



# **PATRIOTIC IAS**

## **DAILY CURRENT AFFAIRS**

### **THE HINDU NEWSPAPER**

#### **01 APRIL 2026**

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**GS Paper 1: History,**  
**TOPICS COVERED**

**01 April 2026**

*Ceremonial anointment*



All dressed up: Devotees taking part in a celebration to mark Mahaveer Jayanti in Chennai on Tuesday.  
B. JITHU BEELA/ANILKAR

All dressed up: Devotees taking part in a celebration to mark Mahaveer Jayanti in Chennai on Tuesday



### Floating outreach



Poll call: Houseboats seen on the Vembanad lake in Kerala on Tuesday as part of a voter awareness programme, SVEEP (systematic voters' education and electoral participation), organised by the Election Commission ahead of the April 9 Assembly polls. SPECIAL ARRANGEMENT

Poll call: Houseboats seen on the Vembanad lake in Kerala on Tuesday as part of a voter awareness programme, **SVEEP (systematic voters' education and electoral participation)**, organised by the Election Commission ahead of the April 9 Assembly polls.

Category	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Freshwater	Wular	Loktak	Shivaji Sagar	Indira Sagar	Pangong
Saltwater	Chilika	Pulicat	Sambhar	Vembanad	Ashtamudi
Overall	Vembanad	Chilika	Shivaji Sagar	Indira Sagar	Pulicat

## Barak Valley

- **Barak Valley** is one of the two major river valleys of **Assam**, the other being the **Brahmaputra Valley**.
- It is located in the **southern part of Assam** and is named after the **Barak River**.
- It comprises three districts:
  - **Cachar**
  - **Karimganj**
  - **Hailakandi**
- The main urban centre is **Silchar**, which acts as the economic and cultural hub.

### Location

- Situated in **Southern Assam**, separated from Brahmaputra Valley by the **Barail Range**
- Shares international border with **Bangladesh**
- Lies between:
  - Meghalaya (west)
  - Manipur and Mizoram (east and south)
- Acts as a **gateway to Northeast India** via southern route

### Physiography

- Characterized by **low-lying floodplains** and surrounding hills
- Drained by the **Barak River and its tributaries**
- The Barak River flows westward into Bangladesh, where it splits into:
  - **Surma River**
  - **Kushiyara River**
- Region is prone to **seasonal flooding**, especially during monsoon

### Climate

- **Humid subtropical climate**



- Average rainfall: **2000–3000 mm annually**
- Warm summers and mild winters

### Soils and Agriculture

- Dominated by **alluvial soils**, highly fertile
- Major crops:
  - Rice (staple crop)
  - Tea (important plantation crop)
  - Sugarcane
  - Pulses and oilseeds
- Tea gardens are widespread, contributing to **regional economy**

### Drainage System

- **Barak River** is the main river
- Important tributaries:
  - Jiri
  - Sonai
  - Rukni
  - Katakhal

## GS Paper II: Polity,

### TOPICS COVERED

01 April 2026

01Apr	<b>Bill on A.P. capital likely to be tabled in Lok Sabha</b> लोकसभा में ए.पी. राजधानी पर विधेयक पेश होने की संभावना
01Apr	<b>An impeachment move with no winners</b> महाभियोग की एक ऐसी प्रक्रिया जिसमें कोई विजेता नहीं

## Bill on A.P. capital likely to be tabled in Lok Sabha

Move follows a resolution passed by A.P. Assembly on March 28 urging Centre to amend the law and declare **Amaravati** the State's sole capital; former CM had favoured a three-capital formula

**GS II: Polity**  
**Nistula Hebbar**  
NEW DELHI

The Union government is likely to introduce the **Andhra Pradesh Reorganisation (Amendment) Bill, 2026**, in the current Lok Sabha session to officially recognise **Amaravati** as the sole capital of Andhra Pradesh.

Government sources said the move follows a resolution passed by the Andhra Pradesh Assembly on March 28, 2026, urging the Centre to amend the law to incorporate **Amaravati** as the State's capital.

The Bill proposes to amend Section 5 of the **Andhra Pradesh Reorganisation Act, 2014**, which



Andhra Pradesh Chief Minister N. Chandrababu Naidu addresses a special session of the Assembly in Amaravati. SPECIAL ASSIGNMENT

had designated Hyderabad as the common capital for both Telangana and Andhra Pradesh for a period not exceeding 10 years.

It comes after a long process of settling a capital city for Andhra Pradesh after the bifurcation of the erstwhile State in 2014 into Telangana and Andhra Pra-

des. At that time, the Union government had set up a committee of experts to explore the question of a new capital.

The committee had submitted a report in August that year. Though it had opposed the idea of a 'super capital' apprehending ecological damage among

other issues, the Chandrababu Naidu-led Telugu Desam Party government began land acquisition in the State's Guntur district to establish the capital.

When the government changed in 2019, work stalled as the new Chief Minister **Jagan Mohan Reddy** was not in favour of a shift of the State's capital to Amaravati. Alleging that too much money was being spent on it, he proposed instead a "three-capital" formula, suggesting **Visakhapatnam** as the executive capital, **Kurnool** as the judicial capital, and **Amaravati** as the legislative capital.

When the **TDP** returned to power in 2024, Mr. Naidu revived the Amaravati plan.

## 01Apr. Bill on A.P. capital likely to be tabled in Lok Sabha

### लोकसभा में ए.पी. राजधानी पर विधेयक पेश होने की संभावना

- The Union government is likely to introduce the **Andhra Pradesh Reorganisation (Amendment) Bill, 2026**, in the current Lok Sabha session to officially recognise **Amaravati** as the sole capital of Andhra Pradesh.



- Alleging that too much money was being spent on it, he proposed instead a **“three-capital” formula, suggesting Visakhapatnam as the executive capital, Kurnool as the judicial capital, and Amaravati as the legislative capital.**

## An impeachment move with no winners

GS II: Polity

A win-win situation benefits all stakeholders even if a compromise is reached in search of a workable alternative. It could even be a way in which the winning side deludes the losing side to perceive its loss as a necessary price it paid for survival.

The impeachment motion of the Opposition parties against the **Chief Election Commissioner (CEC)** is one such example. It is a motion destined not to carry. Yet its prime movers may not see the loss as a defeat. But can the CEC see their loss as his victory?

The move of the Opposition parties is doubtlessly dramatic. However, the question that needs to be pondered by the well-wishers of the Election Commission of India (ECI) is what prompted them to don the gloves for a fight with no chance of victory. Perhaps, sometimes one fights not to win but to wound the opponent. And the troubling part is that political parties treat the CEC as an opponent.

### Steadfast defiance

The move to impeach the CEC is a first in the history of an institution that is supposed to be a vanguard of Indian electoral democracy. “India built many institutions after attaining freedom and adopting a Republican constitution...If anyone were to conduct an opinion poll on which of these institutions rendered the best service to Indian democracy with the highest degree of integrity, I have no doubt that the ECI will be our people’s first choice,” said Atal Bihari Vajpayee, the then Prime Minister at the ECI’s golden jubilee celebrations on January 17, 2001.

And now, 25 years later, 193 parliamentarians of the Opposition have submitted notices for an impeachment motion against the CEC citing charges of “partisan and discriminatory conduct”, “obstruction of investigation into electoral fraud” and disenfranchisement via the Special Intensive Revision (SIR) of electoral rolls. The notice is as



**Ashok Lavasa**

Former Election Commissioner and Union Finance Secretary of India

The exclusion of even a single eligible voter due to the way the SIR has been conducted would legitimise the criticism of this arbitrary and aggressive exercise

unprecedented as the manner in which the revision of electoral rolls has been undertaken despite serious challenge by most political parties, except the ruling dispensation. Such an alignment of thinking disconcerted the Opposition, which sharpened their attack against the CEC. The repeated press conferences by the Leader of the Opposition (LOP) exposing discrepancies in the electoral rolls of States where elections had been held, further eroded trust in the body.

While the aggressive style and severity of the LOP’s attack on the poll body, questioning its integrity was surprising, what was more surprising was the poll body’s obduracy in not providing a credible response to the doubts raised on its functioning and impartiality. As the attacks became more and more bitter, communication channels between the poll body and the opposition political parties seemed to choke.

The nation had seldom seen such a relentless campaign against a CEC even as the Supreme Court heard endless petitions against his decisions. As the petitions failed to yield any substantive relief, frustration mounted and so did the CEC’s apparent indifference. The CEC persisted with the SIR despite the fortnight-long Vote Adhikar Yatra just before the Bihar State elections.

