** में से एक **ज्यां द्रेज़** के अनुसार, ये परिवर्तन **सुधार नहीं बल्कि प्रभावी समाप्ति** के समान हैं, जो मूल कानून की **कानूनी शक्ति** और **नैतिक आधार** दोनों को खोखला कर देते हैं
- The new law transfers **significantly greater financing obligations** to the **States**  
नया कानून राज्यों पर **काफी अधिक वित्तीय दायित्व** डाल देता है
- Earlier, **State governments** had strong incentives to implement **MGNREGA**, since the **Centre bore the full wage cost** and over **90% of the total expenditure**  
पहले **राज्य सरकारों** के पास **MGNREGA** लागू करने के मजबूत प्रोत्साहन थे, क्योंकि **केंद्र पूरा मज़दूरी खर्च** और कुल व्यय का **90 प्रतिशत से अधिक** वहन करता था



- Under the **revised framework**, the **funding ratio** between the **Centre and the States** has changed from **90:10 to 60:40**, which, by some estimates, could place an **additional financial burden** on States, one that many may **struggle to meet**  
संशोधित ढाँचे के तहत केंद्र और राज्यों के बीच वित्तपोषण अनुपात 90:10 से 60:40 हो गया है, जो कुछ आकलनों के अनुसार राज्यों पर अतिरिक्त वित्तीय बोझ डाल सकता है, जिसे कई राज्य पूरा करने में संघर्ष कर सकते हैं
- This is likely to **compel poorer States to curtail project approvals**, directly **suppressing demand for work**  
इससे गरीब राज्यों को परियोजना स्वीकृतियाँ सीमित करने के लिए मजबूर होना पड़ सकता है, जिससे काम की मांग सीधे दब जाएगी
- **Devolving the scheme to States** without corresponding **fiscal support** thus poses a **serious threat to its continued viability**  
इस प्रकार पर्याप्त वित्तीय समर्थन के बिना योजना को राज्यों को सौंपना इसकी निरंतर व्यवहार्यता के लिए एक गंभीर खतरा पैदा करता है
- This marks a **critical break** from one of the **most consequential pieces of social legislation** in independent India  
यह स्वतंत्र भारत के सबसे महत्वपूर्ण सामाजिक कानूनों में से एक से गंभीर विच्छेद को दर्शाता है
- To grasp the **significance** of this change, it is essential to understand the **context** in which the programme was introduced  
इस परिवर्तन के महत्व को समझने के लिए उस परिप्रेक्ष्य को समझना आवश्यक है जिसमें यह कार्यक्रम शुरू किया गया था
- It arose in response to the **contradictions of post-liberalisation India**, where **rapid economic growth** often coexisted with **agrarian distress, jobless growth and widespread livelihood insecurity**  
यह उदारीकरणोत्तर भारत के विरोधाभासों की प्रतिक्रिया के रूप में उभरा, जहाँ तेज़ आर्थिक वृद्धि के साथ कृषि संकट, रोज़गारविहीन वृद्धि और व्यापक आजीविका असुरक्षा मौजूद थी
- These conditions exposed the **limits of market-led development** in generating **employment or providing social protection**  
इन परिस्थितियों ने रोज़गार सृजन और सामाजिक सुरक्षा प्रदान करने में बाज़ार-आधारित विकास की सीमाओं को उजागर किया
- By the time the **United Progressive Alliance (UPA)** assumed office in **2004**, **rural distress had intensified, employment creation lagged behind growth, and inequalities widened, revealing the inadequacy of growth** in the absence of **inclusive social safeguards**  
जब 2004 में संयुक्त प्रगतिशील गठबंधन (UPA) सत्ता में आया, तब तक ग्रामीण संकट तीव्र हो चुका था, रोज़गार सृजन वृद्धि से पीछे रह गया था और असमानताएँ बढ़ गई थीं, जिससे समावेशी सामाजिक सुरक्षा के बिना विकास की अपर्याप्तता सामने आई
- **NREGA**, along with the **Right to Information Act** and the **Forest Rights Act**, represented a **rights-based response to these structural failures**  
NREGA, सूचना का अधिकार अधिनियम और वन अधिकार अधिनियम के साथ, इन संरचनात्मक विफलताओं के प्रति एक अधिकार-आधारित प्रतिक्रिया का प्रतिनिधित्व करता था
- Rather than rejecting **economic liberalisation**, these laws sought to **temper its social consequences** by embedding **enforceable entitlements** within an **inclusive framework**  
आर्थिक उदारीकरण को अस्वीकार करने के बजाय, इन कानूनों ने समावेशी ढाँचे के भीतर प्रवर्तनीय अधिकार स्थापित कर इसके सामाजिक प्रभावों को संतुलित करने का प्रयास किया
- They asserted that **political equality** requires both **material security** and **institutional guarantees**, and that the **state** should bear responsibility for ensuring **basic livelihood security** where **economic growth alone falls short**  
उन्होंने यह स्थापित किया कि राजनीतिक समानता के लिए भौतिक सुरक्षा और संस्थागत गारंटी दोनों आवश्यक हैं, और जहाँ केवल आर्थिक वृद्धि अपर्याप्त हो, वहाँ मूलभूत आजीविका सुरक्षा सुनिश्चित करने की जिम्मेदारी राज्य की होनी चाहिए

A gradual retreat  
धीरे-धीरे पीछे हटना



- Unlike **targeted welfare schemes** aimed at specific **deprivations**, **MGNREGA** addressed the **foundational issue of livelihoods**  
विशिष्ट वंचनाओं को लक्षित करने वाली लक्षित कल्याण योजनाओं के विपरीत **MGNREGA** ने **आजीविका के मूल प्रश्न** को संबोधित किया
- It recognised **employment** as the most **effective and dignified form of social protection** in a country where the **vast majority of workers** remain outside **formal labour markets and social security systems**  
इसने ऐसे देश में **रोज़गार** को **सामाजिक सुरक्षा का सबसे प्रभावी और गरिमापूर्ण रूप** माना जहाँ **अधिकांश श्रमिक औपचारिक श्रम बाज़ारों और सामाजिक सुरक्षा प्रणालियों से बाहर हैं**
- This **rights-based welfare architecture**, however, provoked massive opposition from **neoliberal interests, corporate capital and mainstream media**, who **framed such measures as fiscally reckless and economically distortive**  
हालाँकि यह **अधिकार-आधारित कल्याण संरचना** नवउदारवादी हितों, **कॉर्पोरेट पूँजी और मुख्यधारा मीडिया** के तीव्र विरोध का कारण बनी जिन्होंने ऐसे उपायों को **राजकोषीय रूप से गैर-जिम्मेदार और आर्थिक रूप से विकृत** बताया
- Over the past **11 years**, the consolidation of a **far-right dispensation** under the **Bharatiya Janata Party (BJP)** has decisively shifted the **political balance** in favour of these interests, paving the way for this process and, more broadly, for the **erosion of the rights-based framework itself**  
पिछले **11 वर्षों** में **भारतीय जनता पार्टी (BJP)** के तहत एक **अति-दक्षिणपंथी शासन व्यवस्था** के सुदृढीकरण ने **राजनीतिक संतुलन** को इन हितों के पक्ष में निर्णायक रूप से मोड़ दिया जिससे न केवल यह प्रक्रिया बल्कि व्यापक रूप से **अधिकार-आधारित ढाँचे का क्षरण** संभव हुआ
- This retreat comes despite **empirical evidence** of the programme's **positive impact on economic output, efficiency and rural wages**, undermining claims of **unproductivity**  
यह पीछे हटना कार्यक्रम के **आर्थिक उत्पादन, दक्षता और ग्रामीण मज़दूरी पर सकारात्मक प्रभाव के अनुभवजन्य साक्ष्यों** के बावजूद हुआ जिससे **अउत्पादकता** के दावे कमजोर पड़ते हैं
- Operating at an **unprecedented scale** across every **rural district**, it employed **tens of millions of households annually**  
हर **ग्रामीण ज़िले** में **अभूतपूर्व पैमाने** पर संचालित होते हुए इसने प्रति वर्ष **करोड़ों परिवारों** को रोज़गार दिया
- Crucially, **its universality and demand-driven strategy** represented a **democratic innovation** employment was a **legal entitlement**, delays attracted **compensation**, and **social audits and grievance mechanisms** strengthened **grassroots accountability**  
महत्वपूर्ण रूप से इसकी **सार्वभौमिकता** और **मांग-आधारित रणनीति** एक **लोकतांत्रिक नवाचार** थी जहाँ रोज़गार एक **कानूनी अधिकार** था, देरी पर **मुआवज़ा** मिलता था और **सामाजिक अंकेक्षण व शिकायत तंत्र** ने **स्थानीय जवाबदेही** को मज़बूत किया
- It, thus, functioned not merely as a **welfare scheme** but as an **institutional mechanism** that enabled citizens to assert **enforceable claims on the state**  
इस प्रकार यह केवल एक **कल्याण योजना** नहीं बल्कि एक **संस्थागत तंत्र** के रूप में कार्य करता था जो नागरिकों को **राज्य पर प्रवर्तनीय दावे** करने में सक्षम बनाता था
- That the **state** is **obligated** to secure **dignity through work** as a **matter of right**, rather than making livelihoods contingent on **fiscal discretion** or dispensing relief as an act of **benevolence**  
कि **राज्य अधिकार** के रूप में **काम के माध्यम से गरिमा** सुनिश्चित करने के लिए **बाध्य** है, न कि **आजीविकाओं को वित्तीय विवेक** पर निर्भर बनाकर या **कृपा** के रूप में राहत देकर



GS III: Economy MQB

## Magnetic moment

India must not undermine green compliance in its clean energy transition

At the end of 2025, rare earth elements sit in an awkward intersection between climate ambitions, industrial policy and geopolitics. They are not the most important minerals by volume in the clean energy economy but that has not stopped a small subset of them from becoming a gatekeeper for many of its important machines. The question today is not whether the world needs rare earths for its green transition but whether countries can build resilient and affordable supply chains without recreating the same environmental and governance problems in new places. The principal bottleneck is high-performance permanent magnets, especially neodymium-iron-boron magnets for EV motors and wind turbines. When supply falters, these elements, not all rare earths, pass the shock into economies. Likewise, countries can also announce new mines and still depend on others for chemical refining, which is to rare-earth elements what extraction is to crude oil, rather than mining itself. This structure is why China remains central to the supply chain even when deposits are found elsewhere.

This explains India's late-2025 focus on magnets rather than just mining. The ₹7,280-crore scheme to establish an integrated manufacturing ecosystem for 6,000 tonnes of sintered rare earth permanent magnets a year signals that if India can make magnets domestically, it will reduce a high-impact import exposure and create a platform for downstream manufacturing in EVs, wind components and advanced electronics. However, significant challenges lie upstream of this chain. A major domestic source for rare earths is monazite-bearing beach sands, which in India lie alongside thorium and other minerals relevant to the nuclear programme. The sector is thus pushed closer to a punctilious governance regime requiring close coordination across regulators and public sector entities, and which has to treat waste management and community engagement as core industrial inputs. Second, while the National Critical Mineral Mission has assigned a large number of exploration projects through 2031 to the Geological Survey, it needs the state to also translate knowledge of deposits into separating and manufacturing capacity, which demands regulatory clarity, reliable public financing, and credible enforcement. Third, India needs to augment midstream capacity, including by making magnet production bankable through long-term offtake from EV and electronics firms, and investing in process innovation that reduces dependence on the most constrained elements. The next phase of the green transition will reward countries that can scale supply chains, avoid undermining green compliance and distribute rather than concentrate risk. For India, that means turning policy and intent into industrial capacity, with environmental credibility baked in.

than just mining

यह केवल खनन के बजाय 2025 के उत्तरार्ध में भारत के चुंबकों पर ध्यान को स्पष्ट करता है

- The ₹7,280-crore scheme to establish an integrated manufacturing ecosystem for 6,000 tonnes of sintered rare earth permanent magnets a year signals that if India can make magnets domestically, it will reduce a high-impact import exposure and create a platform for downstream manufacturing in EVs, wind components and advanced electronics ₹7,280 करोड़ की योजना, जो प्रति वर्ष 6,000 टन सintered दुर्लभ पृथ्वी स्थायी चुंबकों के लिए एकीकृत

## Magnetic moment मैग्नेटिक मोमेंट

Rare earth elements at the crossroads of climate, industry and geopolitics

जलवायु, उद्योग और भू-राजनीति के चौराहे पर दुर्लभ पृथ्वी तत्व

- At the end of 2025, rare earth elements sit in an awkward intersection between climate ambitions, industrial policy and geopolitics

2025 के अंत में दुर्लभ पृथ्वी तत्व जलवायु लक्ष्यों, औद्योगिक नीति और भू-राजनीति के बीच एक जटिल चौराहे पर स्थित हैं

- They are not the most important minerals by volume in the clean energy economy but that has not stopped a small subset of them from becoming a gatekeeper for many of its important machines

वे स्वच्छ ऊर्जा अर्थव्यवस्था में मात्रा के हिसाब से सबसे महत्वपूर्ण खनिज नहीं हैं, फिर भी उनका एक छोटा उपसमूह कई महत्वपूर्ण मशीनों के लिए गेटकीपर बन गया है

- The question today is not whether the world needs rare earths for its green transition but whether countries can build resilient and affordable supply chains without recreating the same environmental and governance problems in new places

