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PCS

## Hamano secures Japan its third Women's Asian Cup title

Maika Hamano scored the only goal as a formidable Japan battled past Australia to clinch a third Women's Asian Cup title in Sydney on Saturday. The Tottenham star hit a stunning long-range strike in the 17th minute to add to Japan's continental crowns from 2014 and 2018.

and 2018.

टोटेनहम की स्टार खिलाड़ी ने 17वें मिनट में शानदार लंबी दूरी का गोल किया, जिससे जापान के 2014 और 2018 के खिताबों में एक और जोड़ हो गया।

## 22Mar. Hamano secures Japan its third Women's Asian Cup title

हमानो ने जापान को तीसरा महिला एशियन कप खिताब दिलाया

• **Maika Hamano** scored the only goal as a formidable Japan battled past Australia to clinch a third Women's Asian Cup title in Sydney on Saturday.

माइका हमानो ने एकमात्र गोल किया, जिससे मजबूत जापान ने ऑस्ट्रेलिया को हराकर शनिवार को सिडनी में तीसरा महिला एशियन कप खिताब जीता।

• The Tottenham star hit a stunning long-range strike in the 17th minute to add to Japan's continental crowns from 2014

# Manav, Yashaswini win maiden National titles

The men's top seed ends Jeet's impressive run in the summit clash to land the big prize; the 16-year-old Syndrela falters in a gripping all-PSPB women's finale

### TABLE TENNIS

PCS

Amol Karhadkar  
INDORE

Manav Thakkar and Yashaswini Ghorpade, both representing the Petroleum Sports Promotion Board (PSPB), clinched their maiden men's and women's singles titles at the 87th Senior National Table Tennis Championship here on Saturday.

Even before the finals began at the Abhay Prashal Indoor Stadium, it was clear that new national champions would be crowned in both categories. Top seed Manav lived up to expectations, halting 15th seed Jeet Chandra's impressive run in the men's singles final with a 11-2, 11-4, 6-11, 11-9, 11-3 win. Moments earlier, eighth seed Yashaswini edged past third seed Syndrela Das in a gripping all-PSPB women's final that went the distance.

Manav's consistency proved too much for Jeet in a contest between two bespectacled paddlers. Though Jeet produced some audacious winners in the third game, Manav maintained control throughout the 35-minute encounter to cross the line without any fuss. After losing his only previous National Championship final seven years ago, Manav, the World No. 33, gave a



Winning feeling: Yashaswini and Manav came up trumps in their respective finals. AMOL KARHADKAR

high-five to his sparring partner Siddhesh Pande for ending his long wait.

The women's final, in contrast, was one of fluctuating fortunes. Yashaswini relied on her control, particularly with her long-pimpled backhand, while 16-year-old Syndrela showcased her attacking prowess with powerful backhand winners, repeatedly staging comebacks.

### Decisive moment

At 8-8 in the deciding seventh game, Yashaswini pivoted to her forehand to produce a crucial winner – a moment that proved decisive. The Bengaluru paddler went on to seal a

gruelling 75-minute match and celebrated in style with a Ben Shelton-inspired gesture for the second consecutive day.

Earlier, Syndrela had upset defending champion Diya Chitale in a tense semifinal, while Yashaswini progressed comfortably past Suhana Saini.

Along with the trophies and medals, both Manav and Yashaswini received prize money of ₹3.52 lakh each, while runners-up Jeet and Syndrela earned ₹1.76 lakh apiece.

### The results: Men's singles

(final): Manav Thakkar (PSPB) bt Jeet Chandra (RSPB) 11-2, 11-4, 6-11, 11-9, 11-3.

**Semifinals:** Manav bt Harmeet Desai (PSPB) 11-8, 11-5, 11-7, 11-6; Jeet bt Ronit Bhanja (RSPB) 11-8, 11-5, 8-11, 11-4, 7-11, 7-11, 11-7.

**Women's singles (final):** Yashaswini Ghorpade (PSPB) bt Syndrela Das (PSPB) 11-6, 12-14, 11-5, 9-11, 13-11, 6-11, 11-8.

**Semifinals:** Yashaswini bt Suhana Saini (Har) 6-11, 11-5, 11-9, 11-8, 11-3; Syndrela bt Diya Chitale (RBI) 7-11, 11-9, 11-7, 11-9, 3-11, 3-11, 13-11.

**Mixed doubles (final):** Ankur Bhattacharjee (WB) & Suhana Saini (Har) bt Aniket Bose & Sampriti Roy (WB) 11-9, 11-7, 9-11, 13-15, 12-10.

**Semifinals:** Aniket & Sampriti bt Ronit Bhanja & Kaushani Nath (RSPB) 7-11, 11-9, 12-10, 8-11, 11-7; Ankur & Suhana bt Akash Pal & Poymantee Baisya (RSPB) 11-4, 8-11, 11-7, 8-11, 11-9.



## 22Mar. Manav, Yashaswini win maiden National titles मानव, यशस्विनी ने पहला राष्ट्रीय खिताब जीता

- The men's **top seed** ends Jeet's impressive run in the summit clash to land the big prize; the **16-year-old Syndrela** falters in a gripping all-**PSPB** women's final.  
पुरुष वर्ग के **टॉप सीड** ने फाइनल में जीत चंद्र के शानदार प्रदर्शन को रोककर खिताब जीता; जबकि **16 वर्षीय सिंड्रेला** रोमांचक ऑल-**PSPB** महिला फाइनल में चूक गई।
- Manav Thakkar and Yashaswini Ghorpade**, both representing the **Petroleum Sports Promotion Board (PSPB)**, clinched their maiden men's and women's singles titles at the **87th Senior National Table Tennis Championship** here on Saturday.  
मानव ठक्कर और यशस्विनी घोरपड़े, दोनों **पेट्रोलियम स्पोर्ट्स प्रमोशन बोर्ड (PSPB)** का प्रतिनिधित्व करते हुए, शनिवार को यहां **87वीं सीनियर नेशनल टेबल टेनिस चैंपियनशिप** में पुरुष और महिला एकल के अपने पहले खिताब जीते।
- Earlier, **Syndrela** had upset defending champion **Diya Chitale** in a tense semifinal, while **Yashaswini** progressed comfortably past **Suhana Saini**.  
इससे पहले, **सिंड्रेला** ने सेमीफाइनल में गत चैंपियन **दिया चिताले** को हराया, जबकि **यशस्विनी** ने **सुहाना सैनी** को आसानी से पराजित किया।
- Along with the trophies and medals, both **Manav** and **Yashaswini** received prize money of **₹3.52 lakh** each, while runners-up **Jeet** and **Syndrela** earned **₹1.76 lakh** apiece.  
ट्रॉफी और मेडल के साथ, **मानव** और **यशस्विनी** को **₹3.52 लाख** प्रत्येक का पुरस्कार मिला, जबकि उपविजेता **जीत** और **सिंड्रेला** को **₹1.76 लाख** प्रत्येक प्राप्त हुए।

<b>GS Paper 1: History,</b>	
<b>TOPICS COVERED</b>	<b>22 March 2026</b>
<b>22Mar</b>	<b>Kanshi Ram returns कांशीराम की वापसी</b>



# Kanshi Ram returns

The Bahujan Samaj Party founder's name is being invoked by the leaders in Uttar Pradesh across political lines over the past two weeks and his supporters say that the architect of Dalit consciousness is being resurrected for the State's Assembly poll next year, finds **Mayank Kumar**

**S**tanding outside Gate No. 2 of the Indira Gandhi Pratishthan, a sprawling conversion centre in Lucknow, 66-year-old Vinay Gautam on March 13 urged a small group of young men to step inside and listen to the speakers at a political gathering.

"How many times will you get the opportunity to hear about the great Kanshi Ram? These people are not only observing his birth anniversary, but also discussing his agenda and political ideas," he told the men.

"You are here only because of him [Kanshi Ram] and [B.R.] Ambedkar," Gautam added, chiding them for what he described as a lack of awareness. "These days, you people fail to understand these important things," he said.

A Dalit activist who worked with Kanshi Ram in the 1990s, Gautam was among thousands of people attending the *Samadhan Sammelan* (Constitutional conference) organised by the Congress party at Lucknow's Indira Gandhi Pratishthan, a venue that holds events such as political gatherings, art exhibitions, and weddings.

Kanshi Ram, the founder of the Bahujan Samaj Party (BSP), would have turned 92 years old this year on March 15. Not a landmark birthday, but his legacy has dominated political discourse in Uttar Pradesh over the last two weeks. Leaders across the political spectrum invoked his name, describing him as an "icon of downtrodden social and caste groups".

Rahul Gandhi, the Leader of the Opposition in the Lok Sabha, wrote to Prime Minister Narendra Modi, urging that Kanshi Ram be conferred the Bharat Ratna posthumously.

The Samajwadi Party (SP), once the bête noire of the BSP in U.P., also marked Kanshi Ram's birth anniversary across district offices and at the headquarters.

"Kanshi Ram is a true icon of marginalised social groups. We will carry forward the mission initiated by him," SP chief Akhilesh Yadav said on March 4, adding the proposal of observing March 15 as PDA Days, which is dedicated to the cause of the broader unity of the *Pichhda* (backward), Dalit, and *Alpsankhyak* (minorities) people.

Gautam, however, is delighted, irrespective of political parties' agendas. "It shows the impact of the person and his relevance. That even 20 years after his death, over 4,000 people have come to hear his words," he said.

At the *Samadhan Sammelan*, Gandhi described the late leader as a fighter who had struggled all his life for social justice. Had India's first Prime Minister Jawaharlal Nehru been alive during the time of Kanshi Ram, the Congress would have made him the Chief Minister, Gandhi said.

"[Rahul Gandhi] is using Kanshi Ram's name to reach out to Dalits," said Gautam. "But at least Rahul Gandhi is trying to build a bridge with the community by acknowledging the shortcomings of his party," he added in the same breath.

The Congress, when Nehru served as the Prime Minister, saw four CMs of U.P., all from upper castes.

By the time of his death in 2006, Kanshi Ram's name had come to be associated with mobilising the Bahujan (marginalised majority), including Scheduled Castes (SCs), Scheduled Tribes, Other Backward Castes (OBCs), and minorities.

In Uttar Pradesh, SCs make up around 21% of

the population, minorities about 20% and OBCs are estimated by political parties to constitute up to 40%. "Kanshi Ram's idea was to transform the Bahujan Samaj from a vote-giver to a power getter," said Gautam.

**Mobilisation on identity**  
Born into a Ramdasia Sikh family in Rupnagar district of Punjab, Kanshi Ram joined a government job in Pune in the late 1950s, where he later claimed that he witnessed discrimination against Dalit employees. During this time, he began to read lawyer-cum-activist-cum-social reformer B.R. Ambedkar, with his book, *Annihilation of Caste*, making a particular impression. Influenced deeply by Ambedkar's writing, he adopted the call to "educate, agitate, and organise".

Around the mid-1960s, he experienced a sense of disenchantment with the leadership of the Republican Party of India, which represented marginalised castes and went on to establish the All India Backward and Minorities Communities' Employees Federation (BAMCEF) in 1978. It is an organisation representing government employees from marginalised castes, aimed at creating a solidarity network among hundreds of oppressed castes, spanning religions.

In 1981, he formed another social organisation known as the Dalit Shoshit Samaj Sangharsh Samiti or DS4, aiming to consolidate the Dalit vote. When he founded the BSP, he said that if 50% of Bahujans could unite and form an alliance, establishing a government would be feasible.

MP and founder of the social group Bhim Army, Chandra Shekhar Azad, whose political party is called Aazad Samaj Party (Kanshi Ram), reiterates Kanshi Ram's slogan: *Jisk jini sankhya bhari, uski utni bhagidari*, a statement in favour

of proportional representation, which is perhaps the most popular slogan used by political leaders from all parties even today.

"It has become the sine qua non of representational politics, mirroring modern demands for a caste census and proportional representation in elections," said Ajit Kumar Jha, an Oxford University researcher, who followed Kanshi Ram's politics closely in the 1990s.

However, the BSP failed to gain traction in other States. In 1989, the party won 13 out of 425 seats in the U.P. Assembly and four out of 543 seats in the Lok Sabha poll (three in U.P. and one in Punjab) that year. In the 1992 Punjab Assembly poll, the party won nine out of 117 seats, polling over 16% of the votes, but could win only one seat in the next election. The BSP's appeal was to the Dalits in U.P.

"The real legacy of Kanshi Ramji is in building a new India on the ideology of the Constitution and social justice. He lived by the ideas of Buddha, Kabir, Ravidas, Phule, and Ambedkar," said Laxman Yadav, an activist.

It is this legacy that other parties are now trying to claim. "Our party's PDA is the same as the Bahujan Samaj that Kanshi Ram referred to. We speak for the oppressed and the marginalised," said Umesh Choudhary, an SP worker based in Lucknow.

Another SP leader, Ameesqae Jamei, said, "At a time when atrocities on Dalits, OBCs, and minorities are at their peak under the BJP rule, the ideas and struggle of Kanshi Ram become more relevant."

The BSP and SP found a fit in the post-Babri Masjid U.P., with an alliance in the 1993 Assembly elections. "Mile Mulayam-Kanshi Ram, hawa mein ud gaye Jai Shree Ram," signified the coming together of the Bahujan.

Under the guidance of Kanshi Ram, the BSP

formed governments with the support of the Bharatiya Janata Party (BJP) thrice in U.P. with Mayawati as Chief Minister. Only in 2007 was the BSP able to form the government without the BJP's support, after which it saw a rapid decline. In the 2009 Lok Sabha polls, the BSP polled 27.42% votes, winning 20 seats, while in 2024 its vote share slipped to 9.39%.

**The symbolism and pushback**  
In symbolic moves, the BSP government constructed parks, memorials, and universities dedicated to icons like Dr. B.R. Ambedkar and Kanshi Ram. "These statues resulted in a feeling that people from our social group contributed equally in the making of the Indian republic," says 62-year-old Mohan Ram, a BSP voter, who attended most of Kanshi Ram's rallies in Lucknow.

Over the last few years, many of these statues have been vandalised, with activists saying that breaking the statues symbolises the discomfort and fear of feudal forces. The BJP has been in power since 2017.

"Baba Saheb and Kanshi Ramji are not just historical personalities. They are symbols of equality, justice, and self-respect. These incidents cannot be dismissed as mere acts of anti-social elements, but must be seen as social justice taking a hit," says Laxman.

"The challenge for any party is whether it can expand its social base. The BSP failed in this. I travelled with Kanshi Ram in Madhya Pradesh during the 1993 Assembly election. He would eat at party workers' houses like a family member," says Manindra Nath Thakur, a political scientist at Jawaharlal Nehru University.

He adds that in the latter part of his life, Kanshi Ram moved "from the identity-based politics of the 1990s" to "culture-centric politics in the early 2000s".

On October 9, 2025, the Congress began a 45-day *Dalit Gaurav Samvad* (Dalit pride conversation), on the death anniversary of Kanshi Ram, holding meetings and conferences in localities with a high SC population. Over 500 such meetings took place across U.P.

On March 15, the Congress also organised State-wide events to observe the birth anniversary of the Dalit icon. "From the beginning, our party has been very clear that we want an egalitarian, democratic society. To achieve this, Kanshi Ram's ideas fit, hence we celebrate and follow him," says Anil Yadav, a Congress leader.

Asad Rizvi, a Lucknow-based journalist, says that all these moves are to bring the Dalits under the Congress umbrella.

On November 4, 2025, at a public rally, Gandhi spoke about how "10%" of the population controls major institutions, and that tribals, SCs, OBCs, and minorities have little representation in private firms, the judiciary, the bureaucracy, and the armed forces. "This was what Kanshi Ram said all his life, aiming to unite the marginalised," says Rizvi.

Meanwhile, Mayawati said on X that she is the "sole successor" and that the SP and Congress are anti-Dalit.

Under the INDIA alliance in the 2024 Parliamentary polls, a section of Bahujan voters supported the coalition to win 43 out of 80 seats.

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BSP founder Kanshi Ram and Mayawati, now its national president, at a rally in Lucknow, in 2002. FILE PHOTO

## 22Mar. Kanshi Ram returns कांशीराम की वापसी

- In Uttar Pradesh, SCs make up around 21%, minorities about 20% and OBCs up to 40%. उत्तर प्रदेश में अनुसूचित जातियां लगभग 21%, अल्पसंख्यक 20% और ओबीसी लगभग 40% हैं।
- "Kanshi Ramji's idea was to transform the Bahujan Samaj from a vote-giver to a power getter," Gautam said. गौतम ने कहा, "कांशीरामजी का विचार था कि बहुजन समाज को वोट देने वाले से सत्ता हासिल करने वाला बनाया जाए।"

## Mobilisation on identity पहचान के आधार पर लामबंदी

- Born in Punjab, Kanshi Ram joined a government job in Pune in the late 1950s, where he witnessed discrimination. पंजाब में जन्मे कांशीराम ने 1950 के दशक के अंत में पुणे में सरकारी नौकरी की, जहां उन्होंने भेदभाव देखा।
- He began reading B.R. Ambedkar, especially *Annihilation of Caste*, which influenced him deeply. उन्होंने बी.आर. अंबेडकर को पढ़ना शुरू किया, खासकर जाति का विनाश, जिसने उन्हें गहराई से प्रभावित किया।



- He adopted the call to “**educate, agitate, and organise**”.  
उन्होंने “शिक्षित बनो, संघर्ष करो और संगठित हो” का नारा अपनाया।
- He later founded **BAMCEF (1978)** and **DS4 (1981)** to organise marginalised communities.  
उन्होंने बाद में **BAMCEF (1978)** और **DS4 (1981)** की स्थापना की।
- When he founded the **BSP**, he said if **50% Bahujans** unite, forming a government would be possible.  
जब उन्होंने **BSP** बनाई, तो कहा कि यदि **50% बहुजन** एकजुट हों, तो सरकार बनाना संभव है।
- His slogan “**Jiski jitni sankhya bhari, uski utni bhagidari**” remains popular.  
उनका नारा “जिसकी जितनी संख्या भारी, उसकी उतनी भागीदारी” आज भी लोकप्रिय है।
- However, the **BSP** failed to gain traction in other States.  
हालांकि **BSP** अन्य राज्यों में प्रभाव नहीं बना पाई।
- “The **real legacy of Kanshi Ram is social justice and constitutional values**,” said activists.  
कार्यकर्ताओं ने कहा, “कांशीराम की असली विरासत सामाजिक न्याय और संवैधानिक मूल्य हैं।”
- Under the **INDIA alliance**, a section of **Bahujan voters** supported the coalition in **2024 elections**.  
इंडिया गठबंधन के तहत **2024 चुनावों** में कुछ **बहुजन मतदाताओं** ने गठबंधन का समर्थन किया।

## GS Paper II: Polity,

### TOPICS COVERED

22 March 2026

22Mar

What did the SC say about paid maternity leave?