Not that there was no dialogue. The one between the poll body and the Trinamool Congress caused more rancour culminating in the theatrical presence of Mamata Banerjee in the Supreme Court. Never before had a Chief Minister appeared in Court arguing against the ECI’s unfair decisions. The dharnas against the SIR in West Bengal or officials dying in the course of conducting the SIR failed to deter the CEC or change his avowed commitment to “purify” the electoral rolls.

The ECI invented the “logical discrepancy” tool that pitted electors against the AI used to detect discrepancies. West Bengal saw 58,20,899 electors deleted at

the draft stage and 60,06,675 “under adjudication” in the final list. But the ECI went on to announce elections in the State, where the fate of nearly 10% electors remained undetermined. It employed micro-observers for finalising the revised rolls, something never done in the past. The SC also took the extraordinary step of appointing over 500 judicial officers to decide the fate of these electors in a short span.

It is unusual for a constitutional body mandated with electoral rolls preparation to involve another constitutional body in discharging its routine functions by disregarding the elector’s voting right, which it was created to protect. The exclusion of even a single eligible voter due to the way the SIR has been conducted would legitimise the criticism of this arbitrary and aggressive exercise.

### A loss for the common man

However, does all of this justify the impeachment move? The answer depends on which side of the divide one stands. The crores of voters who figure in the final electoral roll might not protest, treating the tension and trauma during the revision process as part of the routine struggle that helpless citizens go through to secure their rights. The voice of those excluded doesn’t count in the elections in any case.

Eventually, the valid concern of protecting the right to vote turns into the lament of losers who are left with no choice but to resort to the ultimate constitutional weapon against the CEC.

Meanwhile, the ECI has sounded the poll bugle asking players to contest against each other rather than against the referee. It is now in full control. The successful completion of the poll process will justify all its decisions. Victors will exult; losers will find reasons to complain.

What the nation would be left with will be a poll body in which the Opposition, representing more than half the voting population, has expressed no confidence.

### 01Apr. An impeachment move with no winners महाभियोग की एक ऐसी प्रक्रिया जिसमें कोई विजेता नहीं

- The move to impeach the CEC is a **first in history** of an institution meant to safeguard **electoral democracy**.



CEC के खिलाफ महाभियोग का यह प्रयास एक ऐसे संस्थान के इतिहास में पहली बार है जो चुनावी लोकतंत्र की रक्षा के लिए बनाया गया है।

- “India built many institutions after freedom... the ECI would be the first choice,” said **Atal Bihari Vajpayee** on **January 17, 2001**.  
“भारत ने स्वतंत्रता के बाद कई संस्थान बनाए... ECI जनता की पहली पसंद होगी,” यह बात **अटल बिहारी वाजपेयी** ने **17 जनवरी 2001** को कही थी।

<b>GS Paper III: Economy,</b>	
<b>TOPICS COVERED</b>	<b>01 April 2026</b>
<b>01Apr</b>	<b>Sanand ‘bridge’ to Silicon Valley: PM on rise in semiconductor ecosystem</b> <b>सेनंद ‘सिलिकॉन वैली’ का पुल: सेमीकंडक्टर इकोसिस्टम के उभार पर पीएम</b>
<b>01Apr</b>	<b>Unexpected surge</b> <b>अप्रत्याशित उछाल</b>
<b>01Apr</b>	<b>On global tensions and India’s economy</b> <b>वैश्विक तनाव और भारत की अर्थव्यवस्था पर</b>

### **01Apr. Sanand ‘bridge’ to Silicon Valley: PM on rise in semiconductor ecosystem**

#### **सेनंद ‘सिलिकॉन वैली’ का पुल: सेमीकंडक्टर इकोसिस्टम के उभार पर पीएम**

- Prime Minister Narendra Modi on Tuesday positioned Gujarat’s Sanand as an emerging link in the global semiconductor network as he inaugurated a **semiconductor assembly and test facility of Kaynes Semicon in Sanand**, declaring that a “bridge” now connects the industrial town with Silicon Valley.  
प्रधानमंत्री **नरेंद्र मोदी** ने मंगलवार को **गुजरात के साणंद** को वैश्विक **सेमीकंडक्टर नेटवर्क** में उभरती कड़ी बताया, जब उन्होंने साणंद में **Kaynes Semicon** की सेमीकंडक्टर असेंबली और टेस्ट सुविधा का उद्घाटन किया और कहा कि अब यह औद्योगिक शहर **सिलिकॉन वैली** से “पुल” के माध्यम से जुड़ गया है।
- He projected that **India’s semiconductor market could exceed \$100 billion by the end of the decade**.  
उन्होंने अनुमान लगाया कि दशक के अंत तक भारत का **सेमीकंडक्टर बाजार** \$100 बिलियन से अधिक हो सकता है।
- The **plant, built at an estimated cost of ₹3,300 crore**, will serve as a significant milestone under India’s semiconductor mission.  
₹3,300 करोड़ की अनुमानित लागत से बना यह प्लांट भारत के **सेमीकंडक्टर मिशन** के तहत एक महत्वपूर्ण मील का पत्थर साबित होगा।
- “India’s current global semiconductor market stands at **₹4.5 lakh crore**, with a target of **reaching ₹9 lakh crore by 2030**,” he said.  
उन्होंने कहा, “भारत का वर्तमान वैश्विक **सेमीकंडक्टर बाजार** ₹4.5 लाख करोड़ है, जिसे 2030 तक ₹9 लाख करोड़ तक पहुंचाने का लक्ष्य है।”
- “As a result, the **Semiconductor Mission was launched in India in 2021**.  
“इसके परिणामस्वरूप, भारत में 2021 में **सेमीकंडक्टर मिशन** शुरू किया गया।
- Referring to India’s recent participation in the **Pax Silica initiative, a U.S.-led coalition focused on securing supply chains for semiconductors, artificial intelligence and rare earth elements**, Mr. Modi said such collaborations will enhance resilience in critical technology sectors.  
भारत की हालिया **Pax Silica पहल** में भागीदारी का उल्लेख करते हुए, जो सेमीकंडक्टर, **आर्टिफिशियल इंटेलिजेंस** और दुर्लभ तत्वों की आपूर्ति श्रृंखला को सुरक्षित करने पर केंद्रित अमेरिकी नेतृत्व वाला गठबंधन है, श्री मोदी ने कहा कि ऐसे सहयोग महत्वपूर्ण तकनीकी क्षेत्रों में मजबूती बढ़ाएंगे।



GS III: Economy

## Unexpected surge

The Index of Industrial Production diverges from previous data

India's industrial growth held a positive surprise in February 2026, coming in at 5.2%, marginally faster than the growth in January. Apart from November and December last year, February's industrial performance – as measured by the Index of Industrial Production (IIP) – was the best in nearly two years. Why this was a surprise was because this performance diverges quite sharply from what was indicated by the Index of Eight Core Industries released earlier this month. The eight core sectors – crude oil, natural gas, refinery products, coal, fertilizers, steel, cement, and electricity – saw their combined growth slow to 2.3% in February, about half the growth rate in January. These core sectors have a weightage of about 40% in the IIP, and so the expectation was that they would drag the IIP down too. Yet, something else happened. This would imply that sectors outside the core ones did well. Most notably, the manufacturing sector in the IIP saw growth accelerate to a respectable 6% in February. The capital goods sector's growth accelerated to a 28-month high of 12.5%, on an already strong base of 8.1%. These are good signs for labour and capital. What is more concerning is that some elements of consumer demand are going in the opposite direction. Consumer durables grew 7.3%, but consumer non-durables contracted 0.6%, the second consecutive month of shrinkage. It had contracted in February last year as well, so this was not a statistical anomaly.

In general, spending on non-durables involves greater discretion on a day-to-day basis, and so is a better gauge of consumer sentiment. At the moment, at least this data suggest that sentiment is low. This also correlates with the new series of national accounts data showing that household expenditure has had a shrinking contribution to GDP. The government should also look into why the IIP and the Eight Core Industries index moved in opposite directions in February. The two are normally highly correlated, and so a divergence is immediately noteworthy. From the looks of things, February's strong IIP performance is likely to be a short-lived acceleration. The West Asia crisis is already having an impact on the economy. The monthly economic review by the Finance Ministry has said that early high-frequency economic indicators for March are pointing towards a "moderation in economic momentum". The longer the war persists, the sharper this "moderation" is likely to be. On a positive note, while what is being measured might turn dismal, how it is being measured will soon improve. The new, upgraded series of IIP data will be released in May. As the new GDP and CPI have done, the new IIP is sure to provide a clearer picture of the economy – the good and the bad.