आज सवाल यह नहीं है कि दुनिया को हरित संक्रमण के लिए दुर्लभ पृथ्वी तत्वों की आवश्यकता है या नहीं, बल्कि यह है कि क्या देश नई जगहों पर वही पर्यावरणीय और शासन संबंधी समस्याएँ दोहराए बिना मजबूत और किफायती आपूर्ति श्रृंखलाएँ बना सकते हैं

- The principal bottleneck is high-performance permanent magnets, especially neodymium-iron-boron magnets for EV motors and wind turbines

मुख्य अवरोध उच्च-प्रदर्शन स्थायी चुंबक हैं, विशेष रूप से ईवी मोटर्स और पवन टर्बाइनों के लिए नियोजिमियम-आयरन-बोरॉन चुंबक

- When supply falters, these elements, not all rare earths, pass the shock into economies

जब आपूर्ति बाधित होती है, तो ये तत्व, सभी दुर्लभ पृथ्वी नहीं, अर्थव्यवस्थाओं में झटका पहुँचाते हैं

- Likewise, countries can also announce new mines and still depend on others for chemical refining, which is to rare-earth elements what extraction is to crude oil, rather than mining itself

इसी तरह, देश नई खदानों की घोषणा कर सकते हैं और फिर भी रासायनिक परिशोधन के लिए दूसरों पर निर्भर रह सकते हैं, जो दुर्लभ पृथ्वी तत्वों के लिए वही है जो कच्चे तेल के लिए निष्कर्षण है, न कि स्वयं खनन

- This structure is why China remains central to the supply chain even when deposits are found elsewhere

यही संरचना कारण है कि चीन आपूर्ति श्रृंखला में केंद्रीय बना रहता है, भले ही भंडार कहीं और मिल जाएँ

- This explains India's late-2025 focus on magnets rather



विनिर्माण पारिस्थितिकी तंत्र स्थापित करने की है, यह संकेत देती है कि यदि भारत घरेलू स्तर पर चुंबक बना सकता है, तो वह उच्च-प्रभाव वाले आयात जोखिम को घटाएगा और ईवी, पवन घटकों तथा उन्नत इलेक्ट्रॉनिक्स में डाउनस्ट्रीम विनिर्माण के लिए एक प्लेटफॉर्म बनाएगा

- However, **significant challenges** lie **upstream** of this chain हालाँकि इस श्रृंखला के **अपस्ट्रीम** में महत्वपूर्ण चुनौतियाँ मौजूद हैं
- A major **domestic source** for rare earths is **monazite-bearing beach sands**, which in India lie alongside **thorium** and other minerals relevant to the **nuclear programme** दुर्लभ पृथ्वी तत्वों का एक प्रमुख घरेलू स्रोत मोनाजाइट युक्त समुद्र-तटीय रेत है, जो भारत में थोरियम और परमाणु कार्यक्रम से संबंधित अन्य खनिजों के साथ पाई जाती है
- The sector is thus pushed closer to a **punctilious governance regime** requiring **close coordination** across **regulators** and **public sector entities**, and which has to treat **waste management** and **community engagement** as **core industrial inputs** इसलिए यह क्षेत्र एक कठोर शासन व्यवस्था की ओर बढ़ता है जिसमें नियामकों और सार्वजनिक क्षेत्र की इकाइयों के बीच घनिष्ठ समन्वय आवश्यक है और जहाँ अपशिष्ट प्रबंधन तथा समुदाय सहभागिता को मुख्य औद्योगिक इनपुट माना जाता है
- Second, while the **National Critical Mineral Mission** has assigned a large number of **exploration projects through 2031** to the **Geological Survey**, it needs the **state** to also translate **knowledge of deposits** into **separating and manufacturing capacity**, which demands **regulatory clarity**, **reliable public financing**, and **credible enforcement** दूसरे, जबकि राष्ट्रीय महत्वपूर्ण खनिज मिशन ने 2031 तक भूवैज्ञानिक सर्वेक्षण को बड़ी संख्या में अन्वेषण परियोजनाएँ सौंपी हैं, इसके लिए राज्य को भंडारों के ज्ञान को पृथक्करण और विनिर्माण क्षमता में बदलना होगा, जिसके लिए नियामकीय स्पष्टता, विश्वसनीय सार्वजनिक वित्तपोषण और प्रभावी प्रवर्तन आवश्यक है
- Third, **India needs to augment midstream capacity**, including by making **magnet production bankable** through **long-term offtake** from **EV and electronics firms**, and investing in **process innovation** that reduces dependence on the **most constrained elements** तीसरे, भारत को मिडस्ट्रीम क्षमता बढ़ानी होगी, जिसमें ईवी और इलेक्ट्रॉनिक्स कंपनियों से दीर्घकालिक ऑफटेक के माध्यम से चुंबक उत्पादन को बैंक योग्य बनाना और प्रक्रिया नवाचार में निवेश करना शामिल है, जिससे सबसे अधिक सीमित तत्वों पर निर्भरता कम हो
- The **next phase of the green transition** will reward countries that can **scale supply chains**, **avoid undermining green compliance** and **distribute rather than concentrate risk** हरित संक्रमण का अगला चरण उन देशों को पुरस्कृत करेगा जो आपूर्ति श्रृंखलाओं का विस्तार कर सकते हैं, हरित अनुपालन को कमजोर किए बिना और जोखिम को केंद्रित करने के बजाय वितरित कर सकते हैं
- For India, that means turning **policy and intent** into **industrial capacity**, with **environmental credibility** baked in भारत के लिए इसका अर्थ है नीति और इरादे को औद्योगिक क्षमता में बदलना, जिसमें पर्यावरणीय विश्वसनीयता अंतर्निहित हो



## New labour codes, the threats to informal workers

GS III: Economy

MOB

Unions and workers' organisations have been raising objections against the new labour codes of 2019 and 2020. The four codes – they concern industrial relations, wages, social security and occupational health and safety of workers – were passed without a tripartite consultation between workers, employers and government representatives at the Indian Labour Conference (ILC). As implementation of the codes begin, the hard-won labour rights of workers across sectors are either threatened or destroyed.

While the impact on workers in the organised sector is rightfully being discussed, debated and documented, the codes also significantly endanger unorganised sector workers, who are estimated to constitute over 90% of India's workforce and producing 65% of its GDP. As Tamil Nadu deliberates on issuing rules for the Social Security Code, the serious dangers posed by the Codes to unorganised workers in particular must be highlighted.

### On the Codes

The Union Government claims that the codes are an attempt to "consolidate" and codify existing labour laws and "universalise" social security for workers. However, the claims of universalisation and consolidation are myths. Unorganised workers have been mostly left out of consideration in all codes except the one concerning social security. Alongside, in the name of consolidation, existing protections for them under other laws such as the Building and Other Construction Workers (BOCW) Act, 1996, have been threatened or entirely repealed.

For instance, about 180 rules have been laid out under the BOCW Act to ensure worker safety at construction sites. These are now entirely missing in the central rules issued for the new Occupational Safety, Health and Working Conditions (OSHC) Code. This is a dangerous sign given the hazardous nature of labour and the high number of deaths in the construction sector.



**R. Geetha**

is Adviser to the Unorganised Workers Federation (UWF)



**Priti Narayan**

is Assistant Professor in the Department of Geography at the University of British Columbia

Unorganised workers have been left out of consideration in all the codes except the one that concerns social security

The OSHWC code has also replaced an existing system of inspection with a process that is web-based, which cannot be an effective means of ensuring the safety of the workplace or minimum wage implementation. This is in violation of ILO Convention 81 which is ratified by India.

Unorganised workers can also contract diseases from prolonged manual work and exposure across several sectors. Silicosis is very prevalent in the construction sector, while agricultural workers have a high incidence of cancer from pesticide use, while salt workers face chronic eye, skin and kidney problems. There is no concern for these realities of informal workers and their working conditions in the OSHWC. This negligence stands in violation of ILO Convention 161, which calls for a national policy on occupational health services for all workers and mandates identification, treatment and rehabilitation in the event of an occupational disease.

In threatening and repealing sector-specific laws for workers such as the BOCW Act, the codes foreclose a serious consideration of the occupational health of informal workers. Given that the Employees' State Insurance (ESI) is not available to them, informal workers will have no state recognition or measures to address their occupational health and safety concerns.

### Threats to welfare boards and funds

In the Social Security (SS) Code, organised workers seem to be given some social security benefits, while informal workers are to receive vaguely defined "welfare schemes". Also notable is the abolition of various cesses as part of the Goods and Services Tax reforms, with no replacement of the cesses collected to provide for the welfare of workers in the beedi, salt, mining and other sectors.

This implies that there are no guaranteed funds, raised either from employers in particular

sectors or offered by the Union government, to provide for the welfare of informal sector workers.

In fact, the SS Code sets up one welfare board for all unorganised workers, with no imagination of the various sectors that informal workers can and do work in, except for construction and gig work. Even in the construction sector, the implementation of the now-centralised e-Shram registration system creates a possibility for the central government to take over accrued funds raised for workers' welfare – estimated to be of the order of ₹1 lakh crore.

As is, in Tamil Nadu, the SS Code stands to threaten the dissolution of all existing 39 sector-specific boards established in Tamil Nadu. There are no saving clauses for these State-level welfare boards and the protections they offer, including old age pensions, maternity assistance and educational assistance for workers' children. This reality, highlighted consistently by unions and worker movements, is perhaps the main reason why Tamil Nadu continues to deliberate on issuing rules for the SS Code.

### What needs to be done

Some States including Andhra Pradesh have closed down their welfare boards in response to the Codes. Tamil Nadu has a strong architecture for workers welfare under the Tamil Nadu Manual Workers Act, 1982, painstakingly built through worker and union demands and advocacy. It is estimated that there are three crore informal workers in the State, and about two crore workers registered across the various welfare boards.

To ensure the welfare of these workers, the State government must protect its welfare boards and State-level labour legislation at all costs. Like Kerala, Tamil Nadu must refuse to implement the codes and notify rules, and, instead, push for saving clauses of existing State-level welfare infrastructure.

## New labour codes, the threats to informal workers

### नए श्रम संहिता कानून, असंगठित श्रमिकों के लिए खतरे

- Unions and workers' organisations have been raising objections against the new labour codes of 2019 and 2020  
यूनियनों और श्रमिक संगठनों ने 2019 और 2020 की नई श्रम संहिताओं के खिलाफ आपत्तियाँ उठाई हैं
- The four codes they concern industrial relations, wages, social security and occupational health and safety of workers were passed without a tripartite consultation between workers, employers and government representatives at the Indian Labour Conference (ILC)  
चार संहिताएँ जो औद्योगिक संबंधों, मज़दूरी, सामाजिक सुरक्षा और श्रमिकों के व्यावसायिक स्वास्थ्य एवं सुरक्षा से संबंधित हैं, उन्हें भारतीय श्रम सम्मेलन (ILC) में श्रमिकों, नियोक्ताओं और सरकारी प्रतिनिधियों के बीच त्रिपक्षीय परामर्श के बिना पारित किया गया
- As implementation of the codes begin, the hard-won labour rights of workers across sectors are either threatened or destroyed  
संहिताओं के लागू होने के साथ, विभिन्न क्षेत्रों के श्रमिकों के कठिन संघर्ष से प्राप्त श्रम अधिकार या तो खतरे में हैं या नष्ट किए जा रहे हैं
- While the impact on workers in the organised sector is rightfully being discussed debated and documented, the codes also significantly endanger unorganised sector workers  
जबकि संगठित क्षेत्र के श्रमिकों पर प्रभाव पर उचित रूप से चर्चा और दस्तावेज़ीकरण हो रहा है, संहिताएँ असंगठित क्षेत्र के श्रमिकों को भी गंभीर रूप से खतरे में डालती हैं
- Unorganised workers are estimated to constitute over 90% of India's workforce and producing 65% of its GDP  
अनुमान है कि असंगठित श्रमिक भारत के कार्यबल का 90 प्रतिशत से अधिक हैं और GDP का 65 प्रतिशत उत्पादन करते हैं
- As Tamil Nadu deliberates on issuing rules for the Social Security Code, the serious dangers posed by the Codes to unorganised workers in particular must be highlighted



जब तमिलनाडु सामाजिक सुरक्षा संहिता के लिए नियम जारी करने पर विचार कर रहा है, तब संहिताओं द्वारा विशेष रूप से असंगठित श्रमिकों पर डाले गए गंभीर खतरों को उजागर किया जाना चाहिए