सुप्रीम कोर्ट ने भुगतानित मातृत्व अवकाश के बारे में क्या कहा?



## What did the SC say about paid maternity leave?

Why did the Supreme Court strike down Section 60(4) of the Social Security Code, 2020? What did it say about maternity leave for adoptive mothers? What did the Court recommend that the Union government do regarding paternity leave?

**GS II: Polity**  
Priscilla Jebaraj

**MOB**

### The story so far:

Last week, the Supreme Court ruled that adoptive mothers could avail themselves of 12 weeks of paid maternity leave regardless of the age of their children at the time of adoption. Striking down Section 60(4) of the Social Security Code, 2020 (previously Section 5(4) of the Maternity Benefit Act, 1961), which limited this benefit only to mothers who adopted children under the age of three months, the Court said that an adoptive mother had the same rights and obligations towards the child as a biological mother.

**What is the law on maternity leave in India?** Statutory maternity benefits for working women in India began to be granted in colonial times. The Bombay Maternity Benefit Act, 1929, covered women factory workers. It was followed by similar laws in other parts of the country in the run-up to Independence. In 1961, Parliament passed the Maternity Benefit Act to provide paid maternity leave of 12 weeks to working women across the country.

In 2017, the Maternity Benefit (Amendment)

The Court noted that the period of leave plays a key role in fostering emotional bond between the mother and the child

Act not only extended the period of paid maternity leave for biological mothers to 26 weeks, but also inserted a provision extending maternity leave for the first time to adoptive mothers or surrogate mothers. Section 5(4) of the Act stated that surrogate or adoptive mothers legally adopting a child below three months would be entitled to maternity leave for a period of 12 weeks from the date the child is handed over to the mother.

### Why was this law considered inadequate?

This provision was challenged in 2021 by Hamsanandini Nanduri, a lawyer who adopted siblings in 2017. Ms. Nanduri told *The Hindu* that her Bengaluru-based law firm gave her only six weeks of paid maternity leave. "I could not leave my young children at home to turn up in office after just six weeks, so I took some additional months of unpaid leave. But it made me angry that there was no policy about it," she said.

Terminating the 12 weeks of maternity leave granted in 2017 to adoptive or surrogate mothers as "mere lip service", the petitioner contended that when compared to the 26 weeks of maternity leave granted to biological mothers, the provision violated the fundamental rights guaranteed under the Constitution.

The three-month limit was unjust to both children and parents, depriving older adoptees from receiving the maternal care they need for their development and integration into their adoptive families, her lawyer argued.

The petitioner also pointed out in Court that adoption procedures take much longer than three months in India.

Also, as Ms. Nanduri told *The Hindu*: "I found on filing an RTI (Right to Information) application with CARA (Central Adoption Resource Authority) that less than 5% of children adopted at that time were under the age of three months."

### What did the Court say about motherhood?

The Court made it clear that motherhood cannot be seen through the "narrow lens of biology" alone. It referred to adoption as part of the "right to reproductive autonomy". It noted that "the period of leave plays a crucial role in fostering [an] emotional bond between the mother and the child". The Court added that

stress hormone levels in children raised in orphanages are often higher than those in children brought up in a familial environment, which pointed to a greater need for paid maternal leave for older adoptees.

### How will the judgment help adoptees and their parents?

Madhumitha Venkataraman started interviewing for jobs as a senior HR executive while waiting for an adoption referral, stipulating in every interview that she would need paid time off to support her child. Several multinational organisations balked at the idea of granting leave for more than a few weeks. But Ms. Venkataraman was finally recruited by a global media company that promised her one year of paid maternity leave. "My son came home at the age of three and a half months in 2023, so I was not eligible for maternity leave under the old law. But because this company was so accommodating, I did not have to choose between my career and my parenting," she said. "There are emotional needs, and not just for the child. The time at home with my son gave me space to grow into motherhood," she said. It is this time and space that other adoptive mothers say they will be entitled to as well, from now.

Noopur Goyal's daughter was 15 months old when she came home in 2021. "I worked as a paediatric cardiologist at a top hospital in Delhi. I knew there was no provision for maternity leave, so I had to give up my job," said Dr. Goyal, a single parent who works as a freelance consultant in Noida. "I had brought her into a new world, so I had to be present for her. An adopted child has been uprooted twice. I needed the time at home with her to build attachment and give her a sense of security," Dr. Goyal said she was financially stable to be able to do this, but she is "glad now that there is a law mandating 12 weeks of paid maternity leave for all adoptive mothers."

### What did the Court say about paternity leave?

The Court also called on the Union government to examine the need for a formal law recognising paternity leave for all fathers, adoptive or biological. Noting that India's legal framework does not adequately account for the role of fathers in childcare, it underlined the importance of shared parenting. As of now, only male government servants are entitled to 15 days' paternity leave for the birth of a child or adoption. Leaves in the private sector are generally determined by company policies.



Mother and child. GETTY IMAGES

## 22Mar. What did the SC say about paid maternity leave? सुप्रीम कोर्ट ने भुगतानित मातृत्व अवकाश के बारे में क्या कहा?

The story so far:  
अब तक की स्थिति:

- Last week, the Supreme Court ruled that **adoptive mothers** could avail themselves of **12 weeks of paid maternity leave** regardless of the age of their children at the time of adoption.
- Striking down **Section 60(4) of the Social Security Code, 2020** (previously **Section 5(4) of the Maternity Benefit Act, 1961**), which limited this benefit only to mothers who adopted children under the age of **three months**, the Court said that an adoptive mother had the same rights and obligations as a **biological mother**.

पिछले सप्ताह, सुप्रीम कोर्ट ने निर्णय दिया कि दत्तक माताएँ अपने बच्चों की आयु की परवाह किए बिना 12 सप्ताह का सवेतन मातृत्व अवकाश ले सकती हैं। सामाजिक सुरक्षा संहिता, 2020 की धारा 60(4) (पूर्व में मातृत्व लाभ अधिनियम, 1961 की धारा 5(4)) को रद्द करते हुए, जो यह लाभ केवल तीन महीने से कम आयु के बच्चों को गोद लेने वाली माताओं तक सीमित करता था, अदालत ने कहा कि दत्तक माता के अधिकार और कर्तव्य जैविक माता के समान हैं।

What is the law on maternity leave in India?  
भारत में मातृत्व अवकाश का कानून क्या है?



- Statutory maternity benefits for working women in India began to be granted in **colonial times**.  
भारत में कामकाजी महिलाओं के लिए वैधानिक मातृत्व लाभ **औपनिवेशिक काल** में शुरू हुए।
- The **Bombay Maternity Benefit Act, 1929**, covered women factory workers.  
**बॉम्बे मातृत्व लाभ अधिनियम, 1929** ने महिला फैक्ट्री श्रमिकों को कवर किया।
- It was followed by similar laws in other parts of the country in the run-up to **Independence**.  
इसके बाद **स्वतंत्रता** से पहले देश के अन्य हिस्सों में भी ऐसे कानून लागू किए गए।
- In **1961**, Parliament passed the **Maternity Benefit Act to provide paid maternity leave of 12 weeks to working women**.  
**1961** में संसद ने **मातृत्व लाभ अधिनियम** पारित किया, जिससे महिलाओं को **12 सप्ताह का सवेतन अवकाश** मिला।
- In **2017**, the **Maternity Benefit (Amendment) Act** extended paid maternity leave for biological mothers to **26 weeks**.  
**2017** में संशोधन के बाद जैविक माताओं के लिए अवकाश **26 सप्ताह** कर दिया गया।
- It also inserted a provision extending maternity leave to **adoptive mothers or surrogate mothers**.  
इसमें पहली बार **दत्तक और सरोगेट माताओं** को भी शामिल किया गया।
- **Section 5(4)** stated that mothers adopting a child below **three months** would get **12 weeks leave from the date the child is handed over**.  
धारा **5(4)** के अनुसार, **तीन महीने से कम आयु** के बच्चे को गोद लेने पर **12 सप्ताह का अवकाश** मिलेगा।

#### Why was this law considered inadequate? यह कानून अपर्याप्त क्यों माना गया?

- This provision was challenged in **2021** by **Hamsaanandini Nanduri**, a lawyer who adopted siblings in **2017**.  
इस प्रावधान को **2021** में **हंसा आनंदिनी नंदुरी** ने चुनौती दी, जिन्होंने **2017** में बच्चों को गोद लिया था।
- She said her Bengaluru-based law firm gave her only **six weeks of paid maternity leave**.  
उन्होंने बताया कि उनकी कंपनी ने केवल **6 सप्ताह का सवेतन अवकाश** दिया।
- She had to take additional months of **unpaid leave** because she could not leave her children.  
उन्हें बच्चों की देखभाल के लिए अतिरिक्त **बिना वेतन अवकाश** लेना पड़ा।
- She said there was **no policy** regarding this, which made her angry.  
उन्होंने कहा कि इस विषय पर कोई **नीति नहीं** थी, जिससे उन्हें नाराज़गी हुई।
- The petitioner termed the **12 weeks leave** as “**mere lip service**” compared to **26 weeks** for biological mothers.  
याचिकाकर्ता ने **12 सप्ताह के अवकाश** को **सिर्फ औपचारिकता** बताया, जबकि जैविक माताओं को **26 सप्ताह** मिलता है।
- It was argued that this violated **fundamental rights under the Constitution**.  
यह तर्क दिया गया कि यह **संवैधानिक मौलिक अधिकारों का उल्लंघन** है।
- The **three-month limit** was unjust to both children and parents.  
**तीन महीने की सीमा** बच्चों और माता-पिता दोनों के लिए अन्यायपूर्ण थी।
- It deprived older adoptees of **maternal care** needed for their development and integration.  
इससे बड़े बच्चों को आवश्यक **मातृ देखभाल** नहीं मिल पाती थी।
- Adoption procedures in India take **longer than three months**.  
भारत में गोद लेने की प्रक्रिया **तीन महीने से अधिक** समय लेती है।
- An RTI with **CARA (Central Adoption Resource Authority)** showed that less than **5% of children** adopted were under **three months of age**.  
**CARA** के साथ RTI से पता चला कि केवल **5% से कम बच्चे** ही **तीन महीने से कम आयु** के थे।

#### What did the Court say about motherhood? अदालत ने मातृत्व के बारे में क्या कहा?

- The Court made it clear that **motherhood** cannot be seen through the “**narrow lens of biology**” alone.  
अदालत ने स्पष्ट किया कि **मातृत्व** को केवल “**जैविक दृष्टिकोण**” से नहीं देखा जा सकता।



- It referred to **adoption as part of the "right to reproductive autonomy"**.  
अदालत ने दत्तक ग्रहण को "प्रजनन स्वायत्तता के अधिकार" का हिस्सा बताया।
- It noted that "the **period of leave plays a crucial role in fostering an emotional bond between the mother and the child**".  
अदालत ने कहा कि अवकाश की अवधि माँ और बच्चे के बीच **भावनात्मक संबंध** बनाने में महत्वपूर्ण होती है।
- The Court added that **stress hormone levels** in children raised in **orphanages** are often higher than those raised in families.  
अदालत ने बताया कि **अनाथालयों** में पले बच्चों में **तनाव हार्मोन का स्तर** अधिक होता है।
- This pointed to a greater need for **paid maternal leave for older adoptees**.  
इससे बड़े बच्चों को गोद लेने पर **सवेतन मातृत्व अवकाश की अधिक आवश्यकता** स्पष्ट होती है।

### How will the judgment help adoptees and their parents? यह निर्णय दत्तक बच्चों और उनके माता-पिता की कैसे मदद करेगा?

- **Madhumitha Venkataraman** was interviewing for jobs while waiting for an **adoption referral**, asking for **paid leave** in advance.  
**मधुमिता वैकटरमन** गोद लेने की प्रक्रिया के दौरान नौकरी के इंटरव्यू में पहले से **सवेतन अवकाश** की मांग कर रही थीं।
- Several **multinational organisations** refused to grant leave beyond a few weeks.  
कई **बहुराष्ट्रीय कंपनियों** ने कुछ सप्ताह से अधिक अवकाश देने से इनकार किया।
- She was later recruited by a **global media company** that promised **one year of paid maternity leave**.  
बाद में एक **वैश्विक मीडिया कंपनी** ने उन्हें **एक वर्ष का सवेतन अवकाश** दिया।
- Her son came home at the age of **three and a half months in 2023**, making her ineligible under the old law.  
उनका बेटा **2023 में 3.5 महीने की उम्र** में आया, जिससे वह पुराने कानून के तहत पात्र नहीं थीं।
- She said she did not have to choose between **career and parenting**.  
उन्होंने कहा कि उन्हें **करियर और मातृत्व** के बीच चयन नहीं करना पड़ा।
- She emphasised that there are **emotional needs**, not just for the child but also for the parent.  
उन्होंने बताया कि केवल बच्चे ही नहीं बल्कि माता-पिता की भी **भावनात्मक आवश्यकताएँ** होती हैं।
- The time at home helped her **grow into motherhood**.  
घर पर बिताया समय उन्हें **मातृत्व अपनाने** में सहायक रहा।
- This time and space will now be available to other **adoptive mothers** as well.  
अब यह समय और अवसर अन्य **दत्तक माताओं** को भी मिलेगा।
- **Noopur Goyal's** daughter was **15 months old** when adopted in **2021**.  
**नूपुर गoyal** की बेटी **2021 में 15 महीने की उम्र** में गोद ली गई थी।
- She worked as a **paediatric cardiologist** in Delhi but had to **give up her job** due to lack of leave.  
वह दिल्ली में **बाल हृदय रोग विशेषज्ञ** थीं, लेकिन अवकाश न मिलने के कारण उन्हें नौकरी छोड़नी पड़ी।
- As a **single parent**, she chose to be present for her child.  
एक **एकल अभिभावक** के रूप में उन्होंने बच्चे के साथ रहना जरूरी समझा।
- She said an adopted child is "**uprooted twice**" and needs time to build **attachment and security**.  
उन्होंने कहा कि दत्तक बच्चा "**दो बार विस्थापित**" होता है और उसे **सुरक्षा व जुड़ाव** की आवश्यकता होती है।
- She added she was financially stable but welcomed the new law granting **12 weeks paid leave**.  
उन्होंने कहा कि वह आर्थिक रूप से सक्षम थीं, लेकिन **12 सप्ताह के सवेतन अवकाश** का कानून स्वागत योग्य है।

### What did the Court say about paternity leave? अदालत ने पितृत्व अवकाश के बारे में क्या कहा?

- The Court asked the **Union government** to examine the need for a formal law on **paternity leave**.  
अदालत ने **केंद्र सरकार** से **पितृत्व अवकाश** पर कानून बनाने की आवश्यकता पर विचार करने को कहा।



- It said India's legal framework does not adequately recognise the role of **fathers in childcare**.  
अदालत ने कहा कि भारत की कानूनी व्यवस्था **बाल देखभाल में पिता की भूमिका** को पर्याप्त रूप से नहीं पहचानती।
- It emphasised the importance of **shared parenting**.  
अदालत ने **साझा पालन-पोषण** के महत्व को रेखांकित किया।
- Currently, only **male government servants** get **15 days' paternity leave** for birth or adoption.  
वर्तमान में केवल **सरकारी पुरुष कर्मचारी** को **15 दिन का पितृत्व अवकाश** मिलता है।
- In the **private sector**, leave depends on **company policies**.  
**निजी क्षेत्र** में अवकाश **कंपनी की नीतियों** पर निर्भर करता है।

## GS Paper II: Governance,

### TOPICS COVERED

22 March 2026

22Mar	<b>Govt. modifies Mutual Credit Guarantee Scheme for MSMEs</b> <b>सरकार ने MSMEs के लिए म्यूचुअल क्रेडिट गारंटी योजना में संशोधन किया</b>
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### Govt. modifies Mutual Credit Guarantee Scheme for MSMEs

#### GS II: Government Scheme

The Finance Ministry on Saturday said the Mutual Credit Guarantee Scheme for MSMEs (MCGS-MSME) has been modified to support manufacturers and exporters, allowing a 5% upfront contribution in tranches after the fourth year. As per the revised scheme, the services sector has been included in the scheme, and the cost of equipment/machinery has been reduced up to 60% of the project cost from the earlier 75%, the Finance Ministry said in a statement. <sup>PTI</sup>

किया गया है ताकि **निर्माताओं और निर्यातकों** को समर्थन मिल सके, और चौथे वर्ष के बाद किस्तों में **5% अग्रिम योगदान** की अनुमति दी गई है।

- As per the revised scheme, the **services sector** has been included in the scheme, and the cost of **equipment/machinery** has been reduced up to **60% of the project cost** from the earlier **75%**, the Finance Ministry said in a statement.  
संशोधित योजना के अनुसार, **सेवा क्षेत्र** को भी इसमें शामिल किया गया है, और **उपकरण/मशीनरी** की लागत को पहले के **75%** से घटाकर **परियोजना लागत का 60%** कर दिया गया है, यह बात वित्त मंत्रालय ने एक बयान में कही।

### 22Mar. Govt. modifies Mutual Credit Guarantee Scheme for MSMEs

**सरकार ने MSMEs के लिए म्यूचुअल क्रेडिट गारंटी योजना में संशोधन किया**

- The Finance Ministry on Saturday said the **Mutual Credit Guarantee Scheme for MSMEs (MCGS-MSME)** has been modified to support **manufacturers and exporters**, allowing a **5% upfront contribution in tranches** after the fourth year.