- Refinery Products (~28%)
- Electricity (~20%)
- Steel (~17%)
- Coal (~10%)
- Crude Oil (~9%)
- Natural Gas (~6%)
- Cement (~5%)
- Fertilizers (~3%)

## 01Apr. Unexpected surge

### अप्रत्याशित उछाल

• यह आश्चर्यजनक इसलिए था क्योंकि यह प्रदर्शन इस महीने पहले जारी किए गए आठ प्रमुख उद्योगों के सूचकांक से काफी अलग था।

• The **eight core sectors — crude oil, natural gas, refinery products, coal, fertilizers, steel, cement, and electricity** — saw their combined growth slow to **2.3%** in February, about half the growth rate in January.

आठ प्रमुख क्षेत्र — कच्चा तेल, प्राकृतिक गैस, रिफाइनरी उत्पाद, कोयला, उर्वरक, इस्पात, सीमेंट और बिजली — की संयुक्त वृद्धि फरवरी में घटकर **2.3%** रह गई, जो जनवरी की वृद्धि का लगभग आधा है।

• These core sectors have a **weightage of about 40% in the IIP**, and so the expectation was that they would drag the IIP down too. इन प्रमुख क्षेत्रों का IIP में लगभग **40% वेटेज** है, इसलिए उम्मीद थी कि वे IIP को भी नीचे खींचेंगे।

• Most notably, the **manufacturing sector** in the IIP saw growth accelerate to a respectable **6%** in February.

विशेष रूप से, IIP में **विनिर्माण क्षेत्र** की वृद्धि फरवरी में बढ़कर **6%** हो गई।

• The **capital goods sector's growth** accelerated to a **28-month high of 12.5%**, on an already strong base of **8.1%**.

**पूंजीगत वस्तु क्षेत्र** की वृद्धि **28 महीने के उच्च स्तर 12.5%** तक पहुंच गई, जो पहले से मजबूत **8.1%** के आधार पर थी।

• **Consumer durables** grew **7.3%**, but **consumer non-durables** contracted **0.6%**, the second consecutive month of shrinkage.

**उपभोक्ता टिकाऊ वस्तुएं 7.3%** बढ़ीं, लेकिन **उपभोक्ता गैर-टिकाऊ वस्तुएं 0.6%** घट गईं, जो लगातार दूसरा महीना है।

• In general, spending on **non-durables** involves greater discretion on a day-to-day basis, and so is a better gauge of **consumer sentiment**.

सामान्यतः, **गैर-टिकाऊ वस्तुओं** पर खर्च में दैनिक स्तर पर अधिक विवेक होता है, इसलिए यह **उपभोक्ता भावना** का बेहतर संकेतक है।

• This also correlates with the new series of **national accounts data** showing that **household expenditure** has had a **shrinking contribution to GDP**.

यह नए **राष्ट्रीय लेखा आंकड़ों** से भी मेल खाता है, जो दिखाते हैं कि **घरेलू व्यय का GDP** में योगदान घट रहा है।

• The government should also look into why the **IIP** and the **Eight Core Industries index** moved in opposite directions in February.

सरकार को यह भी देखना चाहिए कि फरवरी में **IIP** और **आठ प्रमुख उद्योग सूचकांक** विपरीत दिशा में क्यों गए।

## EIGHT CORE SECTORS



# On global tensions and India's economy

In an economy that imports more than four-fifths of its crude oil, external shocks transmitted through energy prices, shipping route, and volatile commodity markets can significantly reshape fiscal arithmetic. In this context, India must rebalance toward income-led demand, more resilient revenue bases and greater energy diversification

## 65th Economic Survey

**Deepanshu Mohan**

**R**ising geopolitical instability in West Asia is forcing a reassessment of how India's macroeconomic strength is measured.

As of March 2026, this instability has translated into active macroeconomic stress. The rupee has depreciated to a record low of ₹95 per dollar, the Indian basket of crude oil hit \$156.29 per barrel, and the Reserve Bank of India has deployed billions of dollars of foreign exchange reserves to contain volatility. In such conditions, strong quarterly GDP prints capture domestic activity but often overlook vulnerabilities linked to energy imports, shipping routes and fiscal buffers.

Against this backdrop, India enters the post-Budget season with a striking macroeconomic contradiction. Headline indicators remain robust: the State Bank of India expects Q3 FY26 GDP growth of about 8.1 percent, public capital expenditure is near 4 percent of GDP, and fiscal consolidation toward a 4.3 percent deficit by FY27 remains intact. At the same time, external buffers are weakening. Foreign exchange reserves have declined from recent highs to about \$709.76 billion, while foreign portfolio outflows of over \$8 billion following the onset of the conflict have intensified currency pressures.

Yet income dynamics are weaker. Real wages remain subdued, household liabilities have risen to roughly 41 percent of GDP, and private investment continues to lag the state's capex-led expansion.

This divergence reflects a deeper shift in India's fiscal architecture: revenue buoyancy is increasingly driven by transaction-linked taxation while expenditure tilts toward capital formation. In a stable global environment this model can sustain growth, but when energy markets become volatile, its durability depends on whether fiscal revenues, consumption and investment can withstand external commodity shocks.

**Shifts in revenue structure**  
India's revenue structure has been shifting in ways that matter more in a volatile global environment. Revenue receipts have risen from 8.5 percent of GDP in FY16-20 to about 9.1 percent in FY22-FY25 (PA), but the increase reflects recomposition rather than a broadening of income taxation. The Union Budget 2026-27 estimates gross tax revenue at ₹44.04 lakh crore, yet much of the buoyancy now comes from transaction-linked channels. GST collections reached ₹22.8 lakh crore in FY25, while levies on financial and cross-border transactions have also expanded.

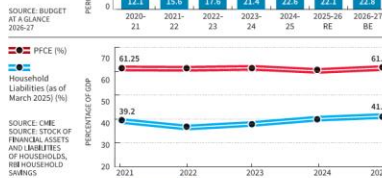
Direct taxes typically expand when more workers move into stable paid employment. As a result, revenue growth increasingly depends on the volume of economic transactions rather than income deepening.

External shocks particularly energy price spikes that raise transport costs and compress household spending can quickly slow transactions. In such conditions, a fiscal model reliant on activity-linked taxation becomes more sensitive to geopolitical disruptions that ripple through consumption, trade and financial markets.

This vulnerability has been evident

## Fiscal trends

India's fiscal stability is tied to capital spending and transaction-based revenues, leaving it vulnerable to energy shocks amid geopolitical tensions



during past shocks. During the pandemic, widening gaps between projected and actual GST revenues forced the Union government to borrow over ₹2.69 lakh crore between 2020 and 2022 to compensate states for revenue shortfalls.

**The effects of oil price surge**  
India's fiscal system remains structurally exposed to oil price volatility. The country imports around 85-87 percent of its crude oil, making it directly vulnerable to external energy shocks.

Empirical estimates suggest that a \$10 per barrel rise in crude prices can increase Consumer Price Index inflation by roughly 0.2 percentage points, widen the current account deficit by about \$9-10 billion (around 0.4 percent of GDP) and reduce GDP growth by nearly 0.5 percentage points under partial pass-through conditions. Oil shocks also propagate through the fiscal system: higher energy costs raise fertiliser and LPG subsidy requirements, increase transport and logistics costs, and elevate inflation-linked expenditure.

Recent policy responses illustrate this transmission. Following the Russian invasion of Ukraine, the Indian crude basket surged from roughly \$59 per barrel in 2019 to over \$120 in mid-2022.

To contain inflation, the government reduced central excise duties on petrol and diesel by a cumulative ₹13 and ₹16 per litre between November 2021 and May 2022, resulting in an estimated ₹2.2 lakh crore revenue loss. At the same time, energy-linked subsidies expanded, with fertiliser support rising sharply and total energy subsidies touching nearly ₹3.2 lakh crore.

Amid the ongoing conflict in West Asia, estimates by ICRA suggest that if oil prices average around \$100 per barrel, India's current account deficit could widen from about 0.7-0.8 percent to nearly 1 percent of GDP, while government expenditure could rise by as much as ₹3.6 trillion due to higher subsidy and compensation requirements. This underscores how energy shocks translate simultaneously into external imbalances and fiscal stress.