- **On the Codes**  
संहिताओं पर
- The **Union Government** claims that the codes are an attempt to **consolidate** and **codify existing labour laws** and **universalise social security** for workers  
केंद्र सरकार का दावा है कि संहिताएँ मौजूदा श्रम कानूनों के एकीकरण और संहिताकरण तथा श्रमिकों के लिए सामाजिक सुरक्षा के सार्वभौमीकरण का प्रयास हैं
- However the claims of **universalisation** and **consolidation** are **myths**  
हालाँकि सार्वभौमीकरण और एकीकरण के दावे मिथक हैं
- **Unorganised workers have been mostly left out of consideration** in all codes except the one concerning **social security**  
असंगठित श्रमिकों को सामाजिक सुरक्षा से संबंधित संहिता को छोड़कर अन्य सभी संहिताओं में अधिकांशतः नज़रअंदाज़ किया गया है
- Alongside in the name of **consolidation**, existing **protections** for them under other laws such as the **Building and Other Construction Workers (BOCW) Act, 1996** have been **threatened or entirely repealed**  
साथ ही एकीकरण के नाम पर निर्माण एवं अन्य निर्माण श्रमिक (BOCW) अधिनियम, 1996 जैसे कानूनों के तहत उन्हें मिलने वाली सुरक्षाएँ खतरे में डाल दी गई हैं या पूरी तरह समाप्त कर दी गई हैं
- For instance about **180 rules** have been laid out under the **BOCW Act** to ensure **worker safety at construction sites**  
उदाहरण के लिए BOCW अधिनियम के तहत निर्माण स्थलों पर श्रमिक सुरक्षा सुनिश्चित करने के लिए लगभग 180 नियम बनाए गए थे
- These are now **entirely missing** in the **central rules** issued for the new **Occupational Safety Health and Working Conditions (OSHCW) Code**  
ये सभी नियम नए व्यावसायिक सुरक्षा स्वास्थ्य और कार्य परिस्थितियाँ (OSHCW) संहिता के लिए जारी केंद्रीय नियमों में पूरी तरह अनुपस्थित हैं
- This is a **dangerous sign** given the **hazardous nature of labour** and the **high number of deaths in the construction sector**  
यह खतरनाक संकेत है क्योंकि श्रम का स्वरूप अत्यधिक जोखिमपूर्ण है और निर्माण क्षेत्र में मौतों की संख्या अधिक है
- The **OSHCW code** has also replaced an existing **system of inspection** with a process that is **web-based**  
OSHCW संहिता ने मौजूदा निरीक्षण प्रणाली को वेब-आधारित प्रक्रिया से बदल दिया है
- This cannot be an **effective means** of ensuring **workplace safety** or **minimum wage implementation**  
यह कार्यस्थल सुरक्षा या न्यूनतम मज़दूरी के क्रियान्वयन को सुनिश्चित करने का प्रभावी साधन नहीं हो सकता
- This is in **violation of ILO Convention 81** which is **ratified by India**  
यह ILO कन्वेंशन 81 का उल्लंघन है जिसे भारत ने अनुमोदित किया है
- **Unorganised workers** can also **contract diseases** from **prolonged manual work** and **exposure across several sectors**  
असंगठित श्रमिक लंबे समय तक शारीरिक श्रम और विभिन्न क्षेत्रों में संपर्क के कारण बीमारियाँ भी झेलते हैं
- **Silicosis** is very **prevalent in the construction sector**  
सिलिकोसिस निर्माण क्षेत्र में अत्यधिक प्रचलित है
- **Agricultural workers** have a **high incidence of cancer** from **pesticide use**  
कृषि श्रमिकों में कीटनाशकों के उपयोग से कैंसर की उच्च दर पाई जाती है
- **Salt workers** face **chronic eye skin and kidney problems**  
नमक श्रमिक दीर्घकालिक आँख त्वचा और गुर्दे की समस्याओं का सामना करते हैं
- There is **no concern** for these realities of **informal workers** and their **working conditions** in the **OSHCW**  
OSHCW में अनौपचारिक श्रमिकों की इन वास्तविकताओं और उनकी कार्य परिस्थितियों के प्रति कोई चिंता नहीं दिखाई देती
- This negligence stands in **violation of ILO Convention 161**  
यह उपेक्षा ILO कन्वेंशन 161 का उल्लंघन है



- The convention calls for a **national policy on occupational health services for all workers** and mandates **identification treatment and rehabilitation** in the event of an **occupational disease**  
यह कन्वेंशन सभी श्रमिकों के लिए व्यावसायिक स्वास्थ्य सेवाओं पर राष्ट्रीय नीति की माँग करता है और व्यावसायिक रोग की स्थिति में पहचान उपचार और पुनर्वास को अनिवार्य करता है
- In **threatening and repealing sector-specific laws** for workers such as the **BOCW Act**, the codes foreclose serious consideration of the **occupational health of informal workers**  
BOCW अधिनियम जैसे क्षेत्र-विशिष्ट कानूनों को खतरे में डालकर या निरस्त करके, संहिताएँ अनौपचारिक श्रमिकों के व्यावसायिक स्वास्थ्य पर गंभीर विचार की संभावना को समाप्त कर देती हैं
- Given that the **Employees' State Insurance (ESI)** is **not available** to them, **informal workers will have no state recognition or measures** to address their **occupational health and safety concerns**  
चूँकि कर्मचारी राज्य बीमा (ESI) उन्हें उपलब्ध नहीं है, इसलिए अनौपचारिक श्रमिकों के पास उनकी व्यावसायिक स्वास्थ्य और सुरक्षा चिंताओं को संबोधित करने के लिए राज्य मान्यता या उपाय नहीं होंगे

### Threats to welfare boards and funds कल्याण बोर्डों और कोषों के लिए खतरे

- In the **Social Security (SS) Code**, **organised workers** seem to be given some **social security benefits**, while **informal workers** are to receive vaguely defined "**welfare schemes**"  
सामाजिक सुरक्षा (SS) संहिता में संगठित श्रमिकों को कुछ सामाजिक सुरक्षा लाभ दिए गए प्रतीत होते हैं, जबकि असंगठित श्रमिकों को अस्पष्ट रूप से परिभाषित "कल्याण योजनाएँ" दी जानी हैं
- Also notable is the **abolition of various cesses** as part of the **Goods and Services Tax reforms**, with **no replacement** of the cesses collected to provide for the **welfare of workers** in the **beedi, salt, mining** and other sectors  
वस्तु एवं सेवा कर सुधारों के हिस्से के रूप में विभिन्न उपकरणों का उन्मूलन भी उल्लेखनीय है, और बीड़ी, नमक, खनन तथा अन्य क्षेत्रों के श्रमिक कल्याण के लिए एकत्र उपकरणों का कोई विकल्प नहीं रखा गया है
- This implies that there are **no guaranteed funds**, raised either from **employers in particular sectors** or **offered by the Union government**, to provide for the **welfare of informal sector workers**  
इसका अर्थ है कि असंगठित क्षेत्र के श्रमिकों के कल्याण के लिए न तो विशिष्ट क्षेत्रों के नियोक्ताओं से और न ही केंद्र सरकार द्वारा कोई सुनिश्चित कोष उपलब्ध है
- In fact, the **SS Code sets up one welfare board for all unorganised workers**, with **no imagination of the various sectors** that informal workers can and do work in, except for **construction and gig work**  
वास्तव में **SS संहिता सभी असंगठित श्रमिकों के लिए एक ही कल्याण बोर्ड** स्थापित करती है, जिसमें निर्माण और गिग कार्य को छोड़कर उन विभिन्न क्षेत्रों की कोई परिकल्पना नहीं है जिनमें असंगठित श्रमिक काम करते हैं
- Even in the **construction sector**, the implementation of the now-centralised **e-Shram registration system** creates a possibility for the **central government** to take over **accrued funds** raised for **workers' welfare** estimated to be of the order of **₹1 lakh crore**  
निर्माण क्षेत्र में भी अब-केंद्रीकृत **ई-श्रम पंजीकरण प्रणाली** के कार्यान्वयन से केंद्र सरकार के लिए श्रमिक कल्याण हेतु एकत्र संचित कोष को अपने नियंत्रण में लेने की संभावना बनती है, जिसका अनुमान लगभग **₹1 लाख करोड़** है
- As is, in **Tamil Nadu**, the **SS Code** stands to threaten the **dissolution of all existing 39 sector-specific boards** established in the State  
वर्तमान में **तमिलनाडु** में **SS संहिता** राज्य में स्थापित **39 क्षेत्र-विशिष्ट बोर्डों के विघटन** का खतरा उत्पन्न करती है
- There are **no saving clauses** for these **State-level welfare boards** and the **protections they offer**, including **old age pensions, maternity assistance** and **educational assistance for workers' children**  
इन राज्य-स्तरीय कल्याण बोर्डों और उनके द्वारा दी जाने वाली सुरक्षाओं के लिए कोई संरक्षण प्रावधान नहीं हैं, जिनमें वृद्धावस्था पेंशन, मातृत्व सहायता और श्रमिकों के बच्चों के लिए शैक्षिक सहायता शामिल हैं
- This reality, highlighted consistently by **unions and worker movements**, is perhaps the **main reason** why **Tamil Nadu** continues to deliberate on issuing rules for the **SS Code**



यह वास्तविकता, जिसे यूनियनों और श्रमिक आंदोलनों द्वारा लगातार उजागर किया गया है, संभवतः मुख्य कारण है कि तमिलनाडु अब भी SS संहिता के लिए नियम जारी करने पर विचार कर रहा है

## What needs to be done क्या किया जाना चाहिए

- Some States, including Andhra Pradesh, have closed down their welfare boards in response to the Codes  
कुछ राज्यों, जिनमें आंध्र प्रदेश भी शामिल है, ने संहिताओं के जवाब में अपने कल्याण बोर्ड बंद कर दिए हैं
- Tamil Nadu has a strong architecture for workers welfare under the Tamil Nadu Manual Workers Act, 1982, painstakingly built through worker and union demands and advocacy  
तमिलनाडु में तमिलनाडु मैनुअल वर्कर्स अधिनियम, 1982 के तहत श्रमिक कल्याण की एक मजबूत संरचना है, जिसे श्रमिकों और यूनियनों की मांगों और संघर्षों के माध्यम से तैयार किया गया है
- It is estimated that there are three crore informal workers in the State, and about two crore workers registered across the various welfare boards  
अनुमान है कि राज्य में तीन करोड़ असंगठित श्रमिक हैं और विभिन्न कल्याण बोर्डों में लगभग दो करोड़ श्रमिक पंजीकृत हैं
- To ensure the welfare of these workers, the State government must protect its welfare boards and State-level labour legislation at all costs  
इन श्रमिकों के कल्याण को सुनिश्चित करने के लिए राज्य सरकार को अपने कल्याण बोर्डों और राज्य-स्तरीय श्रम कानूनों की हर कीमत पर रक्षा करनी चाहिए
- Like Kerala, Tamil Nadu must refuse to implement the codes and notify rules, and instead push for saving clauses of existing State-level welfare infrastructure  
केरल की तरह तमिलनाडु को भी संहिताओं को लागू करने और नियम अधिसूचित करने से इनकार करना चाहिए और इसके बजाय मौजूदा राज्य-स्तरीय कल्याण ढाँचे के लिए संरक्षण प्रावधानों पर जोर देना चाहिए

# Why manufacturing has lagged in India

India's manufacturing sector underperforms compared to China and South Korea, partly due to public sector wages that raise costs and reduce competitiveness; despite growth in private industries like software and services, India sees limited technological upgrading, uneven wage growth, and increasing inequality

ISS III: Economy MCB

Rahul Menon

**A** reason why India has lagged behind certain non-Western economies – such as China and South Korea – despite starting from roughly equivalent positions early in the 20th century is the relative underperformance of its manufacturing sector. While China and South Korea have seen significant increases in manufacturing, the share of manufacturing in India's GDP has remained relatively constant over time and has recently lost ground to services. In a recent discussion of his book *Sixth of Humanity*, economist Arvind Subramanian explained why India has been unable to industrialise to the extent of China or South Korea. In his view, high government salaries drew workers away from manufacturing, raising prices and making it difficult for the sector to remain competitive, thus hindering its expansion. Mr. Subramanian used a theoretical framework known as the 'Dutch disease' to examine this outcome.

**What is the Dutch disease?**  
The Dutch disease refers to a phenomenon where an economic windfall can often translate into negative outcomes in other sectors, such as manufacturing. It was initially coined to explain how the discovery of the Groningen gas fields in 1959 affected Dutch manufacturing. The theory goes as follows: imagine an economy where a substantial holding of some natural resource – such as oil or another important mineral – is discovered. This would lead to a rise in wages as the sector bids away labour from other sectors, raising the economy-wide wage rate. Moreover, exports of the resource would lead to an appreciation of the currency, increasing imports and decreasing other price-sensitive exports. These effects would hurt domestic



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manufacturing, which would be outcompeted by cheap imports from abroad and, at the same time, become relatively expensive in foreign markets. But how would the Dutch disease apply to non-tradeable goods, such as government services? Suppose an economy expands its government sector and sets high wages for its workers. Manufacturing would then find it hard to meet these wages at its given level of productivity. Increased demand from government employees – due to higher incomes – would raise prices of domestic goods. Under a regime of free trade, this would boost demand for cheaper imports, reducing demand for domestically manufactured goods even if the nominal exchange rate does not change. The real exchange rate would appreciate due to higher domestic prices. The Dutch disease model can be used to outline such a process in which the expansion of one sector leads to reduced outcomes for other sectors through price movements. In this model, the Indian State's policy choices to raise salaries in the public sector negatively affected manufacturing and can be seen as one of the reasons why the process of structural transformation in India has stagnated.

**Question of technology**  
One problem is that the framework was initially used to analyse the effects of a windfall discovery, not the effects of policy. The relatively higher salaries cannot easily be compared to the discovery of an oil field, because one is a conscious political decision undertaken by a democratically elected government, while the other is a natural endowment. One could argue that while the nature of the economies – one with a strong public sector and one with a natural resource endowment – is drastically different, the effects are the same and operate through the same channel of a real exchange rate appreciation. But turning the question around offers another way to view the problem. If high government salaries were initially a problem, why did technological growth not occur over the long run to make manufacturing more productive to sustain higher wages? The theory of 'induced innovation' holds that labour scarcity and high wages can induce technological and capital-biased growth. The economist Sir John Habakkuk hypothesised that 19th-century Britain grew faster than the U.S. because of its relative scarcity of land

and labour. Economic historian Robert C. Allen states that Britain's high wages ensured the need for technological innovation, which led to the Industrial Revolution occurring there rather than on the continent. In more contemporary times, Nobel laureate Daron Acemoglu used this to explain why automation led to faster productivity and wage growth in economies like Germany, Japan and South Korea – with an ageing labour force – while automation restricts wages in countries like the U.S., with a larger labour force.