**वित्त मंत्रालय** ने शनिवार को कहा कि **एमएसएमई के लिए म्यूचुअल क्रेडिट गारंटी योजना (MCGS-MSME)** में संशोधन

## GS Paper II: International Relations

### TOPICS COVERED

22 March 2026

22Mar	<b>Why is Israel attacking Lebanon?</b> <b>इज़राइल लेबनान पर हमला क्यों कर रहा है?</b>
22Mar	<b>Asphyxiating an island nation</b> <b>एक द्वीपीय राष्ट्र का घुटन</b>
22Mar	<b>Iran targets Israel's town housing nuclear facility after Natanz strike</b> <b>नतनज़ हमले के बाद ईरान ने परमाणु सुविधा वाले इजरायली शहर को निशाना बनाया</b>
22Mar	<b>U.K. slams Iran's missile attack at Diego Garcia base</b> <b>यू.के. ने डिएगो गार्सिया बेस पर ईरान के मिसाइल हमले की निंदा की</b>



# Why is Israel attacking Lebanon?

Why is the ground offensive concentrated in southern Lebanon? Why has Israel carried out several attacks against Hezbollah in the past and why does it want to dismantle the Shia militant group? What does it want to achieve?

**GS II: IR**  
**Stanly Johny**

**The story so far:**

**A**s the U.S.-Israeli war on Iran enters its fourth week, another, perhaps more brutal, war is unfolding in the region. On March 16, Israel announced the launch of a ground offensive in Lebanon against Hezbollah. It has also carried out massive air strikes in southern Lebanon and the southern outskirts of Beirut, killing at least 1,000 people and displacing about a million. The ground offensive is concentrated in hilltop towns in southern Lebanon, where the Israel Defence Forces are facing stiff resistance from Hezbollah fighters.

**Why did Israel launch the offensive?**

On paper, a ceasefire had been reached between Hezbollah and Israel in November 2024. The ceasefire was reached after a month-long campaign aimed at weakening Hezbollah, a Shia militant group and political party in Lebanon that maintains close ties with Iran.

When Israel launched its invasion of Gaza after Hamas's October 7, 2023 attack, Hezbollah fired rockets into the Shebaa Farms, a Lebanese territory occupied by Israel. Israel responded with air strikes, triggering further Hezbollah rocket attacks that displaced thousands of Israelis from the Upper Galilee region.

In September 2024, Israel assassinated Hezbollah Secretary-General Hassan Nasrallah in

Israel has declared that it wants to dismantle Hezbollah's military capabilities, push them away from southern Lebanon, and create a buffer inside the Lebanese territory

an air strike. The Israeli plan was to disrupt Hezbollah's command structure before launching a ground offensive. During the ground battle, Israel pushed Hezbollah fighters away from the border and occupied strategically important regions in southern Lebanon. In November that year, Israel agreed to a ceasefire, but it continued air strikes nearly every day in Lebanon, targeting Hezbollah positions. Hezbollah hardly retaliated.

On February 2026, after Iran's Supreme Leader Ayatollah Ali Khamenei was killed by a joint Israeli-American air strike, Hezbollah fired hundreds of rockets into northern Israel. Israel retaliated with air strikes, which was followed by the ground offensive.

**What is Hezbollah?**

Over the past five decades, Israel has carried out multiple attacks in Lebanon. In 1978, Israel launched an incursion into southern Lebanon to push the Palestinian militias based in the region, under the umbrella of the Palestine Liberation Organisation (PLO), to the north of the Litani River. In 1982, Israel launched another invasion with the same objective. It managed to force the PLO to relocate from Lebanon, but the consequences of the war led to the rise of Hezbollah as a militant Shia organisation. Iran, where the Shia clergy established an Islamic government in 1979, backed Hezbollah.

When Israeli troops stayed in southern Lebanon to keep a buffer on the Lebanese side of the border, Hezbollah emerged as the major resistance force. Israeli troops, faced with Hezbollah's guerrilla attacks, were forced to withdraw from Lebanon in 2000 – which was celebrated by Hezbollah as the first "Arab victory against Israel".

In 2006, Israel attacked Lebanon again, to dismantle Hezbollah's military infrastructure. After a month-long campaign, Israel had to agree to a ceasefire and pull back. This allowed Hezbollah to rise as a major socio-political and militant movement of Lebanon's sectarian system, where the army is very weak. But Israel has always called Hezbollah – which it designates as a terrorist outfit alongside the U.S. and their Western partners – an "Iranian proxy". There was an uneasy calm along the Israel-Lebanon border after the 2006 war, but it was broken by Hamas's October 7, 2023 attack.

**How strong is Hezbollah today?**

Hezbollah, because of its long resistance history and battlefield experience, is generally seen as a powerful fighting force. After the 2006 war, they

joined the Syrian civil war to fight alongside the forces of President Bashar al-Assad. Hezbollah's involvement played a crucial role in turning around the civil war from 2015 to 2018.

Hezbollah, a state within the state in Lebanon, possesses tens of thousands of rockets and missiles. However, in September 2024, Israel's pager explosions, which targeted Hezbollah's mid-level commanders, and killed the group's top leadership, threw it into disarray. Around that time, Abu Mohammed al-Golani, a former al-Qaeda jihadist who was running Syria's Idlib, started a campaign to take over Damascus. The Syrian Army, which was targeted by hundreds of Israeli air strikes, was in a bad shape. Syria's three main supporters were Iran, Russia, and Hezbollah. Russia was busy with Ukraine. And Iran's space for manoeuvre was limited. Hezbollah was pushed back by Israeli attacks. It took only 12 days for Golani's Hayat Tahrir al-Sham (formerly Jabhat al-Nusra, al-Qaeda's Syria branch) to capture Damascus.

The fall of Assad's government in December cut a vital link between Hezbollah and Iran, which further weakened both sides. From the early 1980s, Iran had provided money, weapons and training to Hezbollah, and Baathist Syria acted as a land bridge between Iran and Syria (through Iraq, at least since 2003). In subsequent months, Israel continued to pound Hezbollah and the group hardly retaliated. But Hezbollah was also using this period to rebuild its command structure and replenish its arsenals, preparing for an eventual war. And when Israel and the U.S. killed Khamenei in February 2026, they joined the war, drawing in thousands of troops into Lebanon.

**What does Israel want to achieve?**

Israel has declared that it wants to dismantle Hezbollah's military capabilities, push them away from southern Lebanon, and create a buffer inside the Lebanese territory. Israel has issued evacuation orders for the whole of southern Lebanon and some neighbourhoods in the north of the Litani River. It has bombed some bridges on the river to cut off supplies for Hezbollah. Israel is also pressing the Lebanese government to take action to disarm Hezbollah.

Hezbollah's version is that it is defending Lebanese territory. It has fired more than 1,000 rockets and drones at Israel since March 2, in a clear message that it still possesses attack capabilities. Israel is also facing stiff resistance in the hilltop towns of southern Lebanon, particularly in Khiam, a high plateau overlooking the Hula Valley in the south. While Israel seeks to push Hezbollah out militarily, an approach it tried several times in the past and failed, Hezbollah, though weakened by regional developments, is resisting with asymmetrical tactics. It is the Lebanese people who are caught in the middle.



Damaged buildings and vehicles in Beirut after an Israeli airstrike, on March 21. The Israeli military said it had launched strikes targeting Hezbollah. AFP

## 22Mar. Why is Israel attacking Lebanon?

### इज़राइल लेबनान पर हमला क्यों कर रहा है?

- **Hezbollah, a Shia militant group and political party in Lebanon with close ties to Iran.** यह युद्धविराम हिज्बुल्लाह को कमजोर करने के लिए एक महीने के अभियान के बाद हुआ था, जो ईरान से जुड़ा शिया उग्रवादी संगठन और राजनीतिक दल है।
- **When Israel launched its invasion of Gaza after Hamas's October 7, 2023 attack, Hezbollah fired rockets into the Shebaa Farms, a Lebanese territory occupied by Israel.** 7 अक्टूबर 2023 के हमला हमले के बाद गाजा पर इज़राइल के हमले के दौरान, हिज्बुल्लाह ने शेबा फार्म्स पर रॉकेट दागे।
- **Israel responded with air strikes, triggering further Hezbollah rocket attacks that displaced thousands of Israelis from the Upper Galilee region.**



इजराइल ने जवाबी हवाई हमले किए, जिससे हिज़्बुल्लाह के और हमले हुए और ऊपरी गैलीली क्षेत्र से हजारों लोग विस्थापित हुए।

- In **September 2024**, Israel assassinated Hezbollah Secretary-General **Hassan Nasrallah** in an air strike.

सितंबर 2024 में इजराइल ने हवाई हमले में हिज़्बुल्लाह प्रमुख **हसन नसरल्लाह** की हत्या कर दी।

- On **February 2026**, after Iran's Supreme Leader **Ayatollah Ali Khamenei** was killed by a joint Israeli-American air strike, Hezbollah fired **hundreds of rockets** into northern Israel.

फरवरी 2026 में ईरान के सर्वोच्च नेता **अयातुल्ला अली खामेनेई** की हत्या के बाद हिज़्बुल्लाह ने **सैकड़ों रॉकेट** दागे।

- Israel retaliated with air strikes, which was followed by the **ground offensive**. इसके बाद इजराइल ने हवाई हमले किए और फिर **जमीनी हमला** शुरू हुआ।

## What is Hezbollah?

### हिज़्बुल्लाह क्या है?

- Over the past **five decades**, Israel has carried out multiple attacks in Lebanon. पिछले **50 वर्षों** में इजराइल ने लेबनान में कई हमले किए हैं।
- In **1978**, Israel launched an incursion into southern Lebanon to push **Palestinian militias (PLO)** north of the **Litani River**.  
1978 में इजराइल ने दक्षिणी लेबनान में हमला कर **PLO** को **लितानी नदी** के उत्तर में धकेला।
- In **1982**, Israel launched another invasion with the same objective.  
1982 में इसी उद्देश्य से एक और आक्रमण किया गया।

- It forced the PLO to relocate, but the consequences led to the rise of **Hezbollah** as a **Shia militant organisation backed by Iran (1979 Islamic Revolution)**.

इससे PLO हट गया लेकिन इसके परिणामस्वरूप **ईरान समर्थित शिया संगठन हिज़्बुल्लाह** का उदय हुआ।

- When Israeli troops stayed in southern Lebanon as a **buffer**, Hezbollah emerged as the main **resistance force**.

जब इजराइली सेना वहां **बफर ज़ोन** बनाए रखी, तब हिज़्बुल्लाह मुख्य **प्रतिरोध बल** बन गया।

- Israeli troops withdrew in **2000** due to Hezbollah's **guerrilla attacks**, which Hezbollah called the first **"Arab victory against Israel"**.

2000 में गुरिल्ला हमलों के कारण इजराइल को पीछे हटना पड़ा, जिसे हिज़्बुल्लाह ने पहला **अरब विजय** बताया।

- In **2006**, Israel attacked Lebanon again to dismantle Hezbollah's **military infrastructure**.

2006 में इजराइल ने हिज़्बुल्लाह की **सैन्य संरचना** नष्ट करने के लिए हमला किया।

- After a month-long campaign, Israel agreed to a **ceasefire** and withdrew. एक महीने बाद इजराइल ने **युद्धविराम** कर पीछे हट गया।

- This allowed Hezbollah to grow into a major **socio-political and militant movement** in Lebanon's weak state system.

इससे हिज़्बुल्लाह लेबनान में एक बड़ा **सामाजिक-राजनीतिक और सैन्य संगठन** बन गया।

- After the **2006 war**, they joined the **Syrian civil war** to fight alongside the forces of President **Bashar al-Assad**.

2006 युद्ध के बाद उन्होंने **सीरियाई गृह युद्ध** में राष्ट्रपति **बशर अल-असद** के साथ लड़ाई लड़ी।

- Hezbollah, a **state within the state** in Lebanon, possesses **tens of thousands of rockets and missiles**.

हिज़्बुल्लाह, लेबनान में एक **राज्य के भीतर राज्य**, के पास **हजारों रॉकेट और मिसाइलें** हैं।

- However, in **September 2024**, Israel's **pager explosions** targeting mid-level commanders and killing top leadership threw it into **disarray**.

लेकिन **सितंबर 2024** में इजराइल के **पेजर विस्फोटों** ने नेतृत्व को खत्म कर संगठन को **अव्यवस्था** में डाल दिया।

- Syria's main supporters were **Iran, Russia, and Hezbollah**.

सीरिया के मुख्य समर्थक **ईरान, रूस और हिज़्बुल्लाह** थे।

- Russia was busy with **Ukraine**, and Iran's space for manoeuvre was limited.

रूस **यूक्रेन** में व्यस्त था और ईरान की रणनीतिक क्षमता सीमित थी।

- Hezbollah was pushed back by **Israeli attacks**.

हिज़्बुल्लाह को **इजराइली हमलों** से पीछे हटना पड़ा।



- It took only **12 days** for Golani's **Hayat Tahrir al-Sham** to capture **Damascus**.  
केवल **12 दिनों** में **हायात तहरीर अल-शाम** ने **दमिश्क** पर कब्ज़ा कर लिया।
- The **fall of Assad's government in December** cut a vital link between **Hezbollah and Iran**, **weakening both**.  
**दिसंबर** में **असद सरकार** के पतन से **हिज़्बुल्लाह-ईरान संबंध** कमजोर हो गए।
- From the **early 1980s**, Iran had provided **money, weapons and training** to Hezbollah, while **Baathist Syria** acted as a land bridge.  
**1980 के दशक** से ईरान ने हिज़्बुल्लाह को **पैसा, हथियार और प्रशिक्षण** दिया और **सीरिया** ने भूमि मार्ग का काम किया।
- Israel wants to **dismantle Hezbollah's military capabilities**, push them away from **southern Lebanon**, and create a **buffer zone**.  
इजराइल हिज़्बुल्लाह की **सैन्य क्षमता खत्म करना**, उसे **दक्षिणी लेबनान से हटाना** और **बफर ज़ोन** बनाना चाहता है।
- Israel has issued **evacuation orders** for southern Lebanon and areas north of the **Litani River**.  
इजराइल ने दक्षिणी लेबनान और **लितानी नदी** के उत्तर के क्षेत्रों में **निकासी आदेश** जारी किए।
- It has bombed **bridges on the river to cut off Hezbollah's supplies**.  
उसने **पुलों पर बमबारी** कर हिज़्बुल्लाह की **आपूर्ति रोकने** की कोशिश की।
- Israel is also pressing the **Lebanese government to disarm Hezbollah**.  
इजराइल लेबनानी सरकार पर **हिज़्बुल्लाह को निरस्त करने** का दबाव डाल रहा है।
- Hezbollah claims it is **defending Lebanese territory**.  
हिज़्बुल्लाह का दावा है कि वह **लेबनान की रक्षा** कर रहा है।
- Israel is facing **stiff resistance** in **southern Lebanon's hilltop towns**, especially **Khiam**.  
इजराइल को दक्षिणी लेबनान के **पहाड़ी क्षेत्रों**, खासकर **खियाम** में कड़ा प्रतिरोध मिल रहा है।



# Asphyxiating an island nation

## Blockade on Cuba

Donald Trump's illegal blockade on the island led to the collapse of the country's electricity grid last week; many are struggling with spoiled food and stifling heat

GS II: IR

Srinivasan Ramani

Two ships moving through the Atlantic Ocean have caught the attention of maritime intelligence companies and geostrategists across the world. *The Anatoly Kolodkin*, owned by the Russian government and carrying an estimated 7,30,000 barrels of crude oil, is heading towards energy-starved Cuba in clear defiance of Donald Trump's illegal energy blockade of the socialist island-nation. Shipping tracker firm Kpler reported that the *Kolodkin* could reach Cuba as early as March 23.

It would not be the first tanker attempting to bring Russian fuel to Cuba in recent weeks. *The Sea Horse*, loaded with 2,00,000 barrels of gas oil believed to be from Russia but owned by a Chinese firm, was headed to Cuba before it abruptly halted in the middle of the Atlantic last month – likely fearing consequences from the U.S.. If the Russian ships arrive, they will be Cuba's first energy shipments in three months.

Russia's help would be a massive succour to a desperate Cuba. The country's entire electricity grid collapsed last week, leaving about 10 million people without power. Although the government managed to partially restore supply to parts of Havana, the consequences have been



AFP

disastrous for ordinary Cubans. A report from the ground in Havana by *The Guardian* indicated that there are few cars on the roads, most airlines serving the island have suspended flights, the Canadian company Sherritt International has shuttered nickel mining operations in Cuba, state offices have closed, and schools have partly suspended classes. Many, the newspaper reported, are struggling with spoiled food, stifling heat, and sleepless children.

Cuba's dependence on oil is structural: it accounts for 83% of total power generation, while oil products make up 56% of total energy consumption by industry, transport, agriculture, and households.

None of this has deterred the Trump administration which continues to pursue illegal actions. On January 29, Mr. Trump signed an executive order threatening punitive tariffs on any country selling oil to Cuba. Last week, he went further, explicitly threatening to "take" the island. Cuba's fuel supplies

had been highly dependent on Venezuelan oil under the oil-for-doctors scheme instituted by Hugo Chavez. In 2022, Venezuela supplied 75% of Cuba's oil imports; by 2023, this had dropped to 58% as Mexico emerged as a key supplier with 31%. Venezuela's supply fell from 46,500 barrels a day in December 2025 to zero following Nicolas Maduro's abduction in early January. After the January 29 order, Mexico also halted shipments.

### Decades of coercion

The current crisis is also the culmination of six decades of U.S. economic coercion. What Cubans call the "blockade" began in 1962 following the Cuban Revolution and nationalisation of industries. The embargo was reinforced in 1992 by the Torricelli Act, which prohibited foreign subsidiaries of U.S. firms from trading with Cuba and barred ships that had docked in Cuba from entering U.S. ports for 180 days. The first Trump administration redesignated

Cuba as a 'State Sponsor of Terrorism' in January 2021, days before leaving office.

Cuba recently admitted it was in discussions with Washington and appears willing to make some economic changes. *The New York Times* reported that U.S. negotiators were demanding the resignation of President Miguel Díaz-Canel.

Cuba has faced and overcome severe economic crises before. Following the collapse of the Soviet Union, which provided subsidies averaging \$4.3 billion annually, the island went through what it termed the 'Special Period' through the 1990s. GDP fell by 35% between 1989 and 1993 and Cubans faced severe food shortages. The government responded with partial liberalisation. More recently, it has permitted micro, small and medium enterprises. But these reforms have proved insufficient against the combined weight of the embargo and subsequent sanctions.