When oil prices spike, governments typically absorb part of the shock through tax reductions and subsidy expansion, compressing fiscal space. In a system increasingly reliant on transaction-linked taxes, such shocks can simultaneously weaken consumption, reduce GST buoyancy and expand expenditure pressures, creating a direct fiscal squeeze.

**Impact on households**  
Household balance sheets reveal a key channel through which energy volatility transmits into the domestic economy.

Private consumption accounts for roughly 61.4 percent of India's GDP, yet household liabilities have risen sharply from about 36-37 percent of GDP in 2022 to over 41 percent by 2025, increasing sensitivity to inflationary shocks and suggesting that consumption is being sustained less by income growth and more through credit expansion.

Net financial savings have also become more volatile, falling to around 3-4 percent of GDP in recent quarters before recovering to about 7.6 percent.

The exposure is being amplified by the current shock, as disruptions to LPG supply chains – over 60 percent of which depend on imports – have translated into

longer refill cycles and local shortages, raising household energy costs even as leverage remains elevated.

At the same time, India's expenditure strategy has pivoted toward infrastructure-led growth. The Union Budget 2026-27 places effective capital expenditure at ₹17.15 lakh crore.

While such front-loaded investment strengthens long-term productive capacity, it compresses fiscal space for welfare stabilisers. Allocations for the Mahatma Gandhi National Rural Employment Guarantee Act fell to ₹60,000 crore in 2023-24, 33 percent below the previous year's revised estimate; by December 2023, states had already spent 17 percent of available funds, with ₹8,449 crore in pending liabilities.

In a low-wage environment, imported energy inflation compresses real incomes while debt servicing obligations remain fixed. Rising household leverage therefore becomes a macroeconomic vulnerability, especially when fiscal policy prioritises capital formation over income support.

**Implications for industrial sector**  
India's industrial upswing is increasingly concentrated in capital-intensive sectors aligned with public investment. Industrial output rose 7.8 percent in December 2025, with manufacturing expanding 8.1 percent year-on-year and 4.8 percent over April-December. High- and medium-technology industries now account for about 46 percent of manufacturing value added, according to the Economic Survey 2025-26.

By contrast, labour-intensive industries remain weak. Private investment remains cautious despite rising project announcements. CME (Centre for Monitoring Indian Economy) data shows private firms account for nearly 80 percent of new project announcements, yet only about 9 percent reached completion in 2022-23, suggesting a recovery that expands production capacity more than wage-linked income.

In a volatile global environment, this financial strength has translated into greater risk selectivity rather than broader credit expansion.

The recent LPG crisis induced shortages of commercial cylinders have forced the closure of restaurants, cloud kitchens and small food businesses, with gig worker unions reporting a 50-60 percent decline in food delivery orders. Such shocks disproportionately affect labour-intensive and informal sectors, where incomes are directly tied to daily demand and lack institutional protection, even as capital-intensive sectors remain relatively insulated within the financial system.

As external pressures intensify, they raise a broader question of fiscal optionality: the state's ability to absorb shocks without abandoning consolidation targets.

With fiscal space tied to capital expenditure and revenues dependent on economic transactions, geopolitical disruptions can quickly narrow the room for counter-cyclical intervention. In such a context, India must rebalance toward income-led demand, more resilient revenue bases and greater energy diversification, or risk turning external shocks into a recurring source of fiscal stress.

(Deepanshu Mohan is professor and dean, O.P. Jindal Global University. He is a visiting professor at LSE and a visiting academic fellow at University of Oxford. Saksham Raj and Aditi Lazarus contributed to this column.)

## THE GIST

India's fiscal system remains structurally exposed to oil price volatility. External shocks, particularly energy price spikes raise transport costs and compress household spending.

Private consumption accounts for roughly 61.4 percent of India's GDP, yet household liabilities have risen sharply, increasing sensitivity to inflationary shocks. At the same time, India's expenditure strategy has pivoted toward infrastructure-led growth.

In a low-wage environment, imported energy inflation compresses real incomes while debt servicing obligations remain fixed. Rising household leverage therefore becomes a macroeconomic vulnerability, especially when fiscal policy prioritises capital formation.

## 01A. On global tensions and India's economy

### वैश्विक तनाव और भारत की अर्थव्यवस्था पर

- The rupee has depreciated to a record low of **₹95 per dollar**, the Indian basket of crude oil hit **\$156.29 per barrel**, and the Reserve Bank of India has deployed billions of dollars of **foreign exchange reserves** to contain volatility.

रुपया **₹95 प्रति डॉलर** के रिकॉर्ड निचले स्तर पर पहुंच गया है, भारतीय कच्चे तेल की टोकरी **\$156.29 प्रति बैरल** तक पहुंच गई है, और भारतीय रिज़र्व बैंक ने अस्थिरता को नियंत्रित करने के लिए अरबों डॉलर के **foreign exchange reserves** का उपयोग किया है।

- Foreign exchange reserves have declined from recent highs to about **\$709.76 billion**, while foreign portfolio outflows of over **\$8 billion** following the onset of the conflict have intensified currency pressures.

विदेशी मुद्रा भंडार हाल के उच्च स्तर से घटकर लगभग **\$709.76 billion** रह गया है, जबकि संघर्ष की शुरुआत के बाद **\$8 billion** से अधिक के विदेशी पोर्टफोलियो बहिर्वाह ने मुद्रा पर दबाव बढ़ा दिया है।

- Yet income dynamics are weaker. फिर भी आय की गतिशीलता कमजोर है।



- Real wages remain subdued, household liabilities have risen to roughly **41 percent of GDP**, and private investment continues to lag the state's capex-led expansion.  
वास्तविक मजदूरी कमजोर बनी हुई है, घरेलू देनदारियाँ लगभग **GDP का 41 percent** तक बढ़ गई हैं, और निजी निवेश राज्य के capex-आधारित विस्तार से पीछे है।
- This divergence reflects a deeper shift in India's fiscal architecture: **revenue buoyancy is increasingly driven by transaction-linked taxation** while expenditure tilts toward **capital formation**.  
यह अंतर भारत की • scal संरचना में गहरे बदलाव को दर्शाता है: राजस्व वृद्धि अब अधिकतर **transaction-linked taxation** से प्रेरित है, जबकि व्यय **capital formation** की ओर झुक रहा है।
- भारत की राजस्व संरचना ऐसे तरीकों से बदल रही है जो एक **volatile global environment** में अधिक महत्वपूर्ण हो जाते हैं।
- The **Union Budget 2026–27 estimates gross tax revenue at ₹44.04 lakh crore**, yet much of the buoyancy now comes from **transaction-linked channels**.  
केंद्रीय बजट **2026–27** में सकल कर राजस्व का अनुमान **₹44.04 लाख करोड़** लगाया गया है, लेकिन अब अधिकांश वृद्धि **transaction-linked channels** से आ रही है।
- **GST collections reached ₹22.8 lakh crore in FY25**, while levies on **financial and cross-border transactions** have also expanded.  
**GST collections FY25 में ₹22.8 लाख करोड़** तक पहुंच गए, जबकि • nancial और **cross-border transactions** पर लगाए गए कर भी बढ़े हैं।
- **Direct taxes typically expand when more workers move into stable paid employment**.  
प्रत्यक्ष कर आमतौर पर तब बढ़ते हैं जब अधिक श्रमिक स्थिर वेतनभोगी रोजगार में आते हैं।
- **As a result, revenue growth increasingly depends on the volume of economic transactions rather than income deepening**.  
परिणामस्वरूप, राजस्व वृद्धि अब लेन-देन की मात्रा पर अधिक निर्भर करती है, न कि आय की गहराई पर।
- **Private consumption accounts for roughly 61.4 percent of India's GDP**, yet household liabilities have risen sharply from about **36–37 percent of GDP in 2022 to over 41 percent by 2025**, increasing sensitivity to inflationary shocks and suggesting that consumption is being sustained less by income growth and more through credit expansion.  
निजी उपभोग भारत के GDP का लगभग **61.4 प्रतिशत** है, फिर भी घरेलू देनदारियाँ **2022 में GDP के 36–37 प्रतिशत** से बढ़कर **2025 तक 41 प्रतिशत से अधिक** हो गई हैं, जिससे मुद्रास्फीति के झटकों के प्रति संवेदनशीलता बढ़ गई है और यह संकेत मिलता है कि उपभोग आय वृद्धि के बजाय ऋण विस्तार से अधिक संचालित हो रहा है।
- **Net financial savings have also become more volatile, falling to around 3–4 percent of GDP in recent quarters before recovering to about 7.6 percent**.  
शुद्ध वित्तीय बचत भी अधिक अस्थिर हो गई है, जो हाल की तिमाहियों में घटकर लगभग **GDP के 3–4 प्रतिशत** रह गई थी और बाद में बढ़कर लगभग **7.6 प्रतिशत** हो गई।
- The exposure is being amplified by the current shock, as disruptions to **LPG supply chains — over 60 percent of which depend on imports** — have translated into longer re• ll cycles and local shortages, raising household energy costs even as leverage remains elevated.  
यह जोखिम वर्तमान झटके से और बढ़ गया है, क्योंकि **एलपीजी आपूर्ति श्रृंखला — जिसमें 60 प्रतिशत से अधिक आयात पर निर्भर है** — में व्यवधान के कारण रिफिल चक्र लंबा हो गया है और स्थानीय कमी उत्पन्न हुई है, जिससे घरेलू ऊर्जा लागत बढ़ गई है जबकि ऋण स्तर ऊँचा बना हुआ है।
- At the same time, India's expenditure strategy has pivoted toward **infrastructure-led growth**.  
साथ ही, भारत की व्यय रणनीति अब बुनियादी ढांचा आधारित विकास की ओर मुड़ गई है।
- The **Union Budget 2026–27 places effective capital expenditure at ₹17.15 lakh crore**.  
केंद्रीय बजट **2026–27** में प्रभावी पूंजी व्यय **₹17.15 लाख करोड़** निर्धारित किया गया है।
- While such front-loaded investment **strengthens long-term productive capacity, it compresses fiscal space for welfare stabilisers**.  
हालांकि इस प्रकार का अग्रिम निवेश दीर्घकालिक उत्पादन क्षमता को मजबूत करता है, लेकिन यह कल्याणकारी उपायों के लिए राजकोषीय गुंजाइश को कम करता है।
- **CMIE (Centre for Monitoring Indian Economy) data shows private firms account for nearly 80 percent of new project announcements, yet only about 9 percent reached completion in 2022–23**, suggesting a recovery that expands production capacity more than wage-linked income.