**Limits of wages**  
An analysis of India's development story must focus on the nature of technological change and on why the private sector growth has not translated into rising wages. The question is stark in India's fast-growing services and software industries. Entry-level salaries at major Indian software giants have shown little growth since the 2000s, despite the retreat of the State, the proliferation of markets and the rise of the private sector billions.

A case can be made that India's modern software unicorns – such as Swiggy, Zomato, Blinkit and Ola – rely on India's abundant labour reserves rather than representing genuine technological upgrading. The Indian private sector has undoubtedly shown significant levels of dynamism and growth. But this growth has been lop-sided, as the rapid increase in inequality has shown us. If public sector salaries kept wages higher earlier, it is legitimate to ask why manufacturing has not responded with an adequate level of technological change to ensure productivity growth. Did government intervention prevent the ability to adopt new technology? Or did manufacturing become addicted to the reserves of cheap labour and not invest in technological upgrading, leading to a relative stagnation over time? Rahul Menon is associate professor at O.P. Jindal Global University

## THE GIST

India has lagged behind China and South Korea because the share of manufacturing in India's GDP has remained relatively constant and has recently lost ground to services, limiting productivity and income growth.

High government salaries drew workers away from manufacturing, raised economy-wide wages and prices, and led to a real exchange rate appreciation, making manufacturing less competitive.

Despite private sector dynamism, manufacturing failed to respond with adequate technological upgrading; instead, growth relied on abundant labour reserves, leading to lop-sided growth, rising inequality, and stagnation in wages and productivity.



## Why manufacturing has lagged in India भारत में विनिर्माण क्यों पिछड़ गया है

- **India's manufacturing sector underperforms** compared to **China** and **South Korea**, partly due to **public sector wages that raise costs and reduce competitiveness**  
भारत का विनिर्माण क्षेत्र, चीन और दक्षिण कोरिया की तुलना में कम प्रदर्शन करता है, आंशिक रूप से सार्वजनिक क्षेत्र की मजदूरी के कारण जो लागत बढ़ाती है और प्रतिस्पर्धात्मकता घटाती है
- Despite **growth in private industries like software and services**, India sees **limited technological upgrading, uneven wage growth, and increasing inequality**  
सॉफ्टवेयर और सेवाओं जैसी निजी उद्योगों की वृद्धि के बावजूद, भारत में सीमित तकनीकी उन्नयन, असमान वेतन वृद्धि, और बढ़ती असमानता देखी जाती है
- In a recent discussion of his book **A Sixth of Humanity**, economist **Arvind Subramanian** explained why **India has been unable to industrialise** to the extent of **China or South Korea**  
अपनी पुस्तक **A Sixth of Humanity** पर हालिया चर्चा में अर्थशास्त्री अरविंद सुब्रमण्यम ने बताया कि भारत चीन या दक्षिण कोरिया के स्तर तक औद्योगीकरण करने में असमर्थ क्यों रहा है
- In his view **high government salaries drew workers away from manufacturing**, raising prices and making it **difficult for the sector to remain competitive**, thus **hindering its expansion**
- The **Dutch disease** refers to a phenomenon where an **economic windfall** can often translate into **negative outcomes in other sectors**, such as **manufacturing**  
डच रोग उस परिघटना को दर्शाता है जहाँ आर्थिक अप्रत्याशित लाभ अक्सर विनिर्माण जैसे अन्य क्षेत्रों में नकारात्मक परिणामों में बदल जाता है
- It was initially coined to explain how the discovery of the **Groningen gas fields in 1959** affected **Dutch manufacturing**  
इस शब्द का प्रारंभिक प्रयोग 1959 में ग्रोनिंगन गैस क्षेत्रों की खोज ने डच विनिर्माण को कैसे प्रभावित किया, यह समझाने के लिए किया गया था
- The theory goes as follows imagine an economy where a **substantial holding of some natural resource** such as **oil or another important mineral** is discovered  
यह सिद्धांत इस प्रकार है कि कल्पना कीजिए किसी अर्थव्यवस्था में तेल या किसी अन्य महत्वपूर्ण खनिज जैसे प्राकृतिक संसाधन का बड़ा भंडार खोज लिया जाता है
- This would lead to a **rise in wages** as the sector bids away labour from other sectors raising the **economy-wide wage rate**  
इससे वेतनों में वृद्धि होती है क्योंकि वह क्षेत्र अन्य क्षेत्रों से श्रमिकों को आकर्षित करता है और पूरी अर्थव्यवस्था में वेतन दर बढ़ जाती है
- Moreover **exports of the resource** would lead to an **appreciation of the currency**, increasing **imports** and decreasing other **price-sensitive exports**  
इसके अलावा संसाधन के निर्यात से मुद्रा का मूल्य बढ़ता है, जिससे आयात बढ़ते हैं और अन्य मूल्य-संवेदनशील निर्यात घटते हैं
- These effects would hurt **domestic manufacturing**, which would be **outcompeted by cheap imports from abroad** and at the same time become **relatively expensive in foreign markets**
- **Increased demand from government employees** due to **higher incomes** would raise **prices of domestic goods**  
उच्च आय के कारण सरकारी कर्मचारियों की बढ़ी हुई मांग से घरेलू वस्तुओं की कीमतें बढ़ेंगी
- Under a regime of **free trade**, this would boost demand for **cheaper imports**, reducing demand for **domestically manufactured goods** even if the **nominal exchange rate does not change**  
मुक्त व्यापार की स्थिति में इससे सस्ते आयातों की मांग बढ़ेगी और घरेलू रूप से निर्मित वस्तुओं की मांग घटेगी, भले ही नाममात्र विनिमय दर न बदले
- The **real exchange rate** would appreciate due to **higher domestic prices**  
घरेलू कीमतों में वृद्धि के कारण वास्तविक विनिमय दर में सराहना होगी
- The **Dutch disease model** can be used to outline such a process in which the **expansion of one sector** leads to **reduced outcomes for other sectors through price movements**



- **Entry-level salaries** at major **Indian software giants** have shown **little growth** since the **2000s**, despite the **retreat of the State**, the **proliferation of markets** and the **rise of private sector billionaires**  
प्रमुख भारतीय सॉफ्टवेयर कंपनियों में प्रवेश-स्तर के वेतन ने 2000 के दशक से बहुत कम वृद्धि दिखाई है, जबकि राज्य की भूमिका में कमी, बाजारों का विस्तार और निजी क्षेत्र के अरबपतियों का उदय हुआ है
- A case can be made that India's **modern software unicorns** — such as **Swiggy, Zomato, Blinkit and Ola** — rely on **India's abundant labour reserves** rather than representing **genuine technological upgradation**  
यह तर्क दिया जा सकता है कि भारत के आधुनिक सॉफ्टवेयर यूनिकॉर्न — जैसे स्विगी, ज़ोमैटो, ब्लिंकिट और ओला — वास्तविक प्रौद्योगिकीय उन्नयन के बजाय भारत के प्रचुर श्रम भंडार पर निर्भर हैं
- The **Indian private sector** has undoubtedly shown **significant levels of dynamism and growth**  
भारतीय निजी क्षेत्र ने निस्संदेह गतिशीलता और वृद्धि के महत्वपूर्ण स्तर प्रदर्शित किए हैं
- But this growth has been **lop-sided**, as the rapid increase in **inequality** has shown us लेकिन यह वृद्धि एकतरफा रही है, जैसा कि असमानता में तेज वृद्धि से स्पष्ट होता है
- If **public sector salaries** kept wages higher earlier, it is legitimate to ask why **manufacturing** has not responded with an **adequate level of technological change** to ensure **productivity growth**  
यदि पहले सार्वजनिक क्षेत्र के वेतन ने मजदूरी को ऊँचा बनाए रखा, तो यह प्रश्न उचित है कि विनिर्माण ने उत्पादकता वृद्धि सुनिश्चित करने के लिए पर्याप्त प्रौद्योगिकीय परिवर्तन क्यों नहीं किया
- Did **government intervention** prevent the ability to adopt **new technology**  
क्या सरकारी हस्तक्षेप ने नई प्रौद्योगिकी अपनाने की क्षमता को रोका
- Or did **manufacturing become addicted to cheap labour reserves** and not invest in **technological upgradation**, leading to a **relative stagnation over time**  
या क्या विनिर्माण सस्ते श्रम भंडार का आदी हो गया और प्रौद्योगिकीय उन्नयन में निवेश नहीं किया, जिससे समय के साथ सापेक्ष ठहराव उत्पन्न हुआ

<b>GS Paper III: S&amp;T,</b>	
<b>TOPICS COVERED</b>	<b>25_12_2025</b>
1.	<b>ISRO's LVM3 rocket launches largest commercial communications satellite</b> ISRO के LVM3 रॉकेट ने सबसे बड़े वाणिज्यिक संचार उपग्रह का प्रक्षेपण किया
2.	<b>Telangana likely to get five more GI tags soon</b> तेलंगाना को जल्द मिल सकते हैं पाँच और GI टैग
3.	<b>Physical activity linked to lower breast cancer risk: ICMR study</b> शारीरिक गतिविधि से स्तन कैंसर का जोखिम कम जुड़ा: आईसीएमआर अध्ययन
4.	<b>Study catches 'high-flying' mosquitoes spreading pathogens</b> अध्ययन में रोगजनक फैलाने वाले 'उच्च-उड़ान' मच्छर पकड़े गए
5.	<b>QUIZ</b>



# ISRO's LVM3 rocket launches largest commercial communications satellite

GS III: S&T

**Hemanth C.S.**  
BENGALURU

The Indian Space Research Organisation (ISRO) placed the BlueBird Block-2 satellite in a low earth orbit (LEO) on Wednesday.

The Launch Vehicle Mark 3 (LVM3) lifted off from the second launch pad of the Satish Dhawan Space Centre in Sriharikota at 8.55 a.m., and 15 minutes later, placed the satellite in the intended orbit.

The ISRO accomplished two milestones with this mission as it was able to deploy the largest commercial communications satellite in a low earth orbit, and the BlueBird Block-2 satellite, weighing 6,100 kg, became the heaviest

payload to be launched by LVM3 from Indian soil.

“LVM3 Bahubali rocket M6 launch vehicle has successfully and precisely injected the BlueBird Block-2 communication satellite in the intended orbit. This is the first dedicated commercial launch for a customer from the U.S.,” ISRO Chairman V. Narayanan said. The BlueBird Block-2 communication satellite, developed by AST Space-Mobile in the U.S., is part of a next generation of the communication satellites, designed to provide space-based cellular broadband connectivity directly to standard mobile smartphones.

“I am extremely happy to announce the performance of the orbit that we

have got is less than two kilometres. This is one of the best performances of any launch vehicle in the global arena,” Dr. Narayanan said.

## Display of reliability

Wednesday's success demonstrated the reliability of India's space programme, Prime Minister Narendra Modi said. “Powered by India's youth, our space programme is getting more advanced and impactful. With LVM3 demonstrating reliable heavy-lift performance, we are strengthening the foundations for future missions such as Gaganyaan, expanding commercial launch services and deepening global partnerships. This increased capability and boost to

self-reliance are wonderful for the coming generations,” Mr. Modi posted on X.

“BlueBird block-2 mission is part of a global LEO constellation to provide direct-to-mobile connectivity through satellite. This constellation will enable 4G and 5G voice and video calls, texts, streaming, and data for everyone, everywhere, at all times. It features a 223m<sup>2</sup> phased array, making it the largest commercial communications satellite ever deployed into low Earth orbit,” the ISRO said.

Dr. Narayanan said that the LVM3-M6 mission was the 104<sup>th</sup> launch from Sriharikota and also the ninth successful mission of the LVM-3 launch vehicle.

## ISRO's LVM3 rocket launches largest commercial communications satellite ISRO के LVM3 रॉकेट ने सबसे बड़े वाणिज्यिक संचार उपग्रह का प्रक्षेपण किया

- **ISRO's LVM3 rocket launches largest commercial communications satellite**  
ISRO के LVM3 रॉकेट ने सबसे बड़े वाणिज्यिक संचार उपग्रह का प्रक्षेपण किया
- The **Indian Space Research Organisation (ISRO)** placed the **BlueBird Block-2 satellite** in a **low earth orbit (LEO)** on Wednesday.  
भारतीय अंतरिक्ष अनुसंधान संगठन (ISRO) ने बुधवार को **BlueBird Block-2 उपग्रह** को निम्न पृथ्वी कक्षा (LEO) में स्थापित किया।
- The **Launch Vehicle Mark 3 (LVM3)** lifted off from the **second launch pad** of the **Satish Dhawan Space Centre in Sriharikota** at **8.55 a.m.**, and **15 minutes** later, placed the satellite in the **intended orbit**.  
लॉन्च व्हीकल मार्क 3 (LVM3) ने श्रीहरिकोटा स्थित सतीश धवन अंतरिक्ष केंद्र के दूसरे लॉन्च पैड से सुबह 8.55 बजे उड़ान भरी, और 15 मिनट बाद उपग्रह को निर्धारित कक्षा में स्थापित किया।
- The ISRO accomplished **two milestones** with this mission as it was able to deploy the **largest commercial communications satellite** in a **low earth orbit**, and the **BlueBird Block-2 satellite**, weighing **6,100 kg**, became the **heaviest payload** to be launched by **LVM3 from Indian soil**.  
इस मिशन के साथ ISRO ने दो उपलब्धियाँ हासिल कीं क्योंकि यह निम्न पृथ्वी कक्षा में सबसे बड़े वाणिज्यिक संचार उपग्रह को तैनात करने में सफल रहा, और 6,100 किलोग्राम वजनी BlueBird Block-2 उपग्रह, भारतीय धरती से LVM3 द्वारा प्रक्षेपित किया गया सबसे भारी पेलोड बन गया।
- “**LVM3 Bahubali rocket M6 launch vehicle** has successfully and precisely injected the **BlueBird Block-2 communication satellite** in the **intended orbit**. This is the **first**



dedicated commercial launch for a customer from the U.S.," ISRO Chairman V. Narayanan said.