The Cuban government has remained defiant even as it negotiates. President Díaz-Canel responded that the U.S. government wants "to take over the country, its resources, its properties, and even the very economy they seek to suffocate in order to force us to surrender". He added: "Faced with the worst-case scenario, Cuba is guided by one certainty: any external aggressor will face unyielding resistance."

## 22Mar. Asphyxiating an island nation एक द्वीपीय राष्ट्र का घुटन

- Donald Trump's illegal blockade on the island led to the collapse of the country's electricity grid last week; many are struggling with spoiled food and stifling heat.  
डोनाल्ड ट्रंप के अवैध नाकाबंदी ने पिछले सप्ताह देश की बिजली ग्रिड को ध्वस्त कर दिया; कई लोग खराब भोजन और घुटन भरी गर्मी से जूझ रहे हैं।
- Two ships moving through the Atlantic Ocean have caught the attention of maritime intelligence companies and geostrategists across the world.  
अटलांटिक महासागर में चल रहे दो जहाजों ने दुनिया भर की समुद्री खुफिया कंपनियों और भू-रणनीतिक विशेषज्ञों का ध्यान आकर्षित किया है।



- The **Anatoly Kolodkin**, owned by the **Russian government** and carrying an estimated **7,30,000 barrels of crude oil**, is heading towards energy-starved **Cuba** in clear defiance of **Donald Trump's** illegal energy blockade of the socialist island-nation.  
एनातोली कोलोडकिन, जो रूसी सरकार के स्वामित्व में है और लगभग 7,30,000 बैरल कच्चा तेल ले जा रहा है, ऊर्जा संकट से जूझ रहे क्यूबा की ओर बढ़ रहा है, जो समाजवादी द्वीपीय राष्ट्र पर डोनाल्ड ट्रंप की अवैध ऊर्जा नाकाबंदी की खुली अवहेलना है।
- Shipping tracker firm **Kpler** reported that the Kolodkin could reach Cuba as early as **March 23**.  
शिपिंग ट्रैकर कंपनी केप्लर ने बताया कि कोलोडकिन 23 मार्च तक क्यूबा पहुंच सकता है।
- It would not be the first tanker attempting to bring Russian fuel to Cuba in recent weeks.  
हाल के हफ्तों में क्यूबा में रूसी ईंधन लाने का प्रयास करने वाला यह पहला टैंकर नहीं होगा।
- The **Sea Horse**, loaded with **2,00,000 barrels of gas oil** believed to be from Russia but owned by a Chinese firm, was headed to Cuba before it abruptly halted in the middle of the Atlantic last month — likely fearing consequences from the **U.S.**.  
सी हॉर्स, जो 2,00,000 बैरल गैस ऑयल से लदा था और माना जाता है कि यह रूस से आया था लेकिन एक चीनी कंपनी के स्वामित्व में था, पिछले महीने क्यूबा की ओर जा रहा था, लेकिन अटलांटिक के बीच में अचानक रुक गया — संभवतः अमेरिका के परिणामों के डर से।
- If the Russian ships arrive, they will be Cuba's first energy shipments in three months.  
यदि रूसी जहाज पहुंचते हैं, तो यह तीन महीनों में क्यूबा की पहली ऊर्जा आपूर्ति होगी।
- **Russia's** help would be a massive succour to a desperate Cuba.  
रूस की मदद संकटग्रस्त क्यूबा के लिए एक बड़ी राहत होगी।
- The country's entire electricity grid collapsed last week, leaving about **10 million people** without power.  
देश की पूरी बिजली ग्रिड पिछले सप्ताह ढह गई, जिससे लगभग 1 करोड़ लोग बिना बिजली के रह गए।
- Although the government managed to partially restore supply to parts of **Havana**, the consequences have been disastrous for ordinary Cubans.  
हालांकि सरकार ने हवाना के कुछ हिस्सों में आंशिक रूप से आपूर्ति बहाल की, लेकिन इसके परिणाम आम क्यूबाई लोगों के लिए विनाशकारी रहे हैं।
- A report from the ground in Havana by **The Guardian** indicated that there are few cars on the roads, most airlines serving the island have suspended flights, the Canadian company **Sherritt International** has shuttered nickel mining operations in Cuba, state offices have closed, and schools have partly suspended classes.  
द गार्जियन की हवाना से एक रिपोर्ट में बताया गया कि सड़कों पर बहुत कम कारें हैं, द्वीप की सेवा करने वाली अधिकांश एयरलाइनों ने उड़ानें निलंबित कर दी हैं, कनाडाई कंपनी शेरिट इंटरनेशनल ने क्यूबा में निकेल खनन कार्य बंद कर दिया है, सरकारी कार्यालय बंद हैं और स्कूलों ने आंशिक रूप से कक्षाएं स्थगित कर दी हैं।
- Many, the newspaper reported, are struggling with spoiled food, stifling heat, and sleepless children.  
अखबार ने बताया कि कई लोग खराब भोजन, घुटन भरी गर्मी और बिना सोए बच्चों से जूझ रहे हैं।
- Cuba's dependence on oil is structural: it accounts for **83% of total power generation**, while oil products make up **56% of total energy consumption** by industry, transport, agriculture, and households.  
क्यूबा की तेल पर निर्भरता संरचनात्मक है: यह कुल बिजली उत्पादन का 83% है, जबकि तेल उत्पाद उद्योग, परिवहन, कृषि और घरों की कुल ऊर्जा खपत का 56% बनाते हैं।
- None of this has deterred the **Trump administration** which continues to pursue illegal actions.  
इनमें से किसी भी चीज़ ने ट्रंप प्रशासन को नहीं रोका है, जो अवैध कार्रवाइयों को जारी रखे हुए है।
- On **January 29**, Mr. Trump signed an executive order threatening punitive tariffs on any country selling oil to Cuba.  
29 जनवरी को, ट्रंप ने एक कार्यकारी आदेश पर हस्ताक्षर किए, जिसमें क्यूबा को तेल बेचने वाले किसी भी देश पर दंडात्मक शुल्क लगाने की धमकी दी गई।
- Last week, he went further, explicitly threatening to "take" the island.  
पिछले सप्ताह, उन्होंने और आगे बढ़ते हुए स्पष्ट रूप से द्वीप को "लेने" की धमकी दी।
- Cuba's fuel supplies had been highly dependent on **Venezuelan oil** under the oil-for-doctors scheme instituted by **Hugo Chavez**.



क्यूबा की ईंधन आपूर्ति **ह्यूगो चावेज़** द्वारा शुरू की गई तेल-के-बदले-डॉक्टर योजना के तहत **वेनेजुएला** के तेल पर अत्यधिक निर्भर रही है।

- In 2022, **Venezuela** supplied **75% of Cuba's oil imports**; by 2023, this had dropped to **58%** as **Mexico** emerged as a key supplier with **31%**.  
2022 में, **वेनेजुएला** ने क्यूबा के **75% तेल आयात** की आपूर्ति की; 2023 तक यह घटकर **58%** रह गया, क्योंकि **मैक्सिको** **31%** के साथ प्रमुख आपूर्तिकर्ता बनकर उभरा।
- Venezuela's supply fell from **46,500 barrels a day** in December 2025 to zero following **Nicolas Maduro's** abduction in early January.  
**वेनेजुएला** की आपूर्ति दिसंबर 2025 में **46,500 बैरल प्रतिदिन** से घटकर जनवरी की शुरुआत में **निकोलस मादुरो** के अपहरण के बाद शून्य हो गई।
- After the January 29 order, Mexico also halted shipments.  
29 जनवरी के आदेश के बाद, मैक्सिको ने भी आपूर्ति रोक दी।

## Decades of coercion दशकों का दबाव

- The current crisis is also the culmination of six decades of **U.S. economic coercion**.  
वर्तमान संकट छह दशकों के **अमेरिकी आर्थिक दबाव** का परिणाम भी है।
- What Cubans call the "**blockade**" began in **1962** following the **Cuban Revolution** and nationalisation of industries.  
जिसे क्यूबाई "**नाकाबंदी**" कहते हैं, वह **1962** में **क्यूबा क्रांति** और उद्योगों के राष्ट्रीयकरण के बाद शुरू हुई।
- The embargo was reinforced in **1992** by the **Torricelli Act**, which prohibited foreign subsidiaries of U.S. firms from trading with Cuba and barred ships that had docked in Cuba from entering U.S. ports for **180 days**.  
यह प्रतिबंध **1992** में **टॉरिसेली एक्ट** द्वारा और मजबूत किया गया, जिसने अमेरिकी कंपनियों की विदेशी सहायक कंपनियों को क्यूबा के साथ व्यापार करने से रोका और क्यूबा में रुकने वाले जहाजों को **180 दिनों** तक अमेरिकी बंदरगाहों में प्रवेश से प्रतिबंधित किया।
- The first **Trump administration** redesignated Cuba as a '**State Sponsor of Terrorism**' in **January 2021**, days before leaving office.  
पहले **ट्रंप प्रशासन** ने पद छोड़ने से कुछ दिन पहले **जनवरी 2021** में क्यूबा को '**आतंकवाद का प्रायोजक राज्य**' के रूप में पुनः नामित किया।
- Cuba recently admitted it was in discussions with **Washington** and appears willing to make some economic changes.  
क्यूबा ने हाल ही में स्वीकार किया कि वह **वॉशिंगटन** के साथ बातचीत कर रहा है और कुछ आर्थिक बदलाव करने को तैयार है।
- **The New York Times** reported that U.S. negotiators were demanding the resignation of President **Miguel Díaz-Canel**.  
**द न्यूयॉर्क टाइम्स** ने रिपोर्ट किया कि अमेरिकी वार्ताकार राष्ट्रपति **मिगुएल डियाज़-कैनल** के इस्तीफे की मांग कर रहे थे।
- Cuba has faced and overcome severe economic crises before.  
क्यूबा पहले भी गंभीर आर्थिक संकटों का सामना कर चुका है और उनसे उबर चुका है।
- Following the collapse of the **Soviet Union**, which provided subsidies averaging **\$4.3 billion annually**, the island went through what it termed the '**Special Period**' through the 1990s.  
**सोवियत संघ** के पतन के बाद, जिसने औसतन **4.3 अरब डॉलर प्रति वर्ष** की सब्सिडी दी थी, द्वीप ने 1990 के दशक में '**विशेष काल**' का सामना किया।
- GDP fell by **35% between 1989 and 1993** and Cubans faced severe food shortages.  
**1989 से 1993 के बीच GDP में 35% की गिरावट** आई और क्यूबाई लोगों को गंभीर खाद्य संकट का सामना करना पड़ा।
- The government responded with partial liberalisation.  
सरकार ने आंशिक उदारीकरण के साथ प्रतिक्रिया दी।
- More recently, it has permitted **micro, small and medium enterprises**.  
हाल ही में, इसने **सूक्ष्म, लघु और मध्यम उद्यमों** की अनुमति दी है।
- But these reforms have proved insufficient against the combined weight of the embargo and subsequent sanctions.  
लेकिन ये सुधार प्रतिबंध और बाद के प्रतिबंधों के संयुक्त प्रभाव के सामने अपर्याप्त साबित हुए हैं।



- The Cuban government has remained defiant even as it negotiates. क्यूबा सरकार बातचीत के बावजूद अडिग बनी हुई है।
- President **Díaz-Canel** responded that the U.S. government wants “to take over the country, its resources, its properties, and even the very economy they seek to suffocate in order to force us to surrender”.  
राष्ट्रपति **डियाज़-कैनल** ने जवाब दिया कि अमेरिकी सरकार “देश, उसके संसाधनों, उसकी संपत्तियों और यहां तक कि उस अर्थव्यवस्था पर कब्जा करना चाहती है जिसे वे हमें आत्मसमर्पण करने के लिए घुटन में डालना चाहते हैं।”
- He added: “Faced with the worst-case scenario, Cuba is guided by one certainty: any external aggressor will face unyielding resistance.”  
उन्होंने कहा: “सबसे खराब स्थिति का सामना करते हुए, क्यूबा एक निश्चितता से निर्देशित है: कोई भी बाहरी आक्रमणकारी अडिग प्रतिरोध का सामना करेगा।”

## Iran targets Israel's town housing nuclear facility after **Natanz strike**

Shrapnel wounds 20 in Dimona, home to Israel's nuclear facility; **IAEA** chief Grossi calls for 'military restraint' to avoid any risk of a nuclear accident; U.S. military used 5,000-pound bunker-buster bombs 'to destroy an underground Iranian facility'

GS II: IR

Agence France-Presse  
JERUSALEM/TEHRAN

Israeli medics late on Saturday said shrapnel wounded 20 people in the town of Dimona, home to a nuclear facility, after warnings of incoming missile fire from Iran.

Israeli police released pictures of officers in a building with a large hole blown in the wall.

**Dimona** in southern Israel hosts a facility widely believed to possess the **West Asia's sole**, if undeclared, **nuclear arsenal**.

Israel has maintained a policy of ambiguity about its nuclear programme, and the Dimona plant officially focuses on research.

According to Iran's



**Massive damage:** The rubble of a building that was destroyed by a strike in Tehran, Iran on Saturday. REUTERS

atomic energy organisation, the U.S. and Israel targeted a plant at Natanz in Isfahan province, which hosts underground centrifuges to enrich uranium for Iran's disputed nuclear programme and was alrea-

dy damaged in last year's June war. The head of the International Atomic Energy Agency (IAEA), Rafael Grossi, called for "military restraint to avoid any risk of a nuclear accident", but the UN watchdog con-

firmed that no increase in off-site radiation levels had been reported.

Asked about Natanz, the Israeli military said it was "not aware of a strike".

The Israeli military earlier in the day said its forces struck ballistic missile production facilities belonging to Iran's Revolutionary Guards and a separate compound belonging to Iran's Defence Ministry in overnight attacks on Tehran.

"Facilities utilised for the production of critical components for the development of ballistic missiles belonging to the Iranian regime's security apparatus were targeted," the military said.

The U.S. military de-

clared on Saturday it had taken out an Iranian bunker housing weapons threatening oil and gas shipments in the Strait of Hormuz.

Admiral Brad Cooper, head of U.S. Central Command, said U.S. war planes had dropped 5,000-pound bombs on an underground facility on Iran's coast that was storing anti-ship cruise missiles, mobile launchers and other equipment.

"We not only took out the facility, but also destroyed intelligence support sites and missile radar relays that were used to monitor ship movements," Adm. Cooper said in a video statement, revealing details of a strike first announced on Tuesday.

### 22Mar. Iran targets Israel's town housing nuclear facility after Natanz strike नतनज़ हमले के बाद ईरान ने परमाणु सुविधा वाले इजरायली शहर को निशाना बनाया

- Shrapnel wounds **20** in **Dimona**, home to Israel's nuclear facility; **IAEA** chief **Grossi** calls for '**military restraint**' to avoid any risk of a nuclear accident; **U.S. military** uses **5,000-pound bunker-buster bombs** 'to destroy an underground Iranian facility'.  
डिमोना में छरों से **20** लोग घायल हुए, जो इजरायल की परमाणु सुविधा का घर है; **IAEA** प्रमुख **ग्रॉसी** ने परमाणु दुर्घटना के जोखिम से बचने के लिए '**सैन्य संयम**' की अपील की; **अमेरिकी सेना** ने **5,000 पाउंड के बंकर-बस्टर बमों** का उपयोग कर 'भूमिगत ईरानी सुविधा को नष्ट किया'।
- **Dimona** in southern **Israel** hosts a facility widely believed to possess **West Asia's sole nuclear arsenal**, if undeclared.  
दक्षिणी **इजरायल** में स्थित **डिमोना** एक ऐसी सुविधा का घर है जिसे व्यापक रूप से **पश्चिम एशिया का एकमात्र परमाणु शस्त्रागार** माना जाता है, हालांकि आधिकारिक रूप से घोषित नहीं है।



- **Israel** has maintained a policy of ambiguity about its **nuclear programme**, and the Dimona plant officially focuses on research.  
इजरायल ने अपने परमाणु कार्यक्रम के बारे में अस्पष्टता की नीति बनाए रखी है, और डिमोना संयंत्र आधिकारिक रूप से अनुसंधान पर केंद्रित है।
- According to **Iran's atomic energy organisation**, the **U.S. and Israel** targeted a plant at **Natanz in Isfahan province**, which hosts **underground centrifuges to enrich uranium for Iran's disputed nuclear programme** and was already damaged in last year's June war.  
ईरान के परमाणु ऊर्जा संगठन के अनुसार, अमेरिका और इजरायल ने इस्फहान प्रांत के नतनज़ स्थित संयंत्र को निशाना बनाया, जहां यूरेनियम संवर्धन के लिए भूमिगत सेंट्रीफ्यूज हैं और जो पिछले साल जून के युद्ध में पहले ही क्षतिग्रस्त हो चुका था।
- The **head of the International Atomic Energy Agency (IAEA), Rafael Grossi**, called for **"military restraint to avoid any risk of a nuclear accident"**, but the **UN watchdog** confirmed that no increase in off-site radiation levels had been reported.  
अंतरराष्ट्रीय परमाणु ऊर्जा एजेंसी (IAEA) के प्रमुख राफेल ग्रांसी ने "परमाणु दुर्घटना के जोखिम से बचने के लिए सैन्य संयम" की अपील की, लेकिन संयुक्त राष्ट्र निगरानी संस्था ने पुष्टि की कि बाहरी विकिरण स्तर में कोई वृद्धि नहीं हुई है।

## U.K. slams Iran's missile attack at Diego Garcia base

GS III: IR  
Associated Press  
DUBAI

Britain has condemned "Iran's reckless attacks" after its military fired missiles at the U.K.-U.S. air base on the island of Diego Garcia in the Indian Ocean.

U.K. officials have not given details of the attempted strike, which was unsuccessful. It's unclear how close the missiles came to the base, which is about 4,000 km from Iran.

The Ministry of Defence said on Saturday that Iran's "lashing out across the region and holding hostage the Strait of Hormuz, are a threat to British interests and British allies".

Britain has not participated in U.S.-Israeli attacks on Iran, but has allowed American bombers to use U.K. bases to attack Iran's missile sites.