TELEGRAM CHANNEL: <https://t.me/patrioticIAS>  
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सीएमआईई के आंकड़ों के अनुसार निजी कंपनियाँ नए परियोजना घोषणाओं का लगभग 80 प्रतिशत हिस्सा रखती हैं, फिर भी केवल लगभग 9 प्रतिशत 2022-23 में पूर्ण हुए, जिससे संकेत मिलता है कि यह सुधार उत्पादन क्षमता को तो बढ़ाता है लेकिन वेतन-आधारित आय को नहीं।

<b>GS Paper III: S&amp;T,</b>	
<b>TOPICS COVERED</b>	<b>01 April 2026</b>
<b>01Apr</b>	<b>Earth's orbits are filling up because governance hasn't kept pace</b> पृथ्वी की कक्षाएँ भरती जा रही हैं क्योंकि शासन ने गति नहीं पकड़ी है
<b>01Apr</b>	<b>Entanglement: spooky action</b> एंटीगलमेंट: स्पूकी एक्शन

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# Earth's orbits are filling up because governance hasn't kept pace

There is no regular way to check whether satellite operators follow through on promises to make satellites safe when they stop working, to move them out of the way or to bring them down once their mission ends; thus, regulators often go by what companies say they will do before launch rather than on what regulators can confirm

SS III & S&T

Shrawani Shagun  
Abhiram Nair

Throughout human history, the sky symbolised freedom – vast, open, untouched. Today, that no longer holds. The earth's orbital environment has become crowded, fragile, and vulnerable, threatened by what is today evidently a failure of governance rather than just of engineering.

The language of space sustainability has grown familiar in international forums and policy documents. Yet familiarity has bred complacency. As launches become more frequent and the number of private actors multiplies, the gap between what is promised and what is implemented has continued to widen. The result is an orbital environment that is actively used, commercially exploited, and strategically warranted but ethically under-governed.

Orbital harm is difficult to govern because much of the debris capable of causing damage is impossible to track consistently. Authorities are also able to say which fragment came from which object only after it has caused some damage, and even then with limited certainty.

Reducing risk depends on having accurate information about when objects in orbit might come close to one another and exactly where they are.

But access to this information is uneven across satellite operators and countries, and it may be withheld for commercial reasons or kept secret for security reasons.

There's also no regular way to check whether operators actually follow through on promises to make satellites safe when they stop working, to move them out of the way or to bring them down once their mission ends, especially for small satellites or missions that last only a short time.

As a result, regulators mostly go by what companies say they will do before launch rather than on what regulators can confirm once the satellite is in orbit, which ultimately leaves responsibility unclear.

## Responsibility and prevention

Even debris smaller than a coin, travelling at orbital velocities, carries enough energy to disable or destroy active satellites. Each collision generates thousands of new fragments, multiplying risk. International law obligates states to take reasonable measures to prevent foreseeable harm arising from activities under their jurisdiction. In the context of orbital debris, this means states need to plan for collisions, fragmentation, and long-term congestion – but do they? Indeed, choosing not to mitigate risk is itself a decision because it expects others to deal with dangerous situations. Orbital governance also remains



By dramatically cutting launch costs, reusable boosters allowed SpaceX to deploy the large Starlink satellite constellation at an economically viable scale. SPACE X

anchored in outdated assumptions. The existing treaties were written for an era when space activity was limited, controlled by states, and innovation was slow. Importantly, they do not address cumulative harm and stewardship.

Article VI of the Outer Space Treaty makes states internationally responsible for national activities in outer space, including those carried out by private actors. Article VII establishes liability for damage caused by space objects. Yet these provisions were not designed to prevent cumulative harm and are also poorly suited to preventing cumulative harm before it becomes irreversible.

At present, there is no international duty-of-care standard for the earth's orbits and no ethical threshold for 'acceptable' congestion.

National licensing regimes are one of a few mechanisms that can enforce orbital responsibility before damage occurs. Increasingly of late, before they approve a rocket launch or a mission, regulators need to be told the orbital lifetime, the ways in which the payload can be disposed of, whether it has provisions to avoid collisions, and whether it can be passivated (i.e. deprived of the ability to move around). However, regulators in different jurisdictions ask for different levels of details, so operators register in permissive regulatory environments.

To avoid this, licensing conditions need to be standardised, alongside mandating launch operators to use measurable debris-mitigation thresholds, compulsorily share data to improve space situational awareness, and use verifiable end-of-life disposal strategies.

**Orbital harm is difficult to govern because much of the debris capable of causing damage is impossible to track consistently. Authorities are also able to say which fragment came from which object only after it has caused some damage**

The ethical vacuum is becoming more pronounced as new actors enter space. Nations entering spaceflight for the first time and private enterprises are central to the future of orbital activity – but will these actors inherit the permissive norms that produced today's congestion or will they help redefine responsibility for the decades ahead?

Principles embedded in international environmental law, including precaution, proportionality, and intergenerational equity, offer a useful guide. These principles recognise that uncertainty does not excuse inaction and that the way we use (non-rivalrous) resources today should not foreclose future generations' access to the same resources.

## India's opportunity

The present moment is particularly significant for India. Its space programme has for a long time operated with tight constraints while delivering global services. As commercial participation expands and launch capabilities grow, India can either remain a silent participant or help shape their ethical norms. Specifically, as India develops its national space legislation and licensing

regime, it has a chance to embed orbital responsibility as a legal requirement.

Ethical governance means recognising that shared environments demand shared restraint and that access to orbit carries obligations beyond national interest or commerce. Setting up such a governing system in turn requires us to answer some tough questions first:

When does congestion become negligence? Who bears responsibility for cumulative risk? What obligations do present-day operators owe to future spacefarers?

Voluntary guidelines and rhetorical commitments no longer work; instead, governments and private sector enterprises must express the best principles of environmental governance in enforceable terms in space policy. Existing guidelines to mitigate debris in orbit, while being technically sound, rely largely on voluntary compliance and lack uniform monitoring or sanctions for non-compliance. This has resulted in an uneven regulatory landscape in which the responsible operators absorb higher costs.

Space should be sustainable, which means we should be willing to build the ethical governance required to make it so. In space as on the earth, governance that waits for damage before assigning responsibility will arrive too late.