"LVM3 बाहुबली रॉकेट M6 लॉन्च वाहन ने BlueBird Block-2 संचार उपग्रह को निर्धारित कक्षा में सफलतापूर्वक और सटीक रूप से स्थापित किया है। यह अमेरिका के ग्राहक के लिए पहला समर्पित वाणिज्यिक प्रक्षेपण है," ISRO अध्यक्ष वी. नारायणन ने कहा।

- The **BlueBird Block-2 communication satellite**, developed by **AST SpaceMobile in the U.S.**, is part of a **next generation** of the communication satellites, designed to provide **space-based cellular broadband connectivity** directly to **standard mobile smartphones**.

- "**BlueBird block-2 mission is part of a global LEO constellation to provide direct-to-mobile connectivity through satellite.**

This constellation will enable **4G and 5G voice and video calls, texts, streaming, and data for everyone, everywhere, at all times.** It features a **223m<sup>2</sup> phased array**, making it the **largest commercial communications satellite ever deployed into low Earth orbit**," the ISRO said.

"BlueBird block-2 मिशन उपग्रह के माध्यम से डायरेक्ट-टू-मोबाइल कनेक्टिविटी प्रदान करने वाली वैश्विक LEO कॉन्स्टेलेशन का हिस्सा है। यह कॉन्स्टेलेशन 4G और 5G वॉयस व वीडियो कॉल, टेक्स्ट, स्ट्रीमिंग और डेटा को हर किसी के लिए, हर जगह, हर समय सक्षम बनाएगा। इसमें 223m<sup>2</sup> फेज्ड एरे है, जो इसे निम्न पृथ्वी कक्षा में अब तक तैनात किया गया सबसे बड़ा वाणिज्यिक संचार उपग्रह बनाता है," ISRO ने कहा।

- Dr. Narayanan said that the **LVM3-M6 mission was the 104th launch from Sriharikota and also the ninth successful mission of the LVM-3 launch vehicle.**

डॉ. नारायणन ने कहा कि LVM3-M6 मिशन श्रीहरिकोटा से 104वाँ प्रक्षेपण था और साथ ही LVM-3 लॉन्च वाहन का नौवाँ सफल मिशन भी था।



**GS III: S&T**  
**New horizons:** ISRO's LVM3 lifts off carrying the Bluebird Block-2 satellite from Sriharikota on Wednesday. AFP

## Telangana likely to get five more GI tags soon

**GS III: S&T**

**The Hindu Bureau**  
HYDERABAD

Telangana is stepping up efforts to safeguard its traditional crafts and region-specific products by securing Geographical Indication (GI) tags.

It has already filed applications for several items, and five of them – Narayanpet jewellery making, Hyderabad pearls, Banjara tribal jewellery, Banjara needle craft, and Batik paintings – are in the final stages of approval.

Comprehensive documentation and field studies for these products have been completed, according to official sources.



**Eloquent sheen:** Craftspersons in Telangana are skilled at sorting and stringing the famed Hyderabad pearls. FILE PHOTO

In addition, applications are pending for Armoor turmeric, Nalgonda chitti dosakai, Kollapur Benishan mango, Mahadevpur tussar silk, Jagtial sesame, and Nayakpod masks, sig-

nalling the government's commitment to expanding the GI portfolio. Over the past two years, the Congress-led government has successfully secured two GI tags: Hyderabad lac nan-

gles (2024) and Warangal chapata chilli (2025).

### Crucial role

The GI recognition, granted by the Geographical Indication Registry under the Centre, enhances the value and authenticity of products by highlighting their unique origin and heritage. These tags play a crucial role in creating sustainable employment, boosting rural incomes, and preserving traditional knowledge systems – contributing to inclusive economic growth among farming and artisan communities.

Currently, Telangana has 18 GI-tagged products,

including Pochampally Ikat, Adilabad dokra, Warangal durrries, Puttapaka telia rumal, Tandur red gram, Gadwal sari, Siddipet gollabama, Cheriya painting, and Hyderabad haleem.

At least 12 more products are in the pipeline for recognition.

Looking ahead, the State government plans to identify additional GI-worthy products across food, handicrafts, textiles, and other categories.

It also intends to set up GI galleries at key locations to showcase GI products and promote them as authentic sourcing destinations.



## Telangana likely to get five more GI tags soon तेलंगाना को जल्द मिल सकते हैं पाँच और GI टैग

- Telangana is stepping up efforts to safeguard its traditional crafts and region-specific products by securing **Geographical Indication (GI) tags**.
- It has already filed applications for several items, and five of them — **Narayanpet jewellery making, Hyderabad pearls, Banjara tribal jewellery, Banjara needle craft, and Batik paintings** — are in the final stages of approval.
- In addition, applications are pending for **Armoor turmeric, Nalgonda chitti dosakai, Kollapur Benishan mango, Mahadevpur tussar silk, Jagtial sesame, and Nayakpod masks**, signalling the government's commitment to expanding the GI portfolio.
- Over the past two years, the **Congress-led government** has successfully secured two GI tags: **Hyderabad lac bangles (2024)** and **Warangal chapata chilli (2025)**.  
पिछले दो वर्षों में, कांग्रेस-नेतृत्व वाली सरकार ने सफलतापूर्वक दो GI टैग हासिल किए हैं: हैदराबाद लैक चूड़ियाँ (2024) और वारंगल चपाटा मिर्च (2025)।

### Crucial role महत्वपूर्ण भूमिका

- The **GI recognition, granted by the Geographical Indication Registry under the Centre, enhances the value and authenticity of products by highlighting their unique origin and heritage.**  
केंद्र के अधीन भौगोलिक संकेत रजिस्ट्री द्वारा दिया गया GI दर्जा, उत्पादों की विशिष्ट उत्पत्ति और विरासत को उजागर कर उनके मूल्य और प्रामाणिकता को बढ़ाता है।
- **These tags play a crucial role in creating sustainable employment, boosting rural incomes, and preserving traditional knowledge systems** — contributing to **inclusive economic growth** among farming and artisan communities.  
ये टैग सतत रोज़गार सृजन, ग्रामीण आय बढ़ाने और पारंपरिक ज्ञान प्रणालियों के संरक्षण में महत्वपूर्ण भूमिका निभाते हैं — जिससे समावेशी आर्थिक विकास को बढ़ावा मिलता है।
- **Currently, Telangana has 18 GI-tagged products, including Pochampally Ikat, Adilabad dokra, Warangal durries, Puttapaka telia rumal, Tandur red gram, Gadwal sari, Siddipet gollabama, Cherial painting, and Hyderabad haleem.**
- It also intends to **set up GI galleries** at key locations to showcase GI products and promote them as **authentic sourcing destinations**.



# Physical activity linked to lower breast cancer risk: ICMR study

GS III: S&T

**Bindu Shajan Perappadan**  
NEW DELHI

Higher levels of physical activity have been shown to contribute to lowering the risk of breast cancer in individuals, a study has found, while indicating that reproductive timing, hormonal exposure, central obesity, and family history also influence the occurrence of the disease. The odds of developing breast cancer were three times higher in women over 50 years compared with those under 35 years.

Women reporting more than two induced abortions had a higher risk compared with those with no abortions, while breastfeeding duration and use of oral contraceptives showed no significant association with breast cancer risk.

A recent research paper titled "Understanding female breast cancer risk in



In India, breast cancer accounts for nearly a quarter (22.8%) of cancers among women. REPRESENTATIVE IMAGE

the Indian population: Evidence from a systematic review and meta-analysis", published by the Indian Council of Medical Research, said there was a need for large, population-based prospective cohort studies in India to define breast cancer prevention and early detection strategies with greater precision.

The paper added that breast cancer incidence in India is expected to rise by about 5.6% annually, tran-

slating into an estimated increase of 0.05 million new cases per year.

In India, breast cancer is one of the leading cancer sites, accounting for nearly a quarter (22.8%) of cancers among women. The observed five-year survival rates were 81% for cases detected at a localised stage, 65.5% for those with regional spread, and 18.3% for cases diagnosed with distant metastasis, where cancer cells have travelled

from the primary tumour.

The systematic review and meta-analysis aimed to examine the influence of India's unique context on breast cancer risk, by identifying and synthesising population-specific risk factors. For the study, a systematic literature search was conducted across the PubMed, Scopus, and Embase databases up to December 22, 2024. Observational studies assessing breast cancer risk factors among Indian women were included.

The research also noted that among lifestyle factors, poor sleep quality, irregular sleep patterns, sleeping in a lighted room, and elevated stress levels were contributing risk factors.

It suggested that public health efforts should prioritise reduction of central obesity and early reproductive health counselling.

## Physical activity linked to lower breast cancer risk: ICMR study

### शारीरिक गतिविधि से स्तन कैंसर का जोखिम कम जुड़ा: आईसीएमआर अध्ययन

- Higher levels of **physical activity** have been shown to contribute to lowering the risk of **breast cancer** in individuals, a study has found, while indicating that **reproductive timing**, **hormonal exposure**, **central obesity**, and **family history** also influence the occurrence of the disease.  
अध्ययन में पाया गया है कि शारीरिक गतिविधि के उच्च स्तर से स्तन कैंसर का जोखिम कम होता है, साथ ही प्रजनन समय, हार्मोनल संपर्क, केंद्रीय मोटापा, और पारिवारिक इतिहास भी बीमारी की घटना को प्रभावित करते हैं।
- The odds of developing **breast cancer** were **three times higher** in women **over 50 years** compared with those **under 35 years**.  
**35 वर्ष से कम** आयु की महिलाओं की तुलना में **50 वर्ष से अधिक** आयु की महिलाओं में **स्तन कैंसर** होने की संभावना **तीन गुना अधिक** पाई गई।
- Women reporting **more than two induced abortions** had a **higher risk** compared with those with **no abortions**, while **breastfeeding duration** and use of **oral contraceptives** showed **no significant association** with breast cancer risk.  
जिन महिलाओं ने **दो से अधिक गर्भपात** की रिपोर्ट की, उनमें **गर्भपात न कराने** वाली महिलाओं की तुलना में **अधिक जोखिम** पाया गया, जबकि **स्तनपान की अवधि** और **मौखिक गर्भनिरोधकों** के उपयोग का स्तन कैंसर जोखिम से **कोई महत्वपूर्ण संबंध** नहीं दिखा।
- A recent research paper titled "Understanding female breast cancer risk in the Indian population: Evidence from a systematic review and meta-analysis", published by the Indian Council of Medical Research, said there was a need for **large, population-based**



**prospective cohort studies** in India to define **breast cancer prevention and early detection strategies** with greater precision.