On Friday, the British



**Long shot:** An overview of the Diego Garcia military base on the Chagos Archipelago in the Indian Ocean. AFP

government said U.S. bombers can also use U.K. bases, including Diego Garcia, in operations to prevent Iran attacking ships in the Strait of Hormuz.

Iran targeted the base before that U.K. statement.

Meanwhile, a U.K. official source said Iran was "unsuccessful" in targeting the base at Diego Garcia.

The *Wall Street Journal* reported on Friday, citing

U.S. officials, that while neither of the two ballistic missiles hit their target, the launch suggests that Tehran has missiles with longer ranges than previously thought.

Iran has "always had missiles of that sort of range that we've known about, maybe not declared", former U.K. Royal Navy commander Tom Sharpe said.

### 22Mar. U.K. slams Iran's missile attack at Diego Garcia base यू.के. ने डिएगो गार्सिया बेस पर ईरान के मिसाइल हमले की निंदा की

- Britain has condemned "Iran's reckless attacks" after its military fired missiles at the **U.K.-U.S. air base on the island of Diego Garcia in the Indian Ocean**.  
ब्रिटेन ने "ईरान के लापरवाह हमलों" की निंदा की, जब उसकी सेना ने हिंद महासागर में स्थित डिएगो गार्सिया द्वीप पर यू.के.-यू.एस. एयर बेस पर मिसाइलें दागीं।

**GS Paper III: Economy**

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**22 March 2026**



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# Same field, two fates

## South Pars

An Israeli attack on a gas field straddling the Persian Gulf and Iran's counterstrikes have laid bare how fragile the world's energy security really is

GS III: Economy

V. Nivedita

In a marked escalation of the West Asia conflict, Israel attacked Iran's South Pars gas field, the world's largest, shared with Qatar across the Persian Gulf, on March 18. Iran, in retaliation, launched missile attacks on energy facilities in Qatar, Saudi Arabia, the UAE, Kuwait and Israel.

The U.S. was quick to distance itself from the attack, with President Donald Trump saying that Israel acted alone and that Tel Aviv would not target the "extremely important and valuable" site again.

The war on Iran had already dealt a massive energy shock to the global economy by choking off exports of crude oil and LNG through the Strait of Hormuz. Brent crude rose 5% to \$108.66 a barrel on March 18, while U.S. West Texas Intermediate crude rose 2.5% to \$98.65 a barrel. Natural gas prices also shot up significantly. Beneath the Persian Gulf, straddling the maritime boundary between Iran and Qatar, lies a reservoir so vast it has become central to the energy economies of both countries and much of the world beyond.

Qatar's North Field and Iran's South Pars together contain more than 1,800 trillion cubic feet of usable gas, enough, according to a Reuters report, to supply the world's needs for 13 years. The field is shared



by Iran and Qatar, giving both countries the second and third largest natural gas reserves in the world, behind Russia. The field was first discovered in Qatari waters in 1971. South Pars was discovered in 1990. The two countries then embarked on strikingly different journeys with the same resource.

Qatar built Ras Laffan Industrial City, a bustling metropolis 80 km north of Doha, to process the gas from this field. Today, Ras Laffan processes nearly all of the country's LNG and is responsible for approximately one fifth of the world's entire LNG supply. The revenues it generated transformed Qatar from a small Gulf emirate into one of the wealthiest countries on earth.

Iran's story takes a different turn. South Pars accounts for 70-75% of the Islamic Republic's total gas production. The gas heats homes, powers factories, and fuel industries. It is the backbone of the country's domestic energy supply.

U.S. sanctions, first imposed in the early 1980s,

effectively shut Iran out of global energy markets. Mr. Trump withdrew from the 2015 Iran nuclear deal in 2018, during his first term, and reimposed tough sanctions on Tehran, leaving part of one of the world's richest gas reserves stranded behind a wall of geopolitical isolation.

### India's ties

The escalation of the conflict into energy sites in the region is bad news for India. India's energy relationship with Iran has remained limited as sanctions, security and commercial concerns kept several ambitious projects from taking off. The two countries discussed a 1,036-km Iran-Pakistan-India gas pipeline, but New Delhi stepped back from talks in 2007.

In 2009, ONGC Videsh Ltd. (OVL) and the Hinduja Group signed agreements to pick up a stake in Phase 12 of the South Pars gas field, along with Petronet LNG. The Indian companies were to receive up to 6 million tonnes of liquefied gas annually. OVL, along

with Indian Oil Corporation and Oil India, also had plans to invest \$5-5.5 billion in developing the Farzad-B gas field. None of these projects took off.

India, which imports nearly 80% of its crude oil needs, is heavily dependent on Saudi Arabia, Iraq, Kuwait and the UAE. It also imports 60% of its LPG needs and around 50% of its natural gas requirements.

"Forty-seven percent of our LNG imports are from Qatar, [therefore], any impact there or anything which affects supplies in the Middle East [West Asia] would impact us," Sujata Sharma, Joint-Secretary at the Ministry of Petroleum and Natural Gas told reporters on March 19. New Delhi is procuring LNG from alternative suppliers, but those supplies will take time to arrive and are likely to be more expensive.

Iranian attacks have knocked out 17% of Qatar's LNG export capacity, causing an estimated \$20 billion in lost annual revenue and threatening supplies to Europe and Asia. Even if the war ends tomorrow, it could take years before production is normalised. This means that availability would be reduced, and the prices are elevated.

In LNG markets, where there are limited strategic reserves and supply chains stretch across conflict zones, even short-term disruptions can have outsized consequences.

22Mar. Same field, two fates  
एक ही क्षेत्र, दो किस्मते



- An Israeli attack on a **gas field** straddling the **Persian Gulf** and **Iran's** counterstrikes have laid bare how fragile the world's **energy security** really is.  
**फारस की खाड़ी** में फैले एक **गैस क्षेत्र** पर इजरायली हमले और **ईरान** के जवाबी हमलों ने यह उजागर कर दिया है कि दुनिया की **ऊर्जा सुरक्षा** कितनी नाजुक है।
- In a marked escalation of the **West Asia conflict**, **Israel** attacked **Iran's South Pars gas field**, the world's largest, shared with **Qatar** across the Persian Gulf, on **March 18**.  
**पश्चिम एशिया संघर्ष** में स्पष्ट वृद्धि के बीच, **इजरायल** ने **18 मार्च** को **ईरान के साउथ पार्स गैस क्षेत्र** पर हमला किया, जो दुनिया का सबसे बड़ा है और **कतर** के साथ साझा किया जाता है।
- **Iran**, in retaliation, launched missile attacks on **energy facilities** in **Qatar, Saudi Arabia, the UAE, Kuwait and Israel**.  
**ईरान** ने जवाबी कार्रवाई में **कतर, सऊदी अरब, यूएई, कुवैत और इजरायल** में **ऊर्जा प्रतिष्ठानों** पर मिसाइल हमले किए।
- The **U.S.** was quick to distance itself from the attack, with **President Donald Trump** saying that Israel acted alone and that Tel Aviv would not target the "extremely important and valuable" site again.  
**अमेरिका** ने इस हमले से खुद को अलग करते हुए **राष्ट्रपति डोनाल्ड ट्रंप** ने कहा कि इजरायल ने अकेले कार्रवाई की और तेल अवीव इस "अत्यंत महत्वपूर्ण और मूल्यवान" स्थल को फिर निशाना नहीं बनाएगा।
- The war on **Iran** had already dealt a massive **energy shock** to the global economy by choking off exports of **crude oil** and **LNG** through the **Strait of Hormuz**.  
**ईरान** पर युद्ध ने पहले ही **हॉर्मुज जलडमरूमध्य** के माध्यम से **कच्चे तेल** और **एलएनजी** के निर्यात को रोककर वैश्विक अर्थव्यवस्था को बड़ा **ऊर्जा झटका** दिया है।
- **Brent crude** rose **5% to \$108.66 a barrel** on March 18, while **U.S. West Texas Intermediate crude** rose **2.5% to \$98.65 a barrel**.  
**ब्रेंट क्रूड** 18 मार्च को **5% बढ़कर \$108.66 प्रति बैरल** हो गया, जबकि **यू.एस. वेस्ट टेक्सास इंटरमीडिएट क्रूड** **2.5% बढ़कर \$98.65 प्रति बैरल** हो गया।
- **Natural gas prices** also shot up significantly.  
**प्राकृतिक गैस की कीमतें** भी काफी बढ़ गईं।
- Beneath the **Persian Gulf**, straddling the maritime boundary between **Iran and Qatar**, lies a reservoir so vast it has become central to the energy economies of both countries and much of the world beyond.  
**फारस की खाड़ी** के नीचे, **ईरान और कतर** की समुद्री सीमा पर फैला एक विशाल भंडार है, जो दोनों देशों और दुनिया की ऊर्जा अर्थव्यवस्थाओं के लिए अत्यंत महत्वपूर्ण बन गया है।
- **Qatar's North Field** and **Iran's South Pars** together contain more than **1,800 trillion cubic feet of usable gas**, enough, according to a Reuters report, to supply the world's needs for **13 years**.  
**कतर का नॉर्थ फील्ड** और **ईरान का साउथ पार्स** मिलकर **1,800 ट्रिलियन क्यूबिक फीट** से अधिक गैस रखते हैं, जो **13 वर्षों** तक दुनिया की जरूरतें पूरी करने के लिए पर्याप्त है।
- The field is shared by **Iran and Qatar**, giving both countries the **second and third largest natural gas reserves** in the world, behind **Russia**.  
यह क्षेत्र **ईरान और कतर** द्वारा साझा किया जाता है, जिससे दोनों देशों के पास दुनिया के **दूसरे और तीसरे सबसे बड़े प्राकृतिक गैस भंडार** हैं, जो **रूस** के बाद आते हैं।
- The field was first discovered in **Qatari waters in 1971**.  
यह क्षेत्र पहली बार **1971 में कतर के जल क्षेत्र** में खोजा गया था।
- **South Pars** was discovered in **1990**.  
**साउथ पार्स** की खोज **1990 में हुई थी**।
- The two countries then embarked on strikingly different journeys with the same resource.  
इसके बाद दोनों देशों ने समान संसाधन के साथ बिल्कुल अलग-अलग रास्ते अपनाए।
- **Qatar** built **Ras Laffan Industrial City**, a bustling metropolis **80 km north of Doha**, to process the gas from this field.  
**कतर** ने इस क्षेत्र से गैस प्रसंस्करण के लिए **दोहा से 80 किमी उत्तर में रास लाफान इंडस्ट्रियल सिटी** का निर्माण किया।
- Today, **Ras Laffan** processes nearly all of the country's **LNG** and is responsible for approximately **one fifth of the world's entire LNG supply**.  
आज **रास लाफान** देश के लगभग सभी **एलएनजी** को संसाधित करता है और दुनिया की कुल **एलएनजी आपूर्ति के लगभग पांचवें हिस्से** के लिए जिम्मेदार है।



- The revenues it generated transformed **Qatar** from a small Gulf emirate into one of the **wealthiest countries** on earth.  
इससे उत्पन्न राजस्व ने **कतर** को एक छोटे खाड़ी अमीरात से दुनिया के सबसे **समृद्ध देशों** में बदल दिया।
- **Iran's** story takes a different turn.  
**ईरान** की कहानी अलग दिशा लेती है।
- **South Pars** accounts for **70-75% of the Islamic Republic's total gas production**.  
**साउथ पार्स** इस्लामिक गणराज्य के कुल गैस उत्पादन का **70-75%** हिस्सा है।
- The gas heats homes, powers factories, and fuel industries.  
यह गैस घरों को गर्म करती है, कारखानों को चलाती है और उद्योगों को ऊर्जा देती है।
- It is the backbone of the country's **domestic energy supply**.  
यह देश की **घरेलू ऊर्जा आपूर्ति** की रीढ़ है।
- **U.S. sanctions**, first imposed in the early **1980s**, effectively shut **Iran** out of global energy markets.  
**अमेरिकी प्रतिबंध**, जो पहली बार **1980 के दशक** की शुरुआत में लगाए गए थे, ने **ईरान** को वैश्विक ऊर्जा बाजारों से बाहर कर दिया।
- **Mr. Trump** withdrew from the **2015 Iran nuclear deal** in **2018**, during his first term, and reimposed tough sanctions on **Tehran**, leaving part of one of the world's richest gas reserves stranded behind a wall of geopolitical isolation.  
श्री **ट्रंप** ने अपने पहले कार्यकाल में **2018** में **2015 के ईरान परमाणु समझौते** से हटकर **तेहरान** पर कड़े प्रतिबंध फिर से लगा दिए, जिससे दुनिया के सबसे समृद्ध गैस भंडार का एक हिस्सा भू-राजनीतिक अलगाव में फँस गया।

## India's ties भारत के संबंध

- The escalation of the conflict into **energy sites** in the region is bad news for **India**.  
क्षेत्र में **ऊर्जा स्थलों** तक संघर्ष का विस्तार **भारत** के लिए बुरी खबर है।
- India's energy relationship with **Iran** has remained limited as sanctions, security and commercial concerns kept several ambitious projects from taking off.  
**ईरान** के साथ भारत के ऊर्जा संबंध सीमित रहे हैं क्योंकि प्रतिबंध, सुरक्षा और व्यावसायिक चिंताओं ने कई महत्वाकांक्षी परियोजनाओं को शुरू नहीं होने दिया।
- The two countries discussed a **1,036-km Iran-Pakistan-India gas pipeline**, but New Delhi stepped back from talks in **2007**.  
दोनों देशों ने **1,036 किमी ईरान-पाकिस्तान-भारत गैस पाइपलाइन** पर चर्चा की, लेकिन **2007** में नई दिल्ली ने बातचीत से पीछे हट गया।
- In **2009**, **ONGC Videsh Ltd. (OVL)** and the **Hinduja Group** signed agreements to pick up a stake in **Phase 12 of the South Pars gas field**, along with **Petronet LNG**.  
**2009** में **ओएनजीसी विदेश लिमिटेड (ओवीएल)** और **हिंदुजा समूह** ने **पेट्रोनेट एलएनजी** के साथ मिलकर **साउथ पार्स गैस क्षेत्र के फेज 12** में हिस्सेदारी लेने के लिए समझौते किए।
- The Indian companies were to receive up to **6 million tonnes of liquefied gas annually**.  
भारतीय कंपनियों को सालाना **6 मिलियन टन तरलीकृत गैस** प्राप्त होने वाली थी।
- **OVL**, along with **Indian Oil Corporation** and **Oil India**, also had plans to invest **\$5-5.5 billion** in developing the **Farzad-B gas field**.  
**ओवीएल**, **इंडियन ऑयल कॉर्पोरेशन** और **ऑयल इंडिया** के साथ मिलकर **फरज़ाद-बी गैस क्षेत्र** के विकास में **5-5.5 अरब डॉलर** निवेश की योजना थी।
- None of these projects took off.  
इनमें से कोई भी परियोजना शुरू नहीं हो सकी।
- India, which imports nearly **80% of its crude oil needs**, is heavily dependent on **Saudi Arabia, Iraq, Kuwait and the UAE**.  
भारत, जो अपने **80% कच्चे तेल** का आयात करता है, **सऊदी अरब, इराक, कुवैत और यूएई** पर अत्यधिक निर्भर है।
- It also imports **60% of its LPG needs** and around **50% of its natural gas requirements**.  
यह अपनी **60% एलपीजी जरूरतों** और लगभग **50% प्राकृतिक गैस आवश्यकताओं** का भी आयात करता है।



- “Forty-seven percent of our LNG imports are from Qatar, [therefore], any impact there or anything which affects supplies in the Middle East [West Asia] would impact us,” **Sujata Sharma**, Joint-Secretary at the **Ministry of Petroleum and Natural Gas** told reporters on March 19.  
“हमारे एलएनजी आयात का 47% कतर से आता है, इसलिए वहां कोई भी प्रभाव या मध्य पूर्व [पश्चिम एशिया] में आपूर्ति को प्रभावित करने वाली कोई भी चीज हमें प्रभावित करेगी,” **सुजाता शर्मा, पेट्रोलियम और प्राकृतिक गैस मंत्रालय** की संयुक्त सचिव ने 19 मार्च को संवाददाताओं से कहा।
- New Delhi is procuring LNG from alternative suppliers, but those supplies will take time to arrive and are likely to be more expensive.  
नई दिल्ली वैकल्पिक आपूर्तिकर्ताओं से एलएनजी खरीद रही है, लेकिन इन आपूर्तियों को आने में समय लगेगा और वे अधिक महंगी होंगी।
- **Iranian attacks** have knocked out **17% of Qatar’s LNG export capacity**, causing an estimated **\$20 billion in lost annual revenue** and threatening supplies to **Europe and Asia**.  
**ईरानी हमलों ने कतर की एलएनजी निर्यात क्षमता के 17% को नष्ट कर दिया है, जिससे अनुमानित 20 अरब डॉलर वार्षिक राजस्व नुकसान हुआ है और यूरोप और एशिया को आपूर्ति खतरे में पड़ गई है।**
- Even if the war ends tomorrow, it could take years before production is normalised.  
भले ही युद्ध कल समाप्त हो जाए, उत्पादन सामान्य होने में वर्षों लग सकते हैं।
- This means that availability would be reduced, and the prices are elevated.  
इसका मतलब है कि उपलब्धता कम होगी और कीमतें बढ़ी रहेंगी।
- In **LNG markets**, where there are limited strategic reserves and supply chains stretch across conflict zones, even short-term disruptions can have outsized consequences.  
**एलएनजी बाजारों में, जहां रणनीतिक भंडार सीमित हैं और आपूर्ति श्रृंखलाएं संघर्ष क्षेत्रों से होकर गुजरती हैं, वहां अल्पकालिक व्यवधान भी बड़े प्रभाव डाल सकते हैं।**

PATRIOTIC IAS



# India's options boom, tale of caution

## NEWS ANALYSIS

GS III: Economy  
Ashok Kumar  
MUMBAI

Last month, Finance Minister Nirmala Sitharaman raised the taxes on futures and options trading and the markets responded with a 2% crash. She said that the move was intended to arrest excessive speculation in the market.

An option is a contract that lets a trader lock-in today the price at which he/she can buy or sell a stock or index in the future. The product helps protect investors and traders from market swings that can incur them losses, an activity called hedging.