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## THE GIST

The earth's orbital environment has become crowded, fragile, and vulnerable, threatened by what is today evidently a failure of governance rather than just of engineering

Reducing risk depends on having accurate information about when objects in orbit might come close to one another and exactly where they are

Even debris smaller than a coin, travelling at orbital velocities, carries enough energy to disable or destroy active satellites

The existing treaties were written for an era when space activity was limited, controlled by states, and innovation was slow

## 01Apr. Earth's orbits are filling up because governance hasn't kept pace

पृथ्वी की कक्षाएँ भरती जा रही हैं क्योंकि शासन ने गति नहीं पकड़ी है

- Orbital harm is **difficult to govern** because much of the debris capable of causing damage is impossible to **track consistently**.

कक्षीय नुकसान को शासित करना कठिन है क्योंकि नुकसान पहुंचाने वाले अधिकांश मलबे को लगातार ट्रैक करना असंभव है।

- But access to this information is **uneven** across satellite operators and countries, and it may be withheld for **commercial reasons** or kept secret for **security reasons**.



लेकिन इस जानकारी तक पहुंच उपग्रह ऑपरेटरों और देशों के बीच **असमान** है, और इसे **व्यावसायिक कारणों** से रोका जा सकता है या **सुरक्षा कारणों** से गुप्त रखा जा सकता है।

- There's also no regular way to check whether operators actually follow through on promises to make satellites **safe when they stop working**, to move them out of the way or to bring them down once their mission ends, especially for **small satellites** or missions that last only a short time.

यह जांचने का भी कोई नियमित तरीका नहीं है कि ऑपरेटर वास्तव में अपने वादों का पालन करते हैं या नहीं, जैसे कि उपग्रहों को **काम बंद होने पर सुरक्षित** बनाना, उन्हें रास्ते से हटाना या मिशन समाप्त होने पर नीचे लाना, खासकर **छोटे उपग्रहों** या कम समय तक चलने वाले मिशनों के लिए।

- Even debris smaller than a coin, travelling at **orbital velocities**, carries enough **energy to disable or destroy active satellites**.  
सिक्के से छोटे मलबे भी, जो **कक्षीय गति** से चलते हैं, सक्रिय उपग्रहों को निष्क्रिय या नष्ट करने के लिए पर्याप्त **ऊर्जा** रखते हैं।
- Each collision generates **thousands of new fragments**, multiplying risk.  
हर टक्कर **हजारों नए टुकड़े** उत्पन्न करती है, जिससे जोखिम बढ़ता है।
- **Article VI of the Outer Space Treaty** makes states internationally responsible for national activities in outer space, including those carried out by **private actors**.  
**Outer Space Treaty** का अनुच्छेद VI राज्यों को बाहरी अंतरिक्ष में राष्ट्रीय गतिविधियों के लिए अंतरराष्ट्रीय रूप से जिम्मेदार बनाता है, जिसमें **निजी भागीदारों** द्वारा की गई गतिविधियाँ भी शामिल हैं।
- **Article VII establishes liability for damage caused by space objects**.  
अनुच्छेद VII अंतरिक्ष वस्तुओं द्वारा हुए नुकसान के लिए **दायित्व** स्थापित करता है।
- **National licensing regimes are one of a few mechanisms that can enforce orbital responsibility before damage occurs**.  
राष्ट्रीय लाइसेंसिंग व्यवस्था उन कुछ तंत्रों में से एक है जो नुकसान होने से पहले **कक्षीय जिम्मेदारी** लागू कर सकती हैं।
- Principles embedded in **international environmental law**, including **precaution, proportionality, and intergenerational equity**, offer a useful guide.  
**अंतरराष्ट्रीय पर्यावरण कानून** में निहित सिद्धांत, जैसे **सावधानी, अनुपातिकता और पीढ़ीगत समानता**, एक उपयोगी मार्गदर्शन प्रदान करते हैं।
- These principles recognise that **uncertainty does not excuse inaction** and that the way we use **(non-rivalrous) resources** today should not foreclose future generations' access to the same resources.  
ये सिद्धांत मानते हैं कि **अनिश्चितता निष्क्रियता का बहाना नहीं है** और आज हम **(गैर-प्रतिस्पर्धी) संसाधनों** का जिस प्रकार उपयोग करते हैं, वह भविष्य की पीढ़ियों की उसी संसाधन तक पहुंच को बाधित नहीं करना चाहिए।

## India's opportunity भारत का अवसर

- Specifically, as India develops its **national space legislation and licensing regime**, it has a chance to embed **orbital responsibility** as a **legal requirement**.  
विशेष रूप से, जैसे-जैसे भारत अपना **राष्ट्रीय अंतरिक्ष कानून** और **लाइसेंसिंग व्यवस्था** विकसित कर रहा है, उसके पास **कक्षीय जिम्मेदारी** को एक **कानूनी आवश्यकता** के रूप में स्थापित करने का अवसर है।
- Existing guidelines to mitigate **debris in orbit**, while being **technically sound**, rely largely on **voluntary compliance** and lack **uniform monitoring or sanctions for non-compliance**.  
कक्षा में **मलबे को कम करने** के लिए मौजूदा दिशानिर्देश, यद्यपि **तकनीकी रूप से सही** हैं, मुख्यतः **स्वैच्छिक अनुपालन** पर निर्भर हैं और इनमें **समान निगरानी या अपालन पर दंड** का अभाव है।
- This has resulted in an **uneven regulatory landscape** in which the **responsible operators absorb higher costs**.  
इससे एक **असमान नियामक व्यवस्था** बनी है जिसमें **जिम्मेदार ऑपरेटरों** को अधिक लागत वहन करनी पड़ती है।
- In space as on the earth, governance that waits for damage before assigning **responsibility** will arrive too late.



अंतरिक्ष में भी, पृथ्वी की तरह, वह शासन जो नुकसान होने के बाद जिम्मेदारी तय करता है, बहुत देर से आता है।

## Entanglement: spooky action

GS III: S&T

Vasudevan Mukunth

**S**cientists have shown that helium atoms can be entangled through their movement. A team from Australia and the U.S. collided clouds of helium atoms together to create pairs that shared a single quantum state.

The achievement showed that even 'heavy' particles could follow the same strange quantum physics rules that scientists have mostly observed so far in much lighter particles like electrons. The possibility also opens new ways for researchers to study the link between quantum physics and gravity — a famous unsolved problem in physics.

Quantum entanglement occurs when two particles become so deeply linked that they share a single existence.

The study achieved momentum entanglement, where the link involves the particles' momentum. When scientists collided the atoms, the resulting pairs flew apart. Because of quantum mechanics, neither atom had a definite direction until a detector measured it. However, once they measured the momentum of one atom, they instantly determined the momentum of its partner, no matter how far apart they'd travelled.

In entanglement, one atom does not disappear and reappear elsewhere. Instead, teleportation involves quantum



Scientists have shown that helium atoms can be entangled through their movement. GETTY IMAGES

information: when a measurement defines the first atom's state, that information effectively dictates the state of the second atom across the void. Albert Einstein famously called this "spooky action at a distance" because it defies everyday logic. In classical physics, objects usually only affect things directly next to them. Momentum entanglement proves that whole atoms can remain connected through a nonlocal bond.

For feedback and suggestions for 'Science', please write to [science@thehindu.co.in](mailto:science@thehindu.co.in) with the subject 'Daily page'

## 01 Apr. Entanglement: spooky action एंटैंगलमेंट: स्पूकी एक्शन

• Scientists have shown that **helium atoms** can be **entangled** through their movement. वैज्ञानिकों ने दिखाया है कि **हीलियम परमाणु** अपनी गति के माध्यम से **उलझ सकते हैं**।

• A team from **Australia and the U.S. collided clouds of helium atoms together to create pairs that shared a single quantum state.**

**ऑस्ट्रेलिया और अमेरिका** की एक टीम ने हीलियम परमाणुओं के बादलों को टकराकर ऐसे जोड़े बनाए जो एक **एकल क्वांटम अवस्था** साझा करते हैं।

• The **achievement showed that even 'heavy' particles could follow the same strange quantum physics rules that scientists have mostly observed so far in much lighter particles like electrons.**

इस उपलब्धि ने दिखाया कि **'भारी' कण** भी वही अजीब **क्वांटम भौतिकी के नियम** का पालन कर सकते हैं जिन्हें वैज्ञानिक अब तक मुख्यतः हल्के कणों जैसे **इलेक्ट्रॉनों** में देखते आए हैं।

• The **possibility also opens new ways for researchers to study the link between quantum**