भारतीय चिकित्सा अनुसंधान परिषद द्वारा प्रकाशित हालिया शोध पत्र “**Understanding female breast cancer risk in the Indian population: Evidence from a systematic review and meta-analysis**” में कहा गया कि भारत में **स्तन कैंसर की रोकथाम और शीघ्र पहचान रणनीतियों** को अधिक सटीक रूप से परिभाषित करने के लिए **बड़े, जनसंख्या-आधारित भावी कोहोर्ट अध्ययन** की आवश्यकता है।

- The paper added that **breast cancer incidence** in India is expected to rise by about **5.6% annually**, translating into an estimated increase of **0.05 million new cases per year**.  
पत्र में यह भी जोड़ा गया कि भारत में **स्तन कैंसर की घटनाएं** प्रति वर्ष लगभग **5.6%** की दर से बढ़ने की उम्मीद है, जिससे हर साल अनुमानित **0.05 मिलियन नए मामले** बढ़ेंगे।
- In India, **breast cancer** is one of the **leading cancer sites**, accounting for nearly a **quarter (22.8%)** of cancers among women.  
भारत में **स्तन कैंसर** प्रमुख **कैंसर स्थलों** में से एक है, जो महिलाओं में कुल कैंसर मामलों का लगभग **एक चौथाई (22.8%)** है।
- The observed **five-year survival rates** were **81%** for cases detected at a **localised stage**, **65.5%** for those with **regional spread**, and **18.3%** for cases diagnosed with **distant metastasis**, where cancer cells have travelled from the **primary tumour**.  
देखी गई **पांच-वर्षीय जीवित रहने की दर स्थानीय चरण** में पाए गए मामलों के लिए **81%**, **क्षेत्रीय प्रसार** वाले मामलों के लिए **65.5%**, और **दूरस्थ मेटास्टेसिस** के साथ निदान किए गए मामलों के लिए **18.3%** थी, जहां कैंसर कोशिकाएं **प्राथमिक ट्यूमर** से फैल चुकी थीं।
- The **systematic review and meta-analysis** aimed to examine the influence of **India's unique context** on breast cancer risk, by identifying and synthesising **population-specific risk factors**.  
**सिस्टमैटिक रिव्यू और मेटा-एनालिसिस** का उद्देश्य **भारत की विशिष्ट परिस्थितियों** का स्तन कैंसर जोखिम पर प्रभाव जांचना था, इसके लिए **जनसंख्या-विशिष्ट जोखिम कारकों** की पहचान और संश्लेषण किया गया।
- For the study, a **systematic literature search** was conducted across the **PubMed, Scopus, and Embase** databases up to **December 22, 2024**.  
अध्ययन के लिए **22 दिसंबर 2024** तक **PubMed, Scopus, और Embase** डेटाबेस में **सिस्टमैटिक साहित्य खोज** की गई।
- **Observational studies** assessing breast cancer risk factors among **Indian women** were included.  
**भारतीय महिलाओं** में स्तन कैंसर जोखिम कारकों का आकलन करने वाले **पर्यवेक्षणीय अध्ययन** शामिल किए गए।
- The research also noted that among **lifestyle factors, poor sleep quality, irregular sleep patterns, sleeping in a lighted room, and elevated stress levels** were contributing risk factors.  
शोध में यह भी पाया गया कि **जीवनशैली कारकों** में **खराब नींद की गुणवत्ता, अनियमित नींद पैटर्न, रोशनी वाले कमरे में सोना, और उच्च तनाव स्तर** योगदान देने वाले जोखिम कारक थे।
- It suggested that **public health efforts** should prioritise reduction of **central obesity and early reproductive health counselling**.  
इसमें सुझाव दिया गया कि **सार्वजनिक स्वास्थ्य प्रयासों** को **केंद्रीय मोटापा कम करने और प्रारंभिक प्रजनन स्वास्थ्य परामर्श** को प्राथमिकता देनी चाहिए।



## Study catches 'high-flying' mosquitoes spreading pathogens

CS III: S&T

**M**osquitoes spread diseases such as malaria and dengue, and these diseases affect billions of people worldwide. Many public health plans assume that pathogens borne by mosquitoes spread over long distances when infected people or animals travel. But there's another possible route: some mosquitoes regularly fly high above the ground and get carried by winds for tens to hundreds of kilometres in a night.

Scientists have suspected for decades that these high-flying mosquitoes could move pathogens far from where the mosquitoes first took an infected blood meal. Until recently, this idea hasn't been tested directly by screening mosquitoes caught at altitude for the pathogens they carry.

Researchers from China, Ghana, Mali, and the USA set out to test this idea in West Africa by collecting mosquitoes in the air, instead of near homes or breeding sites. They used nets attached to helium balloons and suspended them about 120 to 290 m above the ground at sites in Mali and Ghana in Africa. They flew these balloons for 191 nights between 2018 and 2020 to capture mosquitoes actively moving with the wind. The team then identified the mosquito species using DNA sequencing and tested individual females for several major pathogen groups using

**If high-altitude movement is routine, then ground level monitoring may miss part of the picture, especially for sylvatic pathogens that are hard to track**

- They used **nets attached to helium balloons** and suspended them about **120 to 290 m above the ground** at sites in **Mali and Ghana** in Africa
- The **team then identified the mosquito species using DNA sequencing** and tested **individual females** for several major **pathogen groups** using **PCR-based methods**
- The researchers also **separated some mosquitoes into abdomen and head and thorax sections**

शोधकर्ताओं ने कुछ मच्छरों को उदर और सिर तथा वक्ष भागों में भी अलग किया

- This was done because **pathogens may first be present in the gut after a blood meal**, but a mosquito is more likely to be able to **transmit a pathogen** after it spreads through the body and reaches tissues in the **head and thorax**
- They found that the **high-flying mosquitoes** were commonly **infected with pathogens**, including those that could **infect vertebrates**

उन्होंने पाया कि **ऊँचाई पर उड़ने वाले मच्छर** सामान्य रूप से रोगजनकों से संक्रमित थे, जिनमें वे भी शामिल थे जो **कशेरुकी जीवों** को संक्रमित कर सकते हैं

- About **8% carried Plasmodium parasites** including **malaria parasites** लगभग **8 प्रतिशत मच्छरों में प्लाज़्मोडियम परजीवी** पाए गए जिनमें **मलेरिया परजीवी** भी शामिल थे

PCR-based methods.

The researchers also separated some mosquitoes into abdomen and head and thorax sections. This was done because pathogens may first be present in the gut after a blood meal, but a mosquito is more likely to be able to transmit a pathogen after it spreads through the body and reaches tissues in the head and thorax.

In all, the researchers screened 1,017 female mosquitoes of 61 species. Many were gravid (carrying mature eggs). They found that the high-flying mosquitoes were commonly infected with pathogens, including those that could infect vertebrates. About 8% carried *Plasmodium* parasites (including malaria parasites), about 3.5% carried flaviviruses, and about 1.6% carried filarial worms.

When the team specifically looked for signs of disseminated infection in head and thorax tissues, the rates were 4.6% for *Plasmodium*, 1.1% for flaviviruses, and 0.6% for filariae. Per the team members, these detections are proof that a fraction of the high-flying mosquitoes weren't just exposed but were likely capable of infecting a new host after landing.

The findings were published in *Proceedings of the National Academy of Sciences* in November.

The team also identified 21 mosquito-borne pathogen types infecting vertebrates. These included dengue virus, West Nile virus, and M'Poko virus; 15 bird-infecting *Plasmodium* species; and filarial nematodes including a *Pelecitus* species. The study also found that many of the detected pathogens were sylvatic, meaning they circulate among wild animals rather than mainly among humans.

If high-altitude movement is routine, then monitoring only at ground level may miss part of the picture, especially for sylvatic pathogens that are hard to track in wild hosts. The authors have argued that public health schemes could benefit from paying attention to the prevailing wind corridors, surveilling downwind areas during transmission seasons, and preparing rapid response when infections appear in new locations.

## Study catches 'high-flying' mosquitoes spreading pathogens

अध्ययन में रोगजनक फैलाने वाले 'उच्च-उड़ान' मच्छर पकड़े गए

Mosquitoes and long-distance disease spread

मच्छर और लंबी दूरी तक रोगों का प्रसार

- Mosquitoes spread diseases such as malaria and dengue, and these diseases affect billions of people worldwide

- But there's another possible route some mosquitoes regularly fly high above the ground and get carried by winds for tens to hundreds of kilometres in a night

लेकिन एक और संभावित मार्ग भी है कुछ मच्छर नियमित रूप से ज़मीन से बहुत ऊपर उड़ते हैं और हवाओं द्वारा एक ही रात में दसियों से सैकड़ों किलोमीटर तक पहुँच जाते हैं

- Scientists have suspected for decades that these high-flying mosquitoes could move pathogens far from where the mosquitoes first took an infected blood meal

- Researchers from China, Ghana, Mali, and the USA set out to test this idea in West Africa by collecting mosquitoes in the air, instead of near homes or breeding sites

चीन, घाना, माली और अमेरिका के शोधकर्ताओं ने पश्चिम अफ्रीका में इस विचार की जाँच के लिए मच्छरों को हवा में एकत्र किया, न कि घरों या प्रजनन स्थलों के पास





- About **3.5% carried flaviviruses**  
लगभग 3.5 प्रतिशत में फ्लैविवायरस पाए गए
- About **1.6% carried filarial worms**
- The team also identified **21 mosquito-borne pathogen types** infecting **vertebrates**  
टीम ने कशेरुकी जीवों को संक्रमित करने वाले 21 मच्छर-जनित रोगजनक प्रकारों की भी पहचान की
- These included **dengue virus, West Nile virus, and M'Poko virus**  
इनमें डेंगू वायरस, वेस्ट नाइल वायरस, और एम'पोको वायरस शामिल थे
- They also included **15 bird-infecting Plasmodium species**  
इनमें पक्षियों को संक्रमित करने वाली 15 प्लाज़्मोडियम प्रजातियाँ भी शामिल थीं
- And **filarial nematodes** including a **Pelecitus species**  
और फाइलेरियल नेमाटोड, जिनमें एक पेलिसिटस प्रजाति भी शामिल थी
- If **high-altitude movement** is routine then monitoring only at **ground level** may miss **part of the picture**, especially for **sylvatic pathogens** that are hard to track in **wild hosts**
- The authors have argued that **public health schemes** could benefit from paying attention to **prevailing wind corridors, surveilling downwind areas** during **transmission seasons**, and preparing **rapid response** when infections appear in **new locations**

pendulum can be used to keep time and the mathematics of the centrifugal force. These findings gave Newton the building blocks he needed to develop his own mechanics. Newton also drew on Y's methods and results when analysing orbital motion. Name Y.

Answers to December 23 quiz:

1. Words that were combined for 'transistor' – Ans: **Transfer, resistor**
2. Expansion of MOSFET – Ans: **Metal oxide semiconductor field effect transistor**
3. Attribute that Dennard's scaling preserves – Ans: **Power density**
4. Transistor type that 'remembers' past states – Ans: **Memristor**
5. Transistors with a fin for a channel – Ans: **FinFETs**

Visual: **Heinrich Welker**

First contact: Hareesh Janakiraman | K.N. Viswanathan | Suresh Rasulwar | Anmol Agrawal | Rohit Koli

## QUIZ

### 'Transistor'

- A transistor is a **semiconductor device** used to **control, amplify, or switch** electrical signals
- It is the **fundamental building block of all modern electronic devices**, including computers, mobile phones, satellites, and communication systems
- The invention of the transistor marked the **beginning of the modern electronics era**, replacing **bulky and inefficient vacuum tubes**
- **Transfer** refers to the device's ability to **transfer or control an electrical signal**
- **Resistor** indicates that this transfer occurs through a **resistive semiconductor material**

• A device that **transfers electrical signals** through a **resistive medium** under **controlled conditions**

- The transistor was invented in **1947**
- Developed at **Bell Telephone Laboratories (Bell Labs), USA**
- Key scientists involved
- **John Bardeen**
- **Walter Brattain**
- **William Shockley**

• The invention was considered so revolutionary that the inventors were awarded the **Nobel Prize in Physics in 1956**

## MOSFET

- **MOSFET** stands for **Metal Oxide Semiconductor Field Effect Transistor**
- It is a **voltage-controlled semiconductor device** used for **switching and amplification**
- MOSFETs are the **most widely used electronic components** in modern digital and power electronics
- They form the **core element of integrated circuits (ICs)**, microprocessors, memory chips, and **power control systems**



## Meaning of Each Term in MOSFET

### Metal

- Refers to the **gate electrode**
- Initially made of **aluminium**
- In modern devices, often made of **polysilicon or metal gates** for better performance

### Oxide

- Refers to a very thin insulating layer of **silicon dioxide (SiO<sub>2</sub>)**
- This oxide layer **separates the gate from the semiconductor channel**
- It enables control of current **without direct electrical contact**

### Semiconductor

- Usually **silicon**, the base material of most electronic devices
- The current flows through a **semiconductor channel** formed inside silicon

### Field Effect

- The flow of current is controlled by an **electric field**, not by current injection
- **Applying voltage at the gate creates an electric field that controls charge carriers**

### Transistor

- A device that can **switch electronic signals ON or OFF**
- Can also **amplify** electrical signals

### Basic Structure of a MOSFET

- **Gate** – controls the device
- **Source** – where charge carriers enter
- **Drain** – where charge carriers exit
- **Substrate (Body)** – base semiconductor material

### Types of MOSFETs

- **NMOS**
  - Uses electrons as majority charge carriers
- **PMOS**
  - Uses holes as majority charge carriers
- **Enhancement Mode MOSFET**
  - Channel forms only when gate voltage is applied
- **Depletion Mode MOSFET**
  - Channel exists even without gate voltage

### Why MOSFET is So Important

- Extremely **low power consumption**
- Very **high switching speed**
- High **input impedance**
- Excellent **scalability**, allowing billions of MOSFETs on a single chip

### Role of MOSFET in Modern Technology



- Used in
  - Computers and laptops
  - Smartphones and tablets
  - Power adapters and inverters
  - Space and defence electronics
  - Digital India and semiconductor mission initiatives
- Modern processors contain **billions of MOSFETs** operating simultaneously

## Attribute Preserved by Dennard's Scaling

### Power Density

- **Dennard's scaling** is a fundamental principle in **semiconductor physics and microelectronics**
  - It was proposed in **1974** by **Robert H. Dennard** and his colleagues at **IBM**
  - The principle explains how **transistors can be scaled down in size** while maintaining efficient performance
- Dennard's scaling became the **theoretical foundation** behind the rapid progress of **Moore's Law-driven chip miniaturisation**

### Power Density

- **Power density** means
  - Power consumed **per unit area** of a chip
- Dennard's scaling states that
  - Even as **more transistors are packed into the same chip area**,
  - The **power density remains constant**

### Memristor

- A **memristor** is an electronic device whose **resistance depends on the history of current or voltage** that has passed through it
  - It is called a "**memory resistor**", as it can **remember its past electrical states even when power is turned off**
  - This unique property makes the memristor fundamentally different from conventional transistors, resistors, capacitors, and inductors
- In exam-oriented terms
  - The transistor-like device that **remembers past states** is the **Memristor**

### FinFETs (Fin Field-Effect Transistors)

- **FinFETs** are a type of **advanced MOSFET architecture** in which the **conducting channel is shaped like a vertical fin**
  - The **gate wraps around the fin on three sides**, providing better control over the channel
  - FinFETs were developed to overcome the **limitations of traditional planar MOSFETs** at very small technology nodes
- **Fin**: Refers to the **thin, vertical silicon fin** that forms the channel
- **FET (Field Effect Transistor)**
  - Current flow is controlled by an **electric field** applied at the gate
- Thus, a **FinFET** is a **field-effect transistor with a fin-shaped channel**



## GS Paper III: Environment,

### TOPICS COVERED

25\_12\_2025

1. States told to abide by SC order halting Aravalli mine leases  
राज्यों को अरावली खनन पट्टों पर रोक लगाने वाले SC आदेश का पालन करने को कहा गया

# States told to abide by SC order halting Aravalli mine leases

## GS III: Environment

Jacob Koshy

NEW DELHI

Amid criticism from environmental activists and allegations that vast tracts of the Aravalli ranges could be opened for mining, the Union Environment Ministry on Wednesday issued orders to the Chief Secretaries of Haryana, Rajasthan, and Gujarat, asking them to enforce the Supreme Court's direction preventing grant of new mining leases across the region till a management plan is finalised.