It is, however, widely used by retail traders to speculate on the value of the stock for immediate gains and such behaviour in large scale can distort the market.

SEBI acknowledged the challenge in a study which found 9/10 persons trading in options lost money and came out with measures to curb volumes in the market, which is among the largest in the world in terms of number of contracts. SEBI, however, said the losses remained even after steps were announced, the report said.

### Speculation chances

The product entered the 25th year of existence in 2026 in the Indian market. A committee headed by L.C. Gupta in 1998 recommended phased introduction of futures and options and laid down the basic ideas and structures to establish fairness.

A subsequent panel in 2002, headed by J.R. Varma, economist and now distinguished professor at Dhirubhai Ambani University and also a former MPC



**Dickey game:** A man walks past a screen displaying the news and stock market updates at the BSE in Mumbai. REUTERS

member, said the market was ready for the introduction and solidified rules.

"Everything that we take for granted today in the cash market, they all started in the derivatives because there we were drawing on a clean slate," Prof. Varma said in a conversation with *The Hindu*.

The report also addressed speculators while setting up the structure. For an investor to hedge the volatility of stocks, there has to be someone to take the opposite bet and that person is usually a speculator.

"Decisions about many aspects of derivatives trading would have to strike a balance between the needs of the hedgers and the necessity to attract an adequate number of well-capitalised speculators who are prepared to take upon themselves the price risk which hedgers want to give up," the committee noted.

The recommendations aimed at setting up a structure for derivatives market to function and were largely implemented which included putting in place of strict entry barriers for intermediaries and brokers, among others.

### New medium

The markets, however, evolved and the growth of brokerage apps made it ea-

sy to speculate on complex instruments. The risk of mis-selling to uninformed clients became more possible with proliferation of financial influencers promising unrealistic returns.

"With an explosion in index options trading on the expiry day over time, concerns arose around investor protection and systemic stability," SEBI officials wrote in a white paper that compared cash with derivative markets, signalling the balance the LCGC report mentioned may have skewed in favour of speculators at least in option contracts with short contract terms.

There was a dissenting voice in the 1998-committee from the then BSE President M.G. Damani, who felt "it would be dangerous to open the derivatives market to small investors in the beginning," adding that the economy was not mature enough for it in the late 1990s.

In the list of questions he posed to the committee before dissociating himself from the recommendations, he suggested that members be filtered by qualifying examinations and net worth criteria.

While brokers do undergo tight scrutiny which was later strengthened, conversations have now shifted towards filtering retail

traders, too, through suitability norms like a test.

Recently, while speaking at an event in Mumbai, the chief executive officer of National Stock Exchange (NSE) Ashish Chauhan said developing countries such as India can't let lower income strata speculate and suggested minimum qualifying criteria to even participate in the derivatives market, echoing Mr. Damani's sentiments in 1998.

Prof. Varma is, however, unsure if such frameworks can help as losing money in the options market could happen even with those with the knowledge.

People ultimately learn and investment as a long-term goal is increasing in popularity. He further said gambling behaviour had always existed and it was the product that kept changing, he said.

Concentration of younger rather than older people in the instruments is a saving grace as the former is resilient, he continued.

Other markets across the world have had such speculative booms in the capital markets and they were dealt with through a combination of frameworks, conditions or even strict surveillance,

It is impossible to curtail such behavioural risk and therefore, regulation has shifted from changing behaviour to containing its consequences, said Jayesh H., co-founder, Juris Corp.

SEBI maintains that the problem existed only in short-tenure options and the impact of existing methods need to be studied before making any further initiatives.

Markets have evolved, and so have the investors, but Mr. Damani's fears of widespread speculation coming out of small trader participation remains a challenge to regulators.

## 22Mar. India's options boom, tale of caution भारत में ऑप्शंस बूम, सावधानी की कहानी

• Last month, Finance Minister Nirmala Sitharaman raised the taxes on futures and options trading and the markets responded with a 2% crash.

पिछले महीने, वित्त मंत्री निर्मला सीतारमण ने फ्यूचर्स और ऑप्शंस ट्रेडिंग पर कर बढ़ाया और बाजारों ने 2% गिरावट के साथ प्रतिक्रिया दी।

• She said that the move was intended to arrest excessive speculation in the market.

उन्होंने कहा कि यह कदम बाजार में अत्यधिक सट्टेबाजी को रोकने के लिए उठाया गया था।

• An option is a contract that lets a trader lock-in today the price at which he/she can buy or sell a stock or index in the future.

एक ऑप्शन एक ऐसा अनुबंध है जो ट्रेडर को भविष्य में किसी स्टॉक या इंडेक्स को खरीदने या बेचने की कीमत आज ही तय करने की अनुमति देता है।

• The product helps protect investors and traders from market swings that can incur them losses, an activity called hedging.

यह उत्पाद निवेशकों और ट्रेडरों को बाजार के उतार-चढ़ाव से बचाने में मदद करता है, जिसे हेजिंग कहा जाता है।

• It is, however, widely used by retail traders to speculate on the value of the stock for immediate gains and such behaviour in large scale can distort the market.

हालांकि, इसे खुदरा ट्रेडरों द्वारा त्वरित लाभ के लिए स्टॉक के मूल्य पर सट्टा लगाने के लिए व्यापक रूप से उपयोग किया जाता है और बड़े पैमाने पर ऐसा व्यवहार बाजार को विकृत कर सकता है।

• SEBI acknowledged the challenge in a study which found 9/10 persons trading in options lost money and came out with measures to curb volumes in the market, which is among the largest in the world in terms of number of contracts.

सेबी ने एक अध्ययन में इस चुनौती को स्वीकार किया जिसमें पाया गया कि 10 में से 9 लोग ऑप्शंस ट्रेडिंग में पैसा खो देते हैं और बाजार में वॉल्यूम को नियंत्रित करने के लिए उपाय किए, जो अनुबंधों की संख्या के मामले में दुनिया के सबसे बड़े बाजारों में से एक है।

• The product entered the 25th year of existence in 2026 in the Indian market.  
यह उत्पाद भारतीय बाजार में 2026 में 25वें वर्ष में प्रवेश कर गया।



- A committee headed by **L.C. Gupta** in **1998** recommended phased introduction of **futures and options** and laid down the basic ideas and structures to establish fairness.  
1998 में एल.सी. गुप्ता की अध्यक्षता वाली समिति ने फ्यूचर्स और ऑप्शंस के चरणबद्ध परिचय की सिफारिश की और निष्पक्षता स्थापित करने के लिए बुनियादी विचार और संरचना तय की।
- A subsequent panel in **2002**, headed by **J.R. Varma**, economist and now distinguished professor at **Dhirubhai Ambani University** and also a former **MPC member**, said the market was ready for the introduction and solidified rules.  
2002 में जे.आर. वर्मा की अध्यक्षता वाले एक अन्य पैनल ने, जो अब धीरूभाई अंबानी विश्वविद्यालय में प्रोफेसर हैं और पूर्व एमपीसी सदस्य भी हैं, कहा कि बाजार इस परिचय के लिए तैयार है और नियमों को मजबूत किया गया।
- “Everything that we take for granted today in the **cash market**, they all started in the **derivatives** because there we were drawing on a clean slate,” Prof. Varma said in a conversation with **The Hindu**.  
प्रोफेसर वर्मा ने द हिंदू से बातचीत में कहा, “आज हम कैश मार्केट में जो कुछ भी सामान्य मानते हैं, वे सब डेरिवेटिव्स से शुरू हुए क्योंकि वहां हमने एक साफ स्लेट से शुरुआत की थी।”
- The report also addressed **speculators** while setting up the structure.  
रिपोर्ट ने संरचना स्थापित करते समय सट्टेबाजों पर भी ध्यान दिया।
- For an investor to hedge the volatility of stocks, there has to be someone to take the opposite bet and that person is usually a **speculator**.  
किसी निवेशक को स्टॉक्स की अस्थिरता से बचाव करने के लिए किसी को विपरीत दांव लेना होता है और वह व्यक्ति आमतौर पर सट्टेबाज होता है।
- “Decisions about many aspects of **derivatives trading** would have to strike a balance between the needs of the hedgers and the necessity to attract an adequate number of well-capitalised speculators who are prepared to take upon themselves the price risk which hedgers want to give up,” the committee noted.  
समिति ने कहा, “डेरिवेटिव्स ट्रेडिंग के कई पहलुओं पर निर्णय लेते समय हेजर्स की जरूरतों और पर्याप्त संख्या में पूंजी-संपन्न सट्टेबाजों को आकर्षित करने की आवश्यकता के बीच संतुलन बनाना होगा, जो कीमत के जोखिम को लेने के लिए तैयार हों।”

## New medium नया माध्यम

- The markets, however, evolved and the growth of **brokerage apps** made it easy to speculate on complex instruments.  
हालांकि, बाजार विकसित हुए और ब्रोकरेज ऐप्स के विकास ने जटिल साधनों पर सट्टा लगाना आसान बना दिया।
- “With an explosion in **index options trading** on the expiry day over time, concerns arose around **investor protection** and **systemic stability**,” **SEBI officials** wrote in a white paper that compared cash with derivative markets, signalling the balance the **LCGC report** mentioned may have skewed in favour of speculators at least in option contracts with short contract terms.  
सेबी अधिकारियों ने एक श्वेत पत्र में लिखा कि समय के साथ एक्सपायरी डे पर इंडेक्स ऑप्शंस ट्रेडिंग में विस्फोट के कारण निवेशक संरक्षण और प्रणालीगत स्थिरता को लेकर चिंताएं बढ़ीं, जिससे यह संकेत मिलता है कि एलसीजीसी रिपोर्ट द्वारा बताए गए संतुलन छोटे अवधि के ऑप्शन अनुबंधों में सट्टेबाजों के पक्ष में झुक गया हो सकता है।
- While brokers do undergo tight scrutiny which was later strengthened, conversations have now shifted towards filtering **retail traders**, too, through suitability norms like a test.  
जहां ब्रोकर कड़ी जांच से गुजरते हैं, जिसे बाद में और मजबूत किया गया, वहीं अब बातचीत खुदरा ट्रेडर्स को भी परीक्षण जैसे उपयुक्तता मानदंडों के माध्यम से छानने की ओर बढ़ गई है।
- Recently, while speaking at an event in **Mumbai**, the chief executive officer of **National Stock Exchange (NSE)** **Ashish Chauhan** said **developing countries such as India can't let lower income strata speculate and suggested minimum qualifying criteria to even participate in the derivatives market**, echoing Mr. Damani's sentiments in 1998.  
हाल ही में मुंबई में एक कार्यक्रम में बोलते हुए नेशनल स्टॉक एक्सचेंज (एनएसई) के सीईओ आशीष चौहान ने कहा कि भारत जैसे विकासशील देश निम्न आय वर्ग को सट्टा लगाने की अनुमति नहीं दे सकते और



डेरिवेटिव्स बाजार में भाग लेने के लिए न्यूनतम योग्यता मानदंड का सुझाव दिया, जो 1998 में दमानी के विचारों को दर्शाता है।

- Other markets across the world have had such **speculative booms** in the capital markets and they were dealt with through a combination of frameworks, conditions or even strict surveillance.  
दुनिया के अन्य बाजारों में भी पूंजी बाजारों में ऐसे **सट्टा उछाल** देखे गए हैं और उनसे निपटने के लिए विभिन्न ढांचे, शर्तें या कड़ी निगरानी अपनाई गई।
- **It is impossible to curtail such behavioural risk and therefore, regulation has shifted from changing behaviour to containing its consequences**, said **Jayesh H.**, co-founder, **Juris Corp.** ऐसे व्यवहारिक जोखिम को रोकना असंभव है और इसलिए नियमन का ध्यान व्यवहार बदलने से हटकर उसके परिणामों को नियंत्रित करने पर चला गया है, यह **जयेश एच.**, सह-संस्थापक, **ज्यूरिस कॉर्प** ने कहा।
- **SEBI maintains that the problem existed only in short-tenure options** and the impact of existing methods need to be studied before making any further initiatives.  
**सेबी** का मानना है कि समस्या केवल अल्पकालिक ऑप्शंस में है और आगे कोई कदम उठाने से पहले मौजूदा उपायों के प्रभाव का अध्ययन किया जाना चाहिए।

## Why alternatives can't replace LPG yet

Renewable energy accounts for a larger share than conventional sources in Karnataka's total installed power generation capacity. The LPG crisis exposed our continued dependence on conventional sources.

**Rishita Khanna** explores why it is so and what it takes to change

**A**t a time when many eateries across Bengaluru are scaling down their menus and households are rushing to buy induction stoves due to LPG shortages, Reva Jhingan Malik and Ranjan Malik's home remains unaffected. The family moved away from LPG six years ago, shifting instead to solar-based cooking at their "mud" house.

Their home has no LPG connections, taps, and fridge or washing machine, and relies only on sustainable alternatives. The shift began during Reva's research on learning practices in rural communities, where the couple observed how households were deeply rooted in sustainable, low-dependence lifestyles, in contrast to what she describes as the "false abundance" of urban living. Since 2020, their meals have been prepared using a three-compartment solar cooker, while their electricity needs are met through a small 850 VA rooftop solar setup.

But such self-sustained models remain an exception, particularly when it comes to urban commercial kitchens that depend on uninterrupted, high-volume cooking. That gap is reflected in the Karnataka's broader energy mix.

### Energy mix

Karnataka currently has a total installed power generation capacity of about 36,472 megawatts (MW), with renewable energy accounting for a larger share than conventional sources. Of the total, around 20,162 MW comes from renewable sources, while 16,310 MW is generated from thermal, hydro, and gas-based plants.



For most eateries, alternative cooking fuels come with challenges related to infrastructure, cost and the nature of commercial cooking.

Among conventional thermal power plants contribute 5,020 MW, while Karnataka receives 4,081 MW as its share from Central Generating Stations. Hydro power accounts for another 3,798 MW. Additional sources include 1,200 MW from Udupi Power Corporation Limited, 1,391 MW from captive mini-thermal plants, 450 MW from the Damodar Valley Corporation, and 370 MW from the Yelahanka Combined Cycle Power Plant.

Renewables form the largest portion of the State's installed capacity, with solar alone contributing about 9,805 MW, followed by wind at 7,536 MW. Other sources include 1,742 MW from co-generation, 940 MW from mini hydro projects, and 193 MW from biomass. Together, these account for more than half of Karnataka's installed electricity capacity.

However, despite the rapid expansion of renewable energy in the State, this shift has not translated into viable alternatives for small eateries and commercial kitchens, which continue to rely almost entirely on LPG – a dependence now exposed by the ongoing supply disruption. Most households too continue to depend on LPG.

### LPG disruption

On March 9, the Bangalore Hotels' Association raised alarm over a sudden shortage of commercial LPG, which followed escalating tensions in West Asia – a region critical to India's fuel imports, with key shipping routes such as the Strait of Hormuz handling a significant share of global

LPG trade. While the industry was initially assured that supplies were sufficient for over 70 days, the situation tightened within days.

Across the 40,000 hotels in Bengaluru, a majority of small and mid-sized eateries either restricted operations to beverages such as tea and filter coffee or sharply cut down menus to basic rice-based items like sambar rice starting March 10. In the days that followed, as the disruption persisted, several establishments also began increasing prices amid rising input costs and continued uncertainty over supplies. For most hotels, however, the disruption is not just a supply issue but explains how deeply small and medium scale commercial kitchens are built around LPG.

"Small eateries largely depend on LPG because it is the only fuel that can reliably meet the scale and speed of commercial cooking," said Basavaraj M.S., who runs a small eatery in Rajajinagar. In most restaurants, multiple burners operate simultaneously for hours – preparing dosa, frying snacks, boiling rice and cooking curries at the same time. LPG provides a strong, consistent flame that can be adjusted instantly depending on the dish.

This dependence is also reinforced by the way kitchens are set up. "Most restaurant kitchens are designed around LPG-based stoves and equipment. Shifting to electric or induction systems would mean replacing burners, vessels and, in many cases, upgrading wiring capacity. For small eateries operating on thin margins, that is not practical," he said.

### Practical barriers

Even in situations where alternatives are considered, operational constraints remain, however.

For most eateries, alternative cooking fuels come with challenges related to infrastructure, cost and the nature of commercial cooking, said Rupa Shashtri, owner of a restaurant in Gandhinagar. "Solar energy, for instance, cannot directly support kitchen operations as it does not generate the kind of continuous, high heat required for bulk cooking. While it can produce electricity, running multiple appliances would require large rooftop spaces and battery storage systems, something rarely feasible in compact, rented commercial spaces," she explained.

Mahesh Bhat K., owner of a restaurant in Vasanth Nagar, added that electric cooking also presents limitations at scale. Running several induction or electric stoves simultaneously requires significantly higher electrical load than what most establishments are equipped for. Many restaurants already operate close to their sanctioned capacity, and upgrading to higher-load connections involves additional cost and approvals.

Other alternatives such as piped natural gas (PNG) and biomass also face constraints. PNG infrastructure remains limited to certain areas, leaving many eateries without access, while in-

stallation requires time and upfront investment. Biomass-based fuels, on the other hand, require additional space, ventilation and handling due to smoke and residue, conditions that are difficult to manage in dense urban kitchens.

Waste-to-energy solutions face a more fundamental challenge: the lack of consistent waste segregation at source. Mixed waste, in practice, significantly reduces the efficiency of such systems.

Despite policy push and infrastructure in place, poor segregation by households and commercial establishments continues to limit the viability of waste-to-energy at an individual or decentralised level.

### At scale

In contrast, a few large, centralised kitchens have managed to integrate such alternatives into their operations at scale.

One such example is Adama Chetana's Anna-poorna kitchen in Bengaluru, which prepares over 72,000 mid-day meals without relying on LPG, diesel or kerosene. The facility, which initially operated on LPG in 2011 and later transitioned to diesel, has over time shifted to a fully fossil-free model built on biomass and circular resource use.

Cooking here is powered primarily by biomass briquettes made from agricultural waste. The organisation estimates that the transition has helped save nearly 12,500 LPG cylinders and close to one lakh litres of diesel annually.