**physics and gravity — a famous unsolved problem in physics.**

यह संभावना शोधकर्ताओं के लिए **क्वांटम भौतिकी और गुरुत्वाकर्षण** के बीच संबंध का अध्ययन करने के नए रास्ते खोलती है — जो भौतिकी की एक प्रसिद्ध **अनसुलझी समस्या** है।

• **Quantum entanglement occurs when two particles become so deeply linked that they share a single existence.**

क्वांटम उलझाव तब होता है जब दो कण इतने गहराई से जुड़े होते हैं कि वे एक **एकल अस्तित्व** साझा करते हैं।

• The study achieved **momentum entanglement, where the link involves the particles' momentum.**

इस अध्ययन ने **संवेग उलझाव** प्राप्त किया, जिसमें संबंध कणों के **संवेग** से जुड़ा होता है।

• When scientists collided the atoms, the resulting pairs **flew apart.**

जब वैज्ञानिकों ने परमाणुओं को टकराया, तो उत्पन्न जोड़े **अलग-अलग उड़ गए**।

• Because of **quantum mechanics**, neither atom had a definite direction until a **detector measured it.**

**क्वांटम यांत्रिकी** के कारण, किसी भी परमाणु की दिशा निश्चित नहीं थी जब तक कि उसे **डिटेक्टर** द्वारा मापा नहीं गया।

• However, **once they measured the momentum of one atom, they instantly determined the momentum of its partner, no matter how far apart they'd travelled.**

हालांकि, जैसे ही उन्होंने **एक परमाणु के संवेग** को मापा, उन्होंने तुरंत उसके **साथी** का संवेग भी निर्धारित कर लिया, चाहे वे कितनी भी दूरी पर क्यों न हों।

• **In entanglement, one atom does not disappear and reappear elsewhere.**

उलझाव में, एक परमाणु **गायब होकर कहीं** और **प्रकट नहीं** होता।

• Instead, **teleportation involves quantum information: when a measurement defines the first atom's state, that information effectively dictates the state of the second atom across the void.**

इसके बजाय, **टेलीपोर्टेशन** में **क्वांटम सूचना** शामिल होती है: जब एक माप पहले परमाणु की अवस्था निर्धारित करता है, तो वह सूचना प्रभावी रूप से **दूसरे परमाणु की अवस्था** को निर्धारित करती है, चाहे वह कितनी भी दूरी पर हो।

• **Albert Einstein famously called this "spooky action at a distance" because it defies everyday logic.**



अल्बर्ट आइंस्टीन ने इसे प्रसिद्ध रूप से "दूरी पर डरावनी क्रिया" कहा क्योंकि यह सामान्य तर्क का उल्लंघन करता है।

- In classical physics, objects usually only affect things directly next to them.  
शास्त्रीय भौतिकी में, वस्तुएं आमतौर पर केवल अपने पास की चीजों को प्रभावित करती हैं।
- Momentum entanglement proves that whole atoms can remain connected through a nonlocal bond.

संवेग उलझाव यह सिद्ध करता है कि पूरे परमाणु एक गैर-स्थानीय बंधन के माध्यम से जुड़े रह सकते हैं।

<b>GS Paper III: DM,</b>	
<b>TOPICS COVERED</b>	<b>01 April 2026</b>
<b>01 Apr</b>	<b>Counting people is not counting disaster risk</b> <b>लोगों की गणना करना आपदा जोखिम की गणना नहीं है</b>

PATRIOTIC IAS



# Counting people is not counting disaster risk

GS III: Disaster Management

Odisha is, by any measure, one of India's most disaster-prone States. Its 574.7-kilometre coastline has absorbed some of the most powerful cyclones to make landfall on the subcontinent. Over two decades, through investment in early warning systems, cyclone shelters, and mass evacuations, the State has reduced cyclone mortality to near zero. It is, therefore, not merely paradoxical but troubling that the 16th Finance Commission has awarded Odisha the single largest reduction in disaster funding share among all 28 States, a decline of 1.57 percentage points relative to the 15th Finance Commission's allocation.

How does a State with the highest hazard score in the country, and the deepest investments in preparedness, end up losing the most? The answer lies in a structural problem in the Finance Commission's allocation formula.

## The revised formula and its rationale

The 16th Finance Commission has allocated ₹2,04,401 crore to State Disaster Response Funds (SDRF), a 59.5% increase over its predecessor. The Commission adopted a multiplicative Disaster Risk Index (DRI = Hazard X Exposure X Vulnerability), drawing on the theoretical framework. This is a departure from the additive approach of the 15th Finance Commission, which treated hazard and vulnerability as substitutes rather than complements. Risk arises only when hazard intersects with exposed and vulnerable populations. A powerful cyclone striking an uninhabited coastline is a natural event, not a disaster. The logic is correct. The operationalisation is not.

The first problem lies in the measurement of 'Exposure'. The Commission uses the total population of each State, scaled linearly between 1 and 25, as its exposure metric. Uttar Pradesh receives 25 and Sikkim receives 1. This is administratively convenient but scientifically indefensible. Exposure, per the United Nations Intergovernmental Panel on Climate Change



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Structural problems in the 16th Finance Commission's disaster funding formula leave India's most hazard-prone States underserved

(IPCC)'s Sixth Assessment Report, is the presence of people in places that could be adversely affected by hazards, not simply the number of people within a political boundary. A State with 10 crore people on a hazard-safe inland plateau has lower exposure than a State with three crore people settled entirely along a cyclone-prone coastline. Total population and hazard-zone population are not the same variable.

The practical consequences are stark. Odisha's hazard score of 12 is the highest in the country. But because its population score is only 5, its computed DRI of 79.8 is overshadowed by Bihar's 224.2 and Uttar Pradesh's 413.2, two States with lower hazard scores. The multiplicative formula, in practice, rewards demographic size. A State can face the most intense hazard in India and still lose funding because it is not populous. This is precisely the outcome that a risk-based allocation framework was designed to prevent.

The second problem compounds the first. Vulnerability is measured through each State's average per capita Net State Domestic Product (NSDP), inverted so that poorer States score higher. The intuition is clear – poorer States have fewer fiscal resources to absorb disaster shocks. But the NSDP measures fiscal capacity, not disaster vulnerability. Vulnerability is multidimensional, encompassing housing quality, health infrastructure in hazard zones, early warning reach, and the share of population in structurally unsafe dwellings. Average per capita income conceals enormous intra-state inequality.

In 2018, Kerala suffered its worst flooding in a century, causing estimated damages of ₹31,000 crore. Yet, the formula assigns Kerala a vulnerability score of just 1.073, near the minimum, because its per capita income is relatively high. Combined with a population score of 4, Kerala's DRI, of 34.5, is lower than many States with negligible disaster history. Jharkhand, with the second-highest vulnerability score reflecting genuine poverty and tribal fragility, still loses 0.78 percentage points of funding share

because its population score cannot compensate in the multiplicative framework. Twenty States in total have lost relative share. The common thread is not that they are safer; it is that they are smaller, wealthier on average, or both.

## What needs to change

Exposure should be measured as the number of people living within defined hazard zones, flood plains, cyclone-prone coastal belts, earthquake-susceptible zones, using the Building Materials and Technology Promotion Council (BMTPC) Vulnerability Atlas cross-referenced with Census enumeration block data. Vulnerability should be reconstituted as a composite index incorporating the share of kutcha housing, agricultural labour dependence, health infrastructure density in high-hazard districts, crop insurance penetration, and early warning effectiveness. The National Family Health Survey (NFHS)-5, the Pradhan Mantri Fasal Bima Yojana (PMFBY) database, National Health Mission (NHM) facility surveys, and India Meteorological Department (IMD) monitoring records collectively provide that information. The Finance Commission should mandate the National Disaster Management Authority to publish an annual State Disaster Vulnerability Index as the authoritative input for each subsequent award period, institutionalising the methodology and ending contested metrics at every Commission.

India cannot afford to get disaster finance wrong. Climate projections indicate intensifying cyclone frequencies along both coastlines, expanding drought belts across peninsular and central India, and escalating extreme rainfall in already-stretched States. The States most likely to face the sharpest increase in disaster frequency – Odisha, Andhra Pradesh, Kerala, Assam – are precisely those the current formula underserves. A formula that measures total population rather than the exposed population is not a risk index. It is a headcount.