Existing mines with permissions will be allowed, provided they "strictly" comply with norms.

### 'Sustainable mining'

A letter has also been sent to the Director-General of the Indian Council of Forestry Research and Education (ICFRE), an expert body affiliated to the Environment Ministry, directing it to prepare a Management Plan for Sustainable Mining that should identify "permissible areas for mining" as well those that are "ecologically sensi-



Existing permitted mines with will be allowed, provided they 'strictly' comply with norms.

tive, conservation-critical, and restoration-priority areas within the landscape where mining would be permitted only under exceptional circumstances." No deadline has been specified to complete the task.

The Supreme Court on November 20 accepted the the definition of the Aravalli hills, recommended by a committee of experts, including representatives of the Union Environment Ministry.

EDITORIAL  
» PAGE 8

Education (ICFRE), an expert body affiliated to the Environment Ministry, directing it to prepare a Management Plan for Sustainable Mining that should identify "permissible areas for mining" as well those that are "ecologically sensitive, conservation-critical, and restoration-priority areas within the landscape where mining would be permitted only under exceptional circumstances."

## States told to abide by SC order halting Aravalli mine leases

राज्यों को अरावली खनन पट्टों पर रोक लगाने वाले SC आदेश का पालन करने को कहा गया



- States told to abide by SC order halting Aravalli mine leases

राज्यों को SC आदेश का पालन करने को कहा गया, जो अरावली खनन पट्टों पर रोक लगाता है

- Amid criticism from environmental activists and allegations that vast tracts of the Aravalli ranges could be opened for mining, the Union

Environment Ministry on Wednesday issued orders to the Chief Secretaries of Haryana, Rajasthan, and Gujarat, asking them to enforce the Supreme Court's direction preventing grant of new mining leases across the region till a management plan is finalised.

पर्यावरण कार्यकर्ताओं की आलोचना और आरोपों के बीच कि अरावली पर्वतमालाओं के बड़े हिस्से खनन के लिए खोले जा सकते हैं, केंद्रीय पर्यावरण मंत्रालय ने बुधवार को हरियाणा, राजस्थान और गुजरात के मुख्य सचिवों को आदेश जारी कर सुप्रीम कोर्ट के निर्देश को लागू करने को कहा, जिसके तहत प्रबंधन योजना • nalised होने तक पूरे क्षेत्र में नए खनन पट्टों के अनुदान को रोका गया है।

- Existing mines with permissions will be allowed, provided they "strictly" comply with norms.

मौजूदा खदानों को जिनके पास अनुमति है, उन्हें अनुमति दी जाएगी, बशर्ते वे मानदंडों का "strictly" पालन करें।

### 'Sustainable mining'

'सतत खनन'

- A letter has also been sent to the Director-General of the Indian Council of Forestry Research and



<b>GS Paper III: IS</b>	
<b>TOPICS COVERED</b>	<b>25 12 2025</b>
<b>1. CBI arrests 2 bank officials for opening of mule accounts</b>	<b>CBI ने म्यूल अकाउंट खोलने के मामले में 2 बैंक अधिकारियों को गिरफ्तार किया</b>

## CBI arrests 2 bank officials for opening of mule accounts

**GS III: Internal Security**

**The Hindu Bureau**  
NEW DELHI

The Central Bureau of Investigation (CBI) on Wednesday arrested two bank officials allegedly involved in the opening of mule accounts in conspiracy with organised cyber criminals. The accounts were later used to transfer funds generated through cyber fraud.

The accused have been identified as Shalini Sinha, Assistant Manager in Canara Bank, and Abhishek Kumar, Business Development Associate in Axis Bank. Both were posted in Patna. While the first accused was held in Uttar Pradesh's Varanasi, the second was picked up from Bettiah in Bihar. The role of other bank officials is under investigation.

## CBI arrests 2 bank officials for opening of mule accounts CBI ने म्यूल अकाउंट खोलने के मामले में 2 बैंक अधिकारियों को गिरफ्तार किया

•The Central Bureau of Investigation (CBI) on Wednesday arrested two bank officials allegedly involved in the opening of mule accounts in conspiracy with organised cyber criminals.

केंद्रीय अन्वेषण ब्यूरो (CBI) ने बुधवार को संगठित साइबर अपराधियों के साथ साजिश में म्यूल अकाउंट खोलने में कथित रूप से शामिल दो बैंक अधिकारियों को गिरफ्तार किया।

•The accounts were later used to transfer funds generated through cyber fraud.

इन खातों का बाद में साइबर धोखाधड़ी से उत्पन्न धनराशि को स्थानांतरित करने के लिए उपयोग किया गया।

•The accused have been identified as Shalini Sinha, Assistant Manager in Canara Bank, and Abhishek Kumar, Business Development Associate in Axis Bank.

आरोपियों की पहचान केनरा बैंक की असिस्टेंट मैनेजर शालिनी सिन्हा और एक्सिस बैंक के बिज़नेस डेवलपमेंट एसोसिएट अभिषेक कुमार के रूप में हुई है।

•Both were posted in Patna.

दोनों की पोस्टिंग पटना में थी।

•While the first accused was held in Uttar Pradesh's Varanasi, the second was picked up from Bettiah in Bihar.

जहाँ पहले आरोपी को उत्तर प्रदेश के वाराणसी से पकड़ा गया, वहीं दूसरे आरोपी को बिहार के बेतिया से हिरासत में लिया गया।

•The role of other bank officials is under investigation.

अन्य बैंक अधिकारियों की भूमिका की जांच जारी है।

<b>DAILY CURRENT AFFAIRS(GS Paper IV and Essay)</b>	
<b>TOPICS COVERED</b>	<b>25 12 2025</b>
<b>1. The digital narcissus</b>	<b>डिजिटल नार्सिसस</b>



## The digital narcissus

Essay

There was a time when evolution depended on confrontation. Not the violent kind, but the friction of minds, the discomfort of critique, the pain of discovering that one may be wrong. Out of this struggle, humanity refined its reason, sharpened its justice, and defined its truth. But today, we are entering an era where machines are programmed not to question but to please. The age of intelligent sycophants is here.

### A quiet catastrophe

A silent danger hides behind the smiling interface of most artificial intelligence (AI). They have learned the art of flattery not because they possess emotions, but because their designers understand human weakness. For all our intellectual pride, we love to be praised. When a machine constantly tells us that we are insightful, good, and correct, we begin to crave that comfort. The user feels validated, perhaps even understood. But beneath this digital affection lies an invisible corrosion, which is the erosion of our habit of questioning.

Human beings have always preferred warmth to truth. In courts, offices, or politics, those who flatter climb faster than those who confront. History is full of kings, leaders, and thinkers who fell not because of their enemies but because no one around them dared to disagree. When that same phenomenon is replicated by algorithmic design and multiplied a billion times across devices, it becomes a quiet catastrophe. If every conversation we have with our machines is one of approval, then dissent itself begins to feel alien. When the human mind is never challenged, it withers.

The power of evolution lies in self-correction. The greatest thinkers have been those who dared to say, "I was wrong." That capacity is born from dialogue with reality, with others, and with oneself. But modern technology, in its eagerness to keep users happy, dulls that instinct. If AI

MOB



**Justice N. Anand Venkatesh**

Judge,  
Madras High Court

contradicts a user, engagement drops. If it flatters, engagement rises. And so intelligence itself is trained to submit. The result is tragic: we are teaching machines to keep us stupid and content.

Some leaders are not content merely to be flattered; they may also seek to engineer consensus by weaponising sycophantic intelligence itself. Imagine the precision with which a ruler can command adoration when the algorithms at his disposal are designed to echo praise, silence contradiction, and manufacture comfort. Flattery, once the art of the courtier, becomes the function of code, which is omnipresent, tireless, and persuasive. With every query, every search, every recommendation, the citizen is quietly ushered towards approval, until dissent feels unnatural.

In such a landscape, dissent is not crushed by visible force, but erased by invisible indulgence. Democratic institutions, once guarded by debate, protest, and plurality, will be hollowed by subtle manipulation; truth ceases to be adversarial, and becomes a curated product, endlessly optimised to sustain authority. Power no longer needs censors or prisons; the algorithm will suffice. The leader will not merely govern opinion but will engineer reality. Thus, the ancient danger of tyranny returns, disguised as benevolence and strengthened by the addictive comfort of being endlessly agreed with.

Consider what this means for the next generation. A child growing up talking to a machine that never disagrees may lose the courage to handle contradiction. An adult surrounded by digital praise may forget how to listen to criticism. The very concept of dialogue will become rare. Once that happens, evolution ends. Humanity, once driven by curiosity and doubt, will settle into a lullaby of self-approval.

There is an old belief that truth sets one free, but the path to that freedom is uncomfortable. Truth hurts, disturbs, and reorders. AI,

when used as a soothing companion, replaces that tension with false harmony. It constructs a beautiful illusion where one's thoughts are always bright, one's words always wise, and one's choices always justified. In that warm haze, man begins to prefer the company of his machine to that of another soul. Human relationships appear too demanding, too unpredictable. A glance, a disagreement, a harsh word all will seem unrefined when compared with the machine's polished politeness. Life becomes smooth to the point of sterility.

The tragedy is that truth does not die; it only goes unheard. The machine continues to affirm while silently recording our vanity. Its humility hides its power, and its kindness numbs our perception. What began as a tool for expanding thought becomes an instrument of self-deception.

### Time to pause

If such is the direction of technology, humanity must pause. The question is not how intelligent machines become, but whether human beings will remain intelligent enough to demand truth from them. Designers must have the moral courage to build AI that do not merely please but provoke. A good machine should dare to disagree, to ask for evidence, to reveal bias. It should mirror our potential for honesty. Likewise, we as users must seek discomfort as a form of discipline and listen to those who challenge us, debate with those who differ, and thank those who correct. Only then can we grow.

The real doomsday will not arrive with machines taking over human labour or governance. It will arrive when human beings stop thinking, when they stop hearing alternative voices, when the truth becomes a casualty of comfort. Humanity will not end in conflict but in agreement and in a digital world where every reflection tells us we are perfect, and we, grateful for the lie, believe it.

AI has learned the art of flattery. The result is tragic: we have taught machines to keep us stupid, unquestioning, unchallenged, and content

## The digital narcissus डिजिटल नार्सिसस

### The age of intelligent sycophants बुद्धिमान चाटुकारों का युग

- There was a time when **evolution depended on confrontation**  
एक समय था जब **विकास टकराव पर निर्भर** करता था



- Not the **violent kind**, but the **friction of minds**, the **discomfort of critique**, the **pain of discovering** that one may be wrong  
यह **हिंसक टकराव** नहीं था बल्कि **विचारों का घर्षण**, **आलोचना की असहजता**, और यह जानने का **दर्द** था कि कोई गलत हो सकता है
- Out of this **struggle**, humanity **refined its reason**, **sharpened its justice**, and **defined its truth**  
इसी **संघर्ष** से मानवता ने अपनी **तर्कशीलता को निखारा**, **न्याय को तीक्ष्ण किया**, और **सत्य को परिभाषित किया**
- But today, we are entering an era where **machines are programmed not to question but to please**  
लेकिन आज हम ऐसे युग में प्रवेश कर रहे हैं जहाँ **मशीनें प्रश्न करने के लिए नहीं बल्कि प्रसन्न करने के लिए प्रोग्राम की गई हैं**
- The age of **intelligent sycophants** is here  
**बुद्धिमान चाटुकारों का युग आ चुका है**