The system is supported by integrated resource use – organic waste is repurposed as fuel, a biogas unit converts kitchen waste into energy for additional heating, and a co-generation system produces hot water without additional fuel. Solar power supports part of the electricity demand through rooftop installations. Waste management is central to operations. What was once nearly 300 kg of daily

### Power generation in State

Source	Installed capacity in MW
Hydro	3,798
State-owned thermal	5,020
State share with CGS	4,081
LPG (BPCL)	1,400
DLA	450
Captive (Mini-thermal)	1,391
VCCP gas	370
<b>Total (Conventional)</b>	<b>16,310</b>
Source	Installed capacity in MW
Wind	7,536
Solar	9,805
Mini-hydro	940
Biomass	193
Cogeneration	1,742
<b>Total (RE)</b>	<b>20,162</b>

Source: Karnataka Power Corporation Limited (KPLC)

waste has been reduced to zero through reuse and recycling, with vegetable waste diverted for composting or cattle feed, and water reused across processes.

However, such models depend on scale, space and long-term planning – factors that hoteliers say are largely absent in small and mid-sized eateries operating in compact, rented spaces. The transition also requires upfront investment and redesign, making it difficult to replicate across any city's fragmented food sector.

### Beyond fuel availability

Explaining why alternatives to LPG remain limited for residential use at present, Purva Jain, Lead Energy Specialist (Gas and International Advocacy), South Asia, Institute for Energy Economics and Financial Analysis (IEEFA), said that while alternatives exist, their adoption needs more policy support.

"If you look purely at the cost of use, electric cooking can turn out to be one of the cheapest option today. Our (IEEFA) analysis shows that for a family of four, electricity-based cooking is cheaper than both PNG and non-subsidised LPG, and is comparable to subsidised LPG for many consumers. PNG can be around 14% more expensive than electricity-based cooking, and non-subsidised LPG up to 37% more for a family of four in Delhi."

However, operating costs alone does not drive adoption. "The real challenge lies in the upfront cost of procurement and awareness. LPG continues to dominate because most users already have the connection, equipment, and utensils. Even for a new

connection, the initial cost is relatively low compared to other options," she stressed.

### Rooftop solar

This gap between potential and adoption is also visible in rooftop solar uptake across Bengaluru. According to data from the Energy Department, 14,944 buildings under the Bangalore Electricity Supply Company Limited have installed rooftop solar systems, including 215 government buildings, together generating about 352.35 MW of electricity.

Within Bengaluru Urban and Rural districts alone, there are 5,370 such installations, with 4,984 in urban areas.

Jain pointed out that alternatives such as PNG and induction cooking come with higher entry barriers. "For PNG, the upfront cost of getting a connection, including deposits, is significantly higher, and more importantly, it is only available in areas where pipeline infrastructure exists. That geographic limitation itself becomes a constraint."

Induction cooking, she added, faces both cost and design challenges. "The cost of buying induction cooktops and compatible utensils is higher, and the design itself can be a barrier. In India, even the most basic cooking setup typically involves at least two burners. Most induction systems are single-cooktop units, and upgrading to multiple units increases costs further. That becomes a constraint, especially for households or commercial kitchens used to cooking multiple dishes simultaneously."

### The way forward

Jain said the current volatility resulting in LPG supply disruption should be seen as an opportunity to push cleaner alternatives, but only with the right policy and market support. "There is a clear middle path here. Awareness is one part, both from a policy perspective and from manufacturers. Companies need to make alternative technologies more accessible and affordable, just as LPG ecosystems have evolved over time."

On other alternatives, she said solutions like waste-to-energy and biogas require deeper systemic changes. "Waste-to-energy faces challenges such as lack of proper waste segregation, which makes it difficult to scale in India. Biogas, on the other hand, has strong potential, particularly in rural areas and cluster-based industries, but again, it needs coherent policy and fiscal support and infrastructure."

"In a country like India, no single fuel can replace another entirely," she added. "The focus should be on optimising different energy sources based on context, which requires long-term planning, not just short-term responses during crises."

### Individual choice matters

Emphasising the importance of conscious choice, Reva Jhingan Malik said their decision to build an off-grid home came at a time when Bengaluru was repeatedly making headlines for water scarcity and pollution, prompting them to rethink how they lived. She believes more people do not move towards such models largely because the urgency of the problem does not fully register at an individual level.

"The systems we live in make everything readily available, so it becomes difficult to imagine a different way of living. As long as that comfort exists, there is very little push to change." While larger systems need to evolve, Reva believes that responsibility also lies with individuals to recognise the limits and act accordingly.



22Mar. Why alternatives can't replace LPG yet  
विकल्प अभी LPG की जगह क्यों नहीं ले सकते



- **Renewable energy** accounts for a larger share than **conventional sources** in Karnataka's total installed power generation capacity.  
नवीकरणीय ऊर्जा का हिस्सा कर्नाटक की कुल स्थापित विद्युत उत्पादन क्षमता में पारंपरिक स्रोतों से अधिक है।
- The **LPG crisis** exposed our continued dependence on **conventional sources**.  
**LPG संकट** ने हमारी **पारंपरिक स्रोतों** पर निरंतर निर्भरता को उजागर किया।
- At a time when many eateries across **Bengaluru** are scaling down their menus and households are rushing to buy **induction stoves** due to **LPG shortage**, **Reva Jhingan Malik** and **Ranjan Malik's** home remains unaffected.  
जब **बेंगलुरु** में कई होटल अपने मेनू कम कर रहे हैं और लोग **LPG की कमी** के कारण **इंडक्शन स्टोव** खरीद रहे हैं, तब **रेवा झिंगन मलिक** और **रंजन मलिक** का घर प्रभावित नहीं हुआ।
- The family moved away from **LPG** six years ago, shifting instead to **solar-based cooking** at their "mud" house.  
इस परिवार ने छह साल पहले **LPG** छोड़कर अपने "मिट्टी के घर" में **सौर ऊर्जा आधारित खाना पकाने** को अपनाया।
- Their home relies only on **sustainable alternatives**.  
उनका घर पूरी तरह **सतत विकल्पों** पर निर्भर है।
- **Since 2020**, their meals have been prepared using a **solar cooker**, while electricity comes from a **rooftop solar setup**.  
2020 से उनका खाना **सोलर कुकर** से बनता है और बिजली **रूफटॉप सोलर सिस्टम** से आती है।
- **But such self-sustained models remain an exception, especially for urban commercial kitchens**.  
लेकिन ऐसे **आत्मनिर्भर मॉडल** खासकर **शहरी व्यावसायिक रसोईघरों** में अपवाद हैं।

### Energy mix ऊर्जा मिश्रण

- Karnataka has about **36,472 MW** installed capacity, with **renewables** contributing **20,162 MW**.  
कर्नाटक की कुल क्षमता **36,472 मेगावाट** है, जिसमें **नवीकरणीय ऊर्जा** का योगदान **20,162 मेगावाट** है।
- **Conventional sources** contribute **16,310 MW**.  
**पारंपरिक स्रोतों** का योगदान **16,310 मेगावाट** है।
- **Solar energy** contributes about **9,805 MW**, while **wind energy** contributes **7,536 MW**.  
**सौर ऊर्जा** लगभग **9,805 मेगावाट** और **पवन ऊर्जा** **7,536 मेगावाट** देती है।
- Despite this, **LPG dependence** continues for most households and eateries.  
इसके बावजूद अधिकांश घर और होटल अभी भी **LPG पर निर्भर** हैं।

### LPG disruption LPG आपूर्ति बाधा

- On March 9, **Bangalore Hotels' Association** raised concerns over **LPG shortage** linked to **West Asia tensions**.  
9 मार्च को **बेंगलूर होटल्स एसोसिएशन** ने **पश्चिम एशिया तनाव** के कारण **LPG की कमी** पर चिंता जताई।
- Many eateries reduced menus or shifted to basic items like **sambar rice**.  
कई होटलों ने मेनू कम कर दिया या **सांभर चावल** जैसे सरल भोजन पर आ गए।
- Prices also increased due to **rising input costs**.  
**बढ़ती लागत** के कारण कीमतें भी बढ़ीं।
- **"LPG is the only fuel that meets the scale and speed of commercial cooking,"** said **Basavaraj M.S.**  
**बसवराज एम.एस.** ने कहा, "**LPG** ही ऐसा ईंधन है जो **व्यावसायिक खाना पकाने की गति और मात्रा** को पूरा करता है।"

### Practical barriers व्यावहारिक बाधाएं



- **Solar energy** cannot provide **continuous high heat** needed for bulk cooking.  
सौर ऊर्जा बड़े पैमाने पर खाना पकाने के लिए आवश्यक लगातार उच्च ताप नहीं दे सकती।
- **Electric cooking** requires higher **power load and infrastructure**.  
इलेक्ट्रिक कुकिंग के लिए अधिक बिजली लोड और ढांचा चाहिए।
- **PNG** is limited by **pipeline availability**, while **biomass** needs space and ventilation.  
PNG पाइपलाइन उपलब्धता से सीमित है, जबकि बायोमास को स्थान और वेंटिलेशन चाहिए।
- **Waste-to-energy** faces issues due to poor **waste segregation**.  
वेस्ट-टू-एनर्जी को खराब कचरा पृथक्करण के कारण समस्या होती है।

<b>GS Paper III: S&amp;T,</b>	
<b>TOPICS COVERED</b>	<b>22 March 2026</b>
<b>22Mar</b>	<b>Why do electric vehicle batteries catch fire?</b> इलेक्ट्रिक वाहन बैटरियाँ आग क्यों पकड़ती हैं?
<b>22Mar</b>	<b>Nifty chemistry oers to make laundry cleaner</b> उन्नत रसायन विज्ञान कपड़ों की धुलाई को अधिक साफ बनाने का अवसर देता है
<b>22Mar</b>	<b>New reaction to recover Li from battery waste</b> बैटरी अपशिष्ट से Li को पुनः प्राप्त करने के लिए नई अभिक्रिया
<b>22Mar</b>	<b>Where or what is the human mind?</b> मानव मस्तिष्क (mind) क्या है और कहाँ स्थित है?



# Why do electric vehicle batteries catch fire?

Are they safe? Do external conditions matter? What can industry and users do to ensure safety?

GS III: S&T  
Vasudevan M. QMB

The story so far:

A fire tore through a house in Indore on March 18, killing eight people, including two children. An electric vehicle (EV) charging point outside appeared to have sparked the blaze. An investigation is underway.

Are EV batteries safe?

Nearly every EV on the road runs on lithium-ion batteries, which use the same chemistry that powers millions of smartphones and laptops. They pack more energy than lead-acid batteries and are generally safe when managed well.

A common cause of EV battery fires is thermal runaway. A lithium-ion battery packs thousands of cells tightly together, each generating heat as it charges and discharges. Normally, an onboard computer called the battery management system keeps the temperature within a safe range. But if something goes wrong, one cell can overheat, causing neighbouring cells to overheat in a chain reaction that can outpace the cooling system. This process releases a toxic cocktail of gases, including hydrogen fluoride, in a flammable vapour that eases the 'path' to a fire.

What causes thermal runaway?

Manufacturers protect battery packs by packing them inside shells of reinforced steel or aluminium. However, a hard impact – like from a strong impact to the undercarriage – can

Parking an EV in direct sunlight for long periods or charging it immediately after a long drive can add to the thermal stress. Flooding also threatens batteries

deform the casing and puncture or deform the cells inside, leading to a short circuit.

Charging a battery beyond its designed capacity can force charge to build up in the 'wrong' places

inside cells. Reputable EV manufacturers include safeguards in their charging systems to prevent this but third-party or damaged chargers may not pay attention to these limits. And regularly charging a battery overnight with such a charger can increase the risk.

As the battery expands and contracts during use, rare manufacturing defects such as a small protrusion of metal can bring the positive and negative electrodes in touch, causing an enormous current to flow between them. This releases heat that then spreads through the pack. Extension cords or domestic wiring in old buildings can also overheat when they cannot handle the sustained current.

Do external conditions matter?

In hot weather, the cooling system can struggle to shed heat. Parking an EV in direct sunlight for long periods or charging it immediately after a long drive can add to the thermal stress.

As batteries age, their internal components also degrade. So users who ignore warning lights or skip inspections can miss early signs of swelling or chemical decomposition.

Flooding also threatens batteries. The contaminated water after heavy rains can infiltrate a battery pack and cause short circuits. Several EV fires have occurred in the days after vehicles were submerged in floodwater.

EVs are not uniquely dangerous. Petrol cars catch fire too, and more often, as they carry flammable fuel next to an engine running at a high temperature. The difference is that EV battery fires burn hotter, spread faster, and are harder to put out (as the battery releases oxygen as it burns).

The Indore incident was made worse by the fact that LPG cylinders were stored in the house, a sports bike was parked inside, and electronic door locks jammed when the power failed.

What are industry and users doing?

Most EVs today have channels alongside the cells filled with a coolant that absorbs their heat and dissipates it into the air. Scientists are currently developing a new form of cooling where the coolant evaporates as it absorbs heat and releases it into the air, improving heat transfer and handling temperature spikes better.

Manufacturers are also exploring batteries with a solid electrolyte rather than the current liquid to reduce the risk of a thermal runaway, while refining firewalls inside existing designs so that if one cell fails, the fire does not spread.

Users can also take precautions by using the charger that came with the vehicle or one certified by the manufacturer, avoiding routine unattended charging, ensuring home electrical systems meet the necessary standards for high-power appliances, and having EV batteries inspected after any significant impact. Experts have recommended letting batteries cool after a long drive before charging and also keeping the charging area clear.

The Bureau of Indian Standards released updated safety norms for EV batteries in 2023 after a spate of fires the previous year prompted a government review. As part of its AIS-156 standard, the Automotive Research Association of India also requires tests to check how heat propagates in a battery and requires battery packs to give a vehicle's users at least five minutes to escape before a fire.

22Mar. Why do electric vehicle batteries catch fire?

इलेक्ट्रिक वाहन बैटरियाँ आग क्यों पकड़ती हैं?

- A fire tore through a house in Indore on March 18, killing eight people, including two children.

18 मार्च को इंदौर में एक घर में आग लग गई, जिसमें आठ लोगों की मृत्यु हो गई, जिनमें दो बच्चे शामिल थे।

- An electric vehicle (EV) charging point outside appeared to have sparked the blaze.

घर के बाहर लगे इलेक्ट्रिक वाहन (EV) चार्जिंग पाइंट से आग लगने की आशंका है।

- An investigation is underway. मामले की जांच जारी है।

Are EV batteries safe?

क्या EV बैटरियाँ सुरक्षित हैं?

- Nearly every EV on the road runs on lithium-ion batteries, which use the same chemistry that powers millions of smartphones and laptops.

लगभग हर EV में

लिथियम-आयन बैटरियाँ होती हैं, जो स्मार्टफोन और लैपटॉप जैसी ही तकनीक पर काम करती हैं।

- They pack more energy than lead-acid batteries and are generally safe when managed well. ये लेड-एसिड बैटरियों की तुलना में अधिक ऊर्जा संग्रहीत करती हैं और सही प्रबंधन में सामान्यतः सुरक्षित होती हैं।

- A common cause of EV battery fires is thermal runaway.

EV बैटरी में आग लगने का एक सामान्य कारण थर्मल रनअवे है।

- A lithium-ion battery packs thousands of cells tightly together, each generating heat as it charges and discharges.

लिथियम-आयन बैटरी में हजारों सेल होते हैं जो चार्ज और डिस्चार्ज के दौरान ऊष्मा उत्पन्न करते हैं।



- Normally, an onboard computer called the **battery management system** keeps the temperature within a safe range.  
सामान्यतः **बैटरी मैनेजमेंट सिस्टम** तापमान को सुरक्षित सीमा में बनाए रखता है।
- But if something goes wrong, one cell can overheat, causing neighbouring cells to overheat in a chain reaction that can outpace the cooling system.  
लेकिन खराबी होने पर एक सेल **अत्यधिक गर्म** हो सकता है, जिससे आसपास के सेल भी गर्म होकर **श्रृंखलाबद्ध प्रतिक्रिया** पैदा करते हैं।
- This process releases a toxic cocktail of gases, including **hydrogen fluoride**, in a flammable vapour that eases the path to a fire.  
इस प्रक्रिया में **हाइड्रोजन फ्लोराइड** सहित विषैली गैसों निकलती हैं जो ज्वलनशील वाष्प बनाकर आग को बढ़ाती हैं।

### What causes thermal runaway? थर्मल रनअवे के कारण क्या है?

- Manufacturers protect battery packs by packing them inside shells of **reinforced steel or aluminium**.  
निर्माता बैटरी को **मजबूत स्टील या एल्युमिनियम** के खोल में सुरक्षित रखते हैं।
- However, a hard impact — like from a strong impact to the undercarriage — can deform the casing and puncture or deform the cells inside, leading to a **short circuit**.  
लेकिन तेज झटका बैटरी केस को नुकसान पहुंचाकर अंदर के सेल को प्रभावित कर सकता है और **शॉर्ट सर्किट** कर सकता है।
- Charging a battery beyond its designed capacity can force charge to build up in the wrong places inside cells.  
बैटरी को क्षमता से अधिक चार्ज करने पर चार्ज गलत जगह जमा हो सकता है।
- Reputable EV manufacturers include safeguards in their charging systems to prevent this but **third-party or damaged chargers** may not pay attention to these limits.  
विश्वसनीय निर्माता सुरक्षा उपाय रखते हैं, लेकिन **थर्ड-पार्टी या खराब चार्जर** इन सीमाओं का पालन नहीं करते।
- And regularly charging a battery overnight with such a charger can increase the risk.  
ऐसे चार्जर से रातभर चार्ज करने से जोखिम बढ़ता है।
- As the battery expands and contracts during use, rare manufacturing defects such as a small protrusion of metal can bring the positive and negative electrodes in touch, causing an enormous current to flow.  
उपयोग के दौरान विस्तार-संकुचन से छोटे दोष इलेक्ट्रोड को जोड़ सकते हैं जिससे भारी करंट प्रवाहित होता है।
- This releases heat that then spreads through the pack.  
इससे उत्पन्न **ऊष्मा** पूरे बैटरी पैक में फैल जाती है।
- Extension cords or domestic wiring in old buildings can also overheat when they cannot handle the sustained current.  
पुराने घरों की वायरिंग या एक्सटेंशन कॉर्ड भी अधिक करंट से **ओवरहीट** हो सकते हैं।