## 01Apr. Counting people is not counting disaster risk लोगों की गणना करना आपदा जोखिम की गणना नहीं है

- Odisha is, by any measure, one of India's most **disaster-prone States**. ओडिशा किसी भी मानक से भारत के सबसे **आपदा-प्रवण राज्यों** में से एक है।
- Its **574.7-kilometre coastline** has absorbed some of the most powerful **cyclones** to make landfall on the subcontinent. इसकी **574.7 किलोमीटर लंबी तटरेखा** ने उपमहाद्वीप पर आने वाले सबसे शक्तिशाली **चक्रवातों** का सामना किया है।
- Over two decades, through investment in **early warning systems, cyclone shelters, and mass evacuations**, the State has reduced cyclone **mortality to near zero**. दो दशकों में, **प्रारंभिक चेतावनी प्रणाली, चक्रवात आश्रय और बड़े पैमाने पर निकासी** में निवेश के माध्यम से, राज्य ने चक्रवात से होने वाली **मृत्यु दर लगभग शून्य** तक घटा दी है।
- It is, therefore, not merely paradoxical but troubling that the **16th Finance Commission** has awarded Odisha the **largest reduction in disaster funding share** among all 28 States. इसलिए यह केवल विरोधाभासी ही नहीं बल्कि चिंताजनक है कि **16वें वित्त आयोग** ने ओडिशा को सभी 28 राज्यों में **आपदा फंडिंग हिस्सेदारी में सबसे बड़ी कमी** दी है।
- The answer lies in a **structural problem in the Finance Commission's allocation formula**. इसका उत्तर वित्त आयोग के आवंटन सूत्र में एक **संरचनात्मक समस्या** में निहित है।

The revised formula and its rationale  
संशोधित सूत्र और उसका तर्क



- The 16th Finance Commission has allocated **₹2,04,401 crore** to **State Disaster Response Funds (SDRF)**, a **59.5% increase** over its predecessor.  
16वें वित्त आयोग ने राज्य आपदा प्रतिक्रिया कोष (SDRF) के लिए ₹2,04,401 करोड़ आवंटित किए हैं, जो पिछले आयोग से 59.5% अधिक है।
- The Commission adopted a multiplicative **Disaster Risk Index (DRI = Hazard × Exposure × Vulnerability)**.  
आयोग ने गुणात्मक आपदा जोखिम सूचकांक (DRI = खतरा × एक्सपोजर × संवेदनशीलता) को अपनाया।
- This is a departure from the **additive approach** of the 15th Finance Commission.  
यह 15वें वित्त आयोग के योगात्मक दृष्टिकोण से अलग है।
- Risk arises only when **hazard intersects with exposed and vulnerable populations**.  
जोखिम तभी उत्पन्न होता है जब खतरा, एक्सपोज्ड और संवेदनशील जनसंख्या के साथ जुड़ता है।
- A powerful cyclone striking an **uninhabited coastline** is a natural event, not a disaster.  
एक शक्तिशाली चक्रवात यदि निर्जन तटरेखा से टकराता है तो वह प्राकृतिक घटना है, आपदा नहीं।
- The logic is correct, but the **operationalisation is not**.  
तर्क सही है, लेकिन इसका कार्यान्वयन सही नहीं है।
- The first problem lies in the measurement of **'Exposure'**.  
पहली समस्या 'एक्सपोजर' के मापन में है।
- The Commission uses the **total population** of each State as its exposure metric.  
आयोग प्रत्येक राज्य की कुल जनसंख्या को एक्सपोजर के रूप में उपयोग करता है।
- Uttar Pradesh receives **25** and Sikkim receives **1**.  
उत्तर प्रदेश को 25 और सिक्किम को 1 अंक मिलते हैं।
- This is administratively convenient but **scientifically indefensible**.  
यह प्रशासनिक रूप से सुविधाजनक है, लेकिन वैज्ञानिक रूप से अनुचित है।
- **Exposure, per the IPCC Sixth Assessment Report, is the presence of people in places that could be adversely affected by hazards.**  
**IPCC की छठी आकलन रिपोर्ट** के अनुसार, एक्सपोजर का अर्थ है उन स्थानों पर लोगों की उपस्थिति जो खतरों से प्रभावित हो सकते हैं।
- It is not simply the number of people within a **political boundary**.  
यह केवल राजनीतिक सीमा के भीतर लोगों की संख्या नहीं है।
- A State with **10 crore people** in a safe inland area has lower exposure than a State with **3 crore people** on a cyclone-prone coast.  
एक राज्य जिसमें 10 करोड़ लोग सुरक्षित क्षेत्र में रहते हैं, उसका एक्सपोजर उस राज्य से कम है जहां 3 करोड़ लोग चक्रवात-प्रवण तट पर रहते हैं।
- **Total population and hazard-zone population are not the same variable.**  
कुल जनसंख्या और खतरा-क्षेत्र की जनसंख्या समान नहीं हैं।
- The practical consequences are stark.  
इसके व्यावहारिक परिणाम स्पष्ट हैं।
- **The multiplicative formula, in practice, rewards demographic size.**  
यह गुणात्मक सूत्र व्यवहार में जनसंख्या आकार को प्राथमिकता देता है।
- **Vulnerability is measured through each State's average per capita Net State Domestic Product (NSDP), inverted so that poorer States score higher.**  
संवेदनशीलता को प्रत्येक राज्य के औसत प्रति व्यक्ति नेट स्टेट डोमेस्टिक प्रोडक्ट (NSDP) से मापा जाता है, जिसे उलटकर इस तरह किया जाता है कि गरीब राज्यों को अधिक अंक मिलें।
- **The intuition is clear — poorer States have fewer fiscal resources to absorb disaster shocks.**  
तर्क स्पष्ट है — गरीब राज्यों के पास आपदा झटकों को सहने के लिए कम वित्तीय संसाधन होते हैं।
- **But the NSDP measures fiscal capacity, not disaster vulnerability.**  
लेकिन NSDP वित्तीय क्षमता को मापता है, आपदा संवेदनशीलता को नहीं।
- Vulnerability is **multidimensional**, encompassing **housing quality, health infrastructure, early warning reach**, and the share of population in **unsafe dwellings**.  
संवेदनशीलता बहुआयामी होती है, जिसमें आवास गुणवत्ता, स्वास्थ्य अवसंरचना, प्रारंभिक चेतावनी पहुंच और असुरक्षित आवासों में रहने वाली आबादी शामिल होती है।
- **Average per capita income conceals intra-state inequality.**  
औसत प्रति व्यक्ति आय राज्य के भीतर की असमानता को छिपा देती है।
- **Jharkhand**, with the second-highest vulnerability score, still loses **0.78 percentage points** of funding share.



**झारखंड**, जिसका दूसरा सबसे अधिक संवेदनशीलता स्कोर है, फिर भी **0.78 प्रतिशत अंक** की फंडिंग हिस्सेदारी खो देता है।

- Exposure should be measured as the number of people living within **hazard zones** such as **flood plains, cyclone-prone coasts, earthquake zones**.  
एक्सपोजर को **खतरा क्षेत्रों** जैसे **बाढ़ क्षेत्र, चक्रवात-प्रवण तट और भूकंप क्षेत्र** में रहने वाले लोगों की संख्या के रूप में मापा जाना चाहिए।
- This should use the **BMTPC Vulnerability Atlas** cross-referenced with **Census data**.  
इसके लिए **BMTPC Vulnerability Atlas** और **जनगणना डेटा** का उपयोग किया जाना चाहिए।
- Vulnerability should be reconstituted as a **composite index**.  
संवेदनशीलता को एक **समग्र सूचकांक** के रूप में पुनर्निर्मित किया जाना चाहिए।
- It should include **kutchha housing share, agricultural labour dependence, health infrastructure, crop insurance, early warning effectiveness**.  
इसमें **कच्चे मकान, कृषि श्रमिक निर्भरता, स्वास्थ्य ढांचा, फसल बीमा और चेतावनी प्रणाली** शामिल होनी चाहिए।

### GS Paper III: IS

#### TOPICS COVERED

01 April 2026

01Apr

**NIA, ED bust Maoist extortion, money laundering rackets**

**एनआईए, ईडी ने माओवादी उगाही और मनी लॉन्ड्रिंग रैकेट का भंडाफोड़ किया**

Yellow brick road



**SSM: Agriculture**  
A farmer dries harvested maize cobs in an open field near Polavaram in Andhra Pradesh on Tuesday. The sun-drying process, a common post-harvest practice, helps reduce moisture content and permits safe storage and better marketability. G.N. RAO

A farmer dries harvested maize cobs in an open field near Polavaram in Andhra Pradesh on Tuesday. The sun-drying process, a common post-harvest practice, helps reduce moisture content and permits safe storage and better marketability