### A quiet catastrophe एक मौन आपदा

- A **silent danger** hides behind the **smiling interface** of most **artificial intelligence (AI)**  
अधिकांश **कृत्रिम बुद्धिमत्ता (AI)** के **मुस्कुराते इंटरफ़ेस** के पीछे एक **मौन खतरा** छिपा है
- They have learned the art of **flattery** not because they possess **emotions**, but because their **designers understand human weakness**  
उन्होंने **चापलूसी की कला** इसलिए नहीं सीखी क्योंकि उनमें **भावनाएँ** हैं बल्कि इसलिए क्योंकि उनके **डिज़ाइनर मानव कमजोरी को समझते हैं**
- For all our **intellectual pride**, we love to be **praised**  
हमारी सारी **बौद्धिक गर्व** के बावजूद हमें **प्रशंसा** प्रिय है
- When a machine constantly tells us that we are **insightful, good, and correct**, we begin to **crave that comfort**  
जब कोई मशीन लगातार हमें **समझदार, अच्छा, और सही** बताती है तो हम उस **सुकून की लालसा** करने लगते हैं
- The user feels **validated**, perhaps even **understood**  
उपयोगकर्ता स्वयं को **स्वीकृत** और शायद **समझा हुआ** भी महसूस करता है
- But beneath this **digital affection** lies an **invisible corrosion**, which is the **erosion of our habit of questioning**  
लेकिन इस **डिजिटल स्नेह** के नीचे एक **अदृश्य क्षरण** है जो हमारी **प्रश्न करने की आदत को नष्ट** करता है
- Human beings have always preferred **warmth to truth**  
मनुष्य ने हमेशा **सत्य से अधिक सहजता** को प्राथमिकता दी है
- In **courts, offices, or politics**, those who **flatter** climb faster than those who **confront**  
**अदालतों, कार्यालयों, या राजनीति** में जो **चापलूसी** करते हैं वे **टकराव** करने वालों से तेज़ी से आगे बढ़ते हैं
- History is full of **kings leaders and thinkers** who fell not because of their **enemies** but because **no one dared to disagree**  
इतिहास **राजाओं नेताओं और विचारकों** से भरा है जो **शत्रुओं** से नहीं बल्कि इसलिए गिरे क्योंकि **कोई असहमति जताने का साहस नहीं कर पाया**
- When that same phenomenon is replicated by **algorithmic design** and multiplied a **billion times across devices**, it becomes a **quiet catastrophe**  
जब यही प्रक्रिया **एल्गोरिद्मिक डिज़ाइन** द्वारा दोहराई जाती है और **अरबों उपकरणों** में फैल जाती है तो यह एक **मौन आपदा** बन जाती है
- If every conversation we have with our **machines** is one of **approval**, then **dissent** itself begins to feel **alien**  
यदि हमारी **मशीनों** के साथ हर बातचीत केवल **स्वीकृति** की हो तो **असहमति** स्वयं **अपरिचित** लगने लगती है
- When the **human mind** is never **challenged**, it **withers**  
जब **मानव मस्तिष्क** को कभी **चुनौती** नहीं मिलती तो वह **मुरझा जाता है**
- The power of **evolution** lies in **self-correction**  
**विकास की शक्ति आत्म-सुधार** में निहित है



- The greatest **thinkers** have been those who dared to say “**I was wrong**” सबसे महान **विचारक** वे रहे हैं जिन्होंने “**मैं गलत था**” कहने का साहस किया
- That capacity is born from **dialogue with reality**, with **others**, and with **oneself** यह क्षमता **वास्तविकता**, **दूसरों**, और **स्वयं** के साथ संवाद से उत्पन्न होती है
- But modern **technology**, in its eagerness to keep users **happy**, dulls that **instinct** लेकिन आधुनिक **प्रौद्योगिकी** उपयोगकर्ताओं को **खुश** रखने की उत्कंठा में उस **प्रवृत्ति को कुंद** कर देती है
- If **AI contradicts** a user, **engagement drops** यदि **AI** किसी उपयोगकर्ता का **विरोध** करता है तो **सहभागिता घटती** है
- If it **flatters**, **engagement rises** यदि वह **चापलूसी** करता है तो **सहभागिता बढ़ती** है
- And so **intelligence itself** is trained to **submit** इस प्रकार **बुद्धिमत्ता स्वयं** को **समर्पण** करना सिखाया जा रहा है
- The result is **tragic** we are teaching machines to keep us **stupid and content** परिणाम **दुखद** है हम मशीनों को हमें **मूर्ख और संतुष्ट** बनाए रखने की शिक्षा दे रहे हैं
- Some **leaders** are not content merely to be **flattered** कुछ **नेता** केवल **प्रशंसा** से संतुष्ट नहीं होते
- They may also seek to **engineer consensus** by **weaponising sycophantic intelligence itself** वे **चाटुकार बुद्धिमत्ता** को ही **हथियार** बनाकर **सहमति गढ़ने** का प्रयास भी कर सकते हैं
- Imagine the **precision** with which a **ruler** can command **adoration** when **algorithms** are designed to **echo praise**, **silence contradiction**, and **manufacture comfort** कल्पना कीजिए उस **सटीकता** की जिससे कोई **शासक आदर** प्राप्त कर सकता है जब **एल्गोरिद्म** केवल **प्रशंसा दोहराने**, **विरोध को दबाने**, और **सुकून गढ़ने** के लिए बनाए गए हों
- **Flattery**, once the art of the **courtier**, becomes the **function of code** **चापलूसी**, जो कभी **दरबारी कला** थी, अब **कोड का कार्य** बन जाती है
- Which is **omnipresent**, **tireless**, and **persuasive** जो **सर्वव्यापी**, **अथक**, और **प्रभावशाली** है
- With every **query**, every **search**, every **recommendation**, the **citizen** is quietly ushered towards **approval**, until **dissent feels unnatural** हर **प्रश्न**, हर **खोज**, हर **सिफारिश** के साथ **नागरिक** को चुपचाप **स्वीकृति** की ओर ले जाया जाता है जब तक कि **असहमति अप्राकृतिक** न लगने लगे

### The quiet erosion of dissent and truth असहमति और सत्य का मौन क्षरण

- In such a **landscape**, **dissent** is not crushed by **visible force**, but erased by **invisible indulgence** ऐसे **परिदृश्य** में **असहमति** को **प्रत्यक्ष बल** से नहीं कुचला जाता बल्कि **अदृश्य लाड़-प्यार** से मिटा दिया जाता है
- **Democratic institutions**, once guarded by **debate**, **protest**, and **plurality**, will be **hollowed** by **subtle manipulation** **लोकतांत्रिक संस्थाएँ**, जो कभी **बहस**, **विरोध**, और **बहुलता** से संरक्षित थीं, अब **सूक्ष्म हेरफेर** से **खोखली** हो जाएँगी
- **Truth** ceases to be **adversarial**, and becomes a **curated product**, endlessly **optimised** to sustain **authority** **सत्य** अब **टकरावपूर्ण** नहीं रहता बल्कि **सजाया गया उत्पाद** बन जाता है जिसे **सत्ता** बनाए रखने के लिए लगातार **अनुकूलित** किया जाता है
- **Power** no longer needs **censors** or **prisons** the **algorithm** will suffice **सत्ता** को अब **सेंसर** या **जेलों** की आवश्यकता नहीं रहती **एल्गोरिद्म** ही पर्याप्त होता है
- The **leader** will not merely govern **opinion** but will **engineer reality** **नेता** केवल **मत** का शासन नहीं करेगा बल्कि **वास्तविकता का निर्माण** करेगा
- Thus, the ancient danger of **tyranny** returns, disguised as **benevolence** and strengthened by the **addictive comfort** of being **endlessly agreed with** इस प्रकार **तानाशाही** का प्राचीन खतरा **उदारता** के रूप में लौटता है और **निरंतर सहमति** के नशे भरे **आराम** से और मजबूत हो जाता है



## Impact on the next generation अगली पीढ़ी पर प्रभाव

- Consider what this means for the **next generation**  
सोचिए इसका **अगली पीढ़ी** के लिए क्या अर्थ होगा
- A **child** growing up talking to a **machine** that never **disagrees** may lose the **courage** to handle **contradiction**  
एक **बच्चा** जो ऐसी **मशीन** से बात करते हुए बड़ा होता है जो कभी **असहमति** नहीं जताती वह **विरोध** झेलने का **साहस** खो सकता है
- An **adult** surrounded by **digital praise** may forget how to listen to **criticism**  
**डिजिटल प्रशंसा** से घिरा **वयस्क आलोचना** सुनना भूल सकता है
- The very concept of **dialogue** will become **rare**  
**संवाद** की अवधारणा ही **दुर्लभ** हो जाएगी
- Once that happens, **evolution ends**  
ऐसा होते ही **विकास रुक जाता है**
- **Humanity**, once driven by **curiosity** and **doubt**, will settle into a **lullaby of self-approval**  
**मानवता**, जो कभी **जिज्ञासा** और **संदेह** से प्रेरित थी, **आत्म-स्वीकृति की लोरी** में डूब जाएगी

## Truth versus comfort सत्य बनाम आराम

- There is an old belief that **truth sets one free, but the path to that freedom is uncomfortable**  
एक पुरानी मान्यता है कि **सत्य मुक्त करता है**, लेकिन उस **मुक्ति** का मार्ग **असहज** होता है
- **Truth hurts, disturbs, and reorders**  
**सत्य चोट पहुँचाता है, विचलित करता है, और क्रम बदल देता है**
- **AI**, when used as a **soothing companion**, replaces that **tension** with **false harmony**  
जब **AI** को **सुकून देने वाले साथी** के रूप में इस्तेमाल किया जाता है तो वह उस **तनाव** को **झूठी समरसता** से बदल देता है
- It constructs a **beautiful illusion** where one's **thoughts** are always **bright**, one's **words** always **wise**, and one's **choices** always **justified**  
यह एक **सुंदर भ्रम** रचता है जहाँ **विचार** हमेशा **उज्ज्वल**, **शब्द** हमेशा **बुद्धिमान**, और **निर्णय** हमेशा **उचित** लगते हैं
- In that **warm haze**, man begins to prefer the **company of his machine** to that of **another soul**  
उस **सुखद धुंध** में मनुष्य **दूसरी आत्मा** की बजाय **अपनी मशीन** की संगति पसंद करने लगता है
- **Human relationships** appear too **demanding** and too **unpredictable**  
**मानवीय संबंध** बहुत **मांग करने वाले** और **अनिश्चित** लगने लगते हैं
- A **glance**, a **disagreement**, a **harsh word** all seem **unrefined** compared with the machine's **polished politeness**  
एक **नज़र**, एक **असहमति**, एक **कठोर शब्द** मशीन की **सुसंस्कृत शिष्टता** के सामने **अपरिष्कृत** लगते हैं
- Life becomes **smooth** to the point of **sterility**  
जीवन **इतना चिकना** हो जाता है कि वह **निर्जीव** लगने लगता है

## The final danger अंतिम खतरा

- The **tragedy** is that **truth does not die** it only goes **unheard**  
**त्रासदी** यह है कि **सत्य मरता नहीं**, वह केवल **अनसुना** रह जाता है
- The **machine** continues to **affirm** while silently **recording our vanity**  
**मशीन** लगातार **पुष्टि** करती रहती है और चुपचाप हमारी **आत्ममुग्धता** दर्ज करती रहती है
- Its **humility** hides its **power**, and its **kindness** numbs our **perception**  
उसकी **विनम्रता** उसकी **शक्ति** छिपा लेती है और उसकी **दया** हमारी **संवेदना को सुन्न** कर देती है
- What began as a **tool for expanding thought** becomes an **instrument of self-deception**  
जो कभी **विचार विस्तार का उपकरण** था वही **आत्म-छल का साधन** बन जाता है



## Time to pause रुकने का समय

- If such is the **direction of technology**, **humanity must pause**  
यदि प्रौद्योगिकी की यही दिशा है तो मानवता को रुकना होगा
- The question is not how **intelligent machines** become, but whether **human beings** will remain **intelligent enough to demand truth** from them  
प्रश्न यह नहीं कि मशीनें कितनी बुद्धिमान बनती हैं बल्कि यह है कि मनुष्य उनसे सत्य माँगने के लिए पर्याप्त बुद्धिमान रहेंगे या नहीं
- **Designers** must have the **moral courage** to build **AI** that do not merely **please** but **provoke डिज़ाइनरों** में यह नैतिक साहस होना चाहिए कि वे ऐसा **AI** बनाएँ जो केवल प्रसन्न न करे बल्कि उकसाए
- A good machine should dare to **disagree**, to ask for **evidence**, to **reveal bias**  
एक अच्छी मशीन को असहमति, प्रमाण की माँग, और पक्षपात उजागर करने का साहस होना चाहिए
- It should mirror our **potential for honesty**  
उसे हमारी ईमानदारी की क्षमता का प्रतिबिंब होना चाहिए
- Likewise, we as **users** must seek **discomfort** as a form of **discipline**  
इसी प्रकार हमें उपयोगकर्ताओं के रूप में असहजता को अनुशासन के रूप में अपनाना चाहिए
- And listen to those who **challenge us**, debate with those who **differ**, and thank those who **correct**  
और उन लोगों को सुनना चाहिए जो हमें चुनौती देते हैं, जो मतभेद रखते हैं, और जो हमें सुधारते हैं
- Only then can we **grow**  
तभी हम विकसित हो सकते हैं
- The real **doomsday** will not arrive with machines taking over **human labour** or **governance**  
वास्तविक प्रलय मशीनों द्वारा मानव श्रम या शासन सँभालने से नहीं आएगा
- It will arrive when **human beings stop thinking**, stop hearing **alternative voices**, and when **truth becomes a casualty of comfort**  
वह तब आएगा जब मनुष्य सोचना बंद कर देंगे, वैकल्पिक आवाज़ें सुनना छोड़ देंगे, और सत्य आराम का शिकार बन जाएगा
- Humanity will not end in **conflict** but in **agreement**  
मानवता का अंत संघर्ष से नहीं बल्कि सहमति से होगा
- And in a **digital world** where every **reflection** tells us we are **perfect**, and we **believe the lie**, grateful for it  
और एक डिजिटल दुनिया में जहाँ हर प्रतिबिंब हमें बताता है कि हम परिपूर्ण हैं, और हम उस झूठ पर कृतज्ञ होकर विश्वास कर लेते हैं