### Do external conditions matter? क्या बाहरी परिस्थितियाँ प्रभाव डालती हैं?

- In hot weather, the cooling system can struggle to shed heat.  
गर्म मौसम में कूलिंग सिस्टम गर्मी निकालने में संघर्ष करता है।
- Parking an EV in direct sunlight for long periods or charging it immediately after a long drive can add to the thermal stress.  
लंबे समय तक धूप में पार्किंग या लंबी ड्राइव के तुरंत बाद चार्जिंग से **थर्मल तनाव** बढ़ता है।
- As batteries age, their internal components also degrade.  
बैटरी के पुराने होने पर उसके अंदरूनी घटक खराब होने लगते हैं।
- So users who ignore warning lights or skip inspections can miss early signs of swelling or chemical decomposition.  
चेतावनी संकेतों को नजरअंदाज करने पर शुरुआती संकेत छूट सकते हैं।
- Flooding also threatens batteries.  
**बाढ़** भी बैटरियों के लिए खतरा है।



- The contaminated water after heavy rains can infiltrate a battery pack and cause short circuits.  
दूषित पानी बैटरी में प्रवेश कर **शॉर्ट सर्किट** कर सकता है।
- Several EV fires have occurred in the days after vehicles were submerged in floodwater.  
कई EV आग की घटनाएँ बाढ़ में डूबने के बाद हुई हैं।
- EVs are not uniquely dangerous.  
EV विशेष रूप से अधिक खतरनाक नहीं हैं।
- Petrol cars catch fire too, and more often, as they carry flammable fuel next to an engine running at a high temperature.  
पेट्रोल कारों में भी अधिक आग लगती है क्योंकि उनमें ज्वलनशील ईंधन होता है।
- The difference is that EV battery fires burn hotter, spread faster, and are harder to put out (as the battery releases oxygen as it burns).  
अंतर यह है कि EV आग **अधिक गर्म**, तेज फैलती और बुझाना कठिन होती है।
- The Indore incident was made worse by the fact that **LPG cylinders** were stored in the house, a **sports bike** was parked inside, and **electronic door locks** jammed when the power failed.  
इंदौर घटना में स्थिति इसलिए और गंभीर हुई क्योंकि घर में **LPG सिलेंडर**, **स्पोर्ट्स बाइक** थी और बिजली जाने पर **इलेक्ट्रॉनिक लॉक** जाम हो गए।

### What are industry and users doing? उद्योग और उपयोगकर्ता क्या कर रहे हैं?

- Most EVs today have channels alongside the cells filled with a **coolant** that absorbs their heat and dissipates it into the air.  
आज अधिकांश EV में सेल के पास **कूलेंट** चैनल होते हैं जो गर्मी को अवशोषित कर हवा में छोड़ते हैं।
- Scientists are currently developing a new form of cooling where the coolant **evaporates** as it absorbs heat and releases it into the air, improving heat transfer and handling temperature spikes better.  
वैज्ञानिक नई कूलिंग तकनीक विकसित कर रहे हैं जिसमें कूलेंट गर्मी लेकर **वाष्पित** हो जाता है और ताप नियंत्रण बेहतर करता है।
- Manufacturers are also exploring batteries with a **solid electrolyte** rather than the current liquid to reduce the risk of a **thermal runaway**.  
निर्माता **ठोस इलेक्ट्रोलाइट** वाली बैटरियों पर काम कर रहे हैं ताकि **थर्मल रनअवे** का खतरा कम हो।
- While refining **firewalls** inside existing designs so that if one cell fails, the fire does not spread.  
साथ ही डिजाइन में **फायरवॉल** सुधार किए जा रहे हैं ताकि एक सेल खराब होने पर आग न फैले।
- Users can also take precautions by using the charger that came with the vehicle or one **certified by the manufacturer**.  
उपयोगकर्ता वाहन के साथ आए या **प्रमाणित चार्जर** का उपयोग करें।
- Avoiding routine **unattended charging**.  
नियमित रूप से बिना निगरानी के चार्जिंग से बचें।
- Ensuring home electrical systems meet the necessary standards for **high-power appliances**.  
घर की वायरिंग **उच्च शक्ति उपकरणों** के लिए उपयुक्त होनी चाहिए।
- Having EV batteries inspected after any **significant impact**.  
किसी भी **बड़े झटके** के बाद बैटरी की जांच कराएं।
- Experts have recommended letting batteries **cool after a long drive** before charging and also keeping the charging area clear.  
विशेषज्ञ सलाह देते हैं कि लंबी ड्राइव के बाद बैटरी को **ठंडा होने दें** और चार्जिंग क्षेत्र साफ रखें।
- The **Bureau of Indian Standards (BIS)** released updated safety norms for EV batteries in **2023** after a spate of fires the previous year prompted a government review.  
**भारतीय मानक ब्यूरो (BIS)** ने **2023** में EV बैटरी के लिए नए सुरक्षा मानक जारी किए।
- As part of its **AIS-156 standard**, the Automotive Research Association of India requires tests to check how heat propagates in a battery.  
**AIS-156 मानक** के तहत बैटरी में गर्मी फैलने की जांच अनिवार्य है।
- It also requires battery packs to give users at least **five minutes** to escape before a fire.  
यह भी अनिवार्य है कि आग लगने से पहले उपयोगकर्ताओं को कम से कम **5 मिनट** का समय मिले।



GS III: S&T

## Nifty chemistry offers to make laundry cleaner

Researchers have made a fabric coating that offers to eliminate detergents from laundry. They sprayed alternating layers of compounds called PDADMAC and PVS onto textiles. The spray formed a dense layer that effectively repelled stains, residues, and germs, and could be washed off by rinsing under tap water. The team has estimated the technique could lower water and electricity use by 80% and also eliminate the discharge of detergent residues and microplastics in the wastewater.

**water and electricity use by 80%** and also eliminate the discharge of **detergent residues and microplastics** in the wastewater.

टीम के अनुसार यह तकनीक पानी और बिजली की खपत को 80% तक कम कर सकती है और अपशिष्ट जल में डिटर्जेंट अवशेष व माइक्रोप्लास्टिक को खत्म कर सकती है।

## 22Mar. Nifty chemistry offers to make laundry cleaner

उन्नत रसायन विज्ञान कपड़ों की धुलाई को अधिक साफ बनाने का अवसर देता है

- **Fabric coating to eliminate detergents in laundry** कपड़ों की धुलाई में डिटर्जेंट हटाने के लिए फैब्रिक कोटिंग

- Researchers have made a **fabric coating** that offers to eliminate **detergents** from laundry.

शोधकर्ताओं ने एक **फैब्रिक कोटिंग** विकसित की है जो धुलाई में डिटर्जेंट की आवश्यकता समाप्त कर सकती है।

- They sprayed alternating layers of compounds called **PDADMAC and PVS** onto textiles.

उन्होंने कपड़ों पर **PDADMAC और PVS** नामक यौगिकों की परतें स्प्रे कीं।

- The spray formed a **dense layer** that effectively repelled **stains, residues, and germs**, and could be washed off by rinsing under **tap water**.

यह स्प्रे एक **घनी परत** बनाता है जो **दाग, अवशेष और कीटाणुओं** को दूर करता है और **नल के पानी** से धुल सकता है।

- The team has estimated the technique could lower



GS III: S&T

## New reaction to recover Li from battery waste

A new method called halometallurgy could recover lithium from Li-ion battery waste. First, the battery materials are heated to move lithium from the cathode into a mix of sodium and potassium chloride salts, breaking the cathode's structure into transition metal oxides. As the salts melt, they coat the particles to create a barrier against oxygen, which allows graphite to reduce the oxides into metallic alloys. Finally, up to 96% of lithium is recovered in the saline solution.

सकता है।

- Finally, up to **96% of lithium** is recovered in the **saline solution**. अंततः **96% तक लिथियम** को **लवणीय घोल** में पुनः प्राप्त किया जाता है।

## 22Mar. New reaction to recover Li from battery waste बैटरी अपशिष्ट से Li को पुनः प्राप्त करने के लिए नई अभिक्रिया

- **Halometallurgy method to recover lithium from Li-ion battery waste**

**Li-ion बैटरी कचरे से लिथियम पुनर्प्राप्त करने की हैलोमेटलर्जी विधि**

- A new method called **halometallurgy** could recover **lithium** from **Li-ion battery waste**.

**Halo Metallurgy** नामक एक नई विधि **Li-ion बैटरी कचरे से लिथियम** को पुनः प्राप्त कर सकती है।

- First, the battery materials are **heated** to move **lithium** from the **cathode** into a mix of **sodium and potassium chloride salts**, breaking the cathode's structure into **transition metal oxides**.

सबसे पहले बैटरी सामग्री को **गरम** किया जाता है जिससे **लिथियम** को **कैथोड से सोडियम और पोटैशियम क्लोराइड लवणों** के मिश्रण में स्थानांतरित किया जाता है और कैथोड की संरचना **ट्रांजिशन मेटल ऑक्साइड्स** में टूट जाती है।

- As the salts **melt**, they coat the particles to create a **barrier against oxygen**, which allows **graphite** to reduce the oxides into **metallic alloys**.

जब लवण **पिघलते** हैं, तो वे कणों पर परत बनाकर **ऑक्सीजन के विरुद्ध अवरोध** बनाते हैं, जिससे **ग्रेफाइट ऑक्साइड्स** को **धात्विक मिश्रधातुओं** में बदल



# Waves in the ocean

## Where or what is the human mind?

**GS III: S&T**  
Evidence points to the human mind not being a physical object you can touch, but a process the brain creates. The foundation of the mind consists of approximately 86 billion nerve cells, a.k.a. neurons. These cells form a large and intricate web where they communicate by sending electrical signals and releasing chemical messengers called neurotransmitters across gaps known as synapses. Glial cells support these neurons by supplying nutrients and maintaining the structure. However, the mind is more

than just a bunch of cells. Most researchers view the mind as an emergent property of the brain, meaning that while individual neurons can't think or feel, their collective interaction produces consciousness and emotions. For an analogy, if the brain is the hardware of the body, the mind appears to be the software or maybe the active processing unit. It encompasses everything from human logic and language to people's deepest feelings. And research suggests that the mind is quite literally what the brain does.

Readers may send their questions / answers to [science@thehindu.co.in](mailto:science@thehindu.co.in)

## 22Mar. Where or what is the human mind? मानव मस्तिष्क (mind) क्या है और कहाँ स्थित है?

- Evidence points to the human mind not being a **physical object** you can touch, but a **process** the brain creates. प्रमाण बताते हैं कि मानव mind कोई **भौतिक वस्तु** नहीं है जिसे छुआ जा सके, बल्कि यह मस्तिष्क द्वारा निर्मित एक **प्रक्रिया** है।
- The foundation of the mind consists of approximately **86 billion nerve cells (neurons)**. मस्तिष्क का आधार लगभग **86 अरब तंत्रिका कोशिकाओं (neurons)** से बना होता है।
- These cells form a large and intricate web where they communicate by sending **electrical signals** and releasing chemical messengers called **neurotransmitters** across gaps known as **synapses**. ये कोशिकाएँ एक जटिल जाल बनाती हैं जहाँ वे **विद्युत संकेतों** के माध्यम से संवाद करती हैं और **न्यूरोट्रांसमीटर** नामक रासायनिक संदेशवाहक **सिनेप्स** के माध्यम से छोड़ती हैं।
- Glial cells** support these neurons by supplying nutrients and maintaining the structure. **ग्लियल कोशिकाएँ** इन न्यूरॉन्स को पोषक तत्व प्रदान करके और

संरचना बनाए रखकर उनका समर्थन करती हैं।

- However, the mind is more than just a bunch of cells. हालांकि, mind केवल कोशिकाओं का समूह नहीं है।
- Most researchers view the mind as an **emergent property** of the brain, meaning that while individual neurons can't think or feel, their collective interaction produces **consciousness** and **emotions**. अधिकांश शोधकर्ता mind को मस्तिष्क का एक **उद्भव गुण (emergent property)** मानते हैं, अर्थात् एकल न्यूरॉन सोच या महसूस नहीं कर सकता, लेकिन उनका सामूहिक कार्य **चेतना** और **भावनाएँ** उत्पन्न करता है।
- For an analogy, if the brain is the **hardware** of the body, the mind appears to be the **software** or maybe the active processing unit. उदाहरण के रूप में, यदि मस्तिष्क शरीर का **हार्डवेयर** है, तो mind **सॉफ्टवेयर** या सक्रिय प्रोसेसिंग यूनिट के समान है।
- It encompasses everything from human **logic and language** to people's deepest **feelings**. यह मानव की **तर्क क्षमता और भाषा** से लेकर गहरी **भावनाओं** तक सब कुछ समाहित करता है।
- And research suggests that the mind is quite literally what the **brain does**. और शोध बताते हैं कि mind वास्तव में वही है जो **मस्तिष्क करता है**।

## GS Paper III: Environment,

### TOPICS COVERED

22 March 2026

22Mar

**Land encroaches out, Nilgiri tahrs in**  
**भूमि अतिक्रमणकारी बाहर, नीलगिरी तहर अंदर**

22Mar

**Oceans more than gases helped earth cool**  
**गैसों से अधिक महासागरों ने पृथ्वी को ठंडा करने में मदद की**



**GS III: Environment**  
The elephant named Suvarna engages with her calf 'Sudha' at Bannerghatta National Park, 2020. FILE PHOTO

## Land encroachers out, Nilgiri tahrs in

Once a hub of encroachers, **Chokramudi hills** are now a thriving habitat for **Nilgiri tahrs** and **Neelakurinji**; govt. had reclaimed the land after residents protested against illegal construction

**GS III: Environment**  
The Hindu Bureau  
IDUKKI

In 2024, the Chokramudi hills under the Bison Valley panchayat near Munnar in Idukki, Kerala, were known primarily as a hub of encroachers. However, just two years later, the landscape had been transformed into a thriving natural habitat for the endangered Nilgiri tahrs.

The crisis began when an Adimaly native purchased 14.69 acres of land in the ecologically fragile Chokramudi hills, attempting to divide and sell the land into over 60 plots. The encroacher



**Safe home:** A Nilgiri tahr at the Chokramudi hills near Munnar in Idukki district of Kerala. SPECIAL ARRANGEMENT

constructed an illegal road, felled numerous trees, and built a check dam on the hillside. In protest, downstream residents of Bison Valley formed the "Chokramudi Protection Council".  
Two Special

Investigation Teams uncovered large-scale encroachment of government land and the massive destruction of Neelakurinji plants.

Following these reports, the Revenue Department cancelled the 13.69 acres

of land's title deeds in March 2025 and reclaimed the area. By August 2025, authorities cancelled the title deed for an additional 1.05 acres and seized a resort built on the encroached land. Since the government takeover, the absence of unregulated tourism has allowed nature to rebound.

Botanist Jomy Augustine said that the hills have become an active habitat for the Nilgiri tahrs and Neelakurinji. "The climate and grasslands here are most favourable for the tahr," he said. The hills are set to witness a massive flowering of Neelakurinji.

### 22Ma. Land encroaches out, Nilgiri tahrs in भूमि अतिक्रमणकारी बाहर, नीलगिरी तहर अंदर

- Once a hub of **encroachers**, **Chokramudi hills** are now a thriving habitat for **Nilgiri tahrs** and **Neelakurinji**; govt. had reclaimed the land after residents protested against illegal construction.

एक समय **अतिक्रमणकारियों** का केंद्र रहे **चोकरामुडी पहाड़** अब **नीलगिरी तहर** और **नीलकुरिंजी** का समृद्ध आवास बन गए हैं; सरकार ने अवैध निर्माण के खिलाफ निवासियों के विरोध के बाद भूमि को वापस ले लिया।

- In 2024, the **Chokramudi hills** under the **Bison Valley panchayat** near **Munnar** in **Idukki, Kerala**, were known primarily as a hub of **encroachers**.

2024 में, **केरल के इडुक्की** में **मुन्नार** के पास **बाइसन वैली पंचायत** के अंतर्गत आने वाले **चोकरामुडी पहाड़** मुख्य रूप से **अतिक्रमणकारियों** के केंद्र के रूप में जाने जाते थे।

- However, just two years later, the landscape had been transformed into a thriving natural habitat for the endangered **Nilgiri tahrs**.

हालांकि, केवल दो साल बाद ही यह परिदृश्य लुप्तप्राय **नीलगिरी तहर** के लिए एक समृद्ध प्राकृतिक आवास में बदल गया।



- The crisis began when an **Adimaly** native purchased **14.69 acres** of land in the ecologically fragile **Chokramudi hills**, attempting to divide and sell the land into over **60 plots**.  
संकट तब शुरू हुआ जब **अदिमाली** के एक निवासी ने पारिस्थितिक रूप से संवेदनशील **चोकरामुड़ी पहाड़ों** में **14.69 एकड़** भूमि खरीदी और उसे **60 से अधिक प्लॉट्स** में बांटकर बेचने की कोशिश की।
- The encroacher constructed an illegal road, felled numerous trees, and built a **check dam** on the hillside.  
अतिक्रमणकारी ने एक अवैध सड़क बनाई, कई पेड़ों को काटा और पहाड़ी पर एक **चेक डैम** का निर्माण किया।
- In protest, downstream residents of **Bison Valley** formed the "**Chokramudi Protection Council**".  
विरोध में, **बाइसन वैली** के निचले क्षेत्र के निवासियों ने "**चोकरामुड़ी संरक्षण परिषद**" का गठन किया।
- Two **Special Investigation Teams** uncovered large-scale encroachment of **government land** and the massive destruction of **Neelakurinji plants**.  
दो **विशेष जांच टीमों** ने **सरकारी भूमि** पर बड़े पैमाने पर अतिक्रमण और **नीलकुरिंजी पौधों** के भारी विनाश का खुलासा किया।
- Following these reports, the **Revenue Department** cancelled the **13.69 acres** of land's title deeds in **March 2025** and reclaimed the area.  
इन रिपोर्टों के बाद, **राजस्व विभाग** ने **मार्च 2025** में **13.69 एकड़** भूमि के स्वामित्व दस्तावेज रद्द कर दिए और क्षेत्र को वापस ले लिया।
- By **August 2025**, authorities cancelled the title deed for an additional **1.05 acres** and seized a **resort** built on the encroached land.  
**अगस्त 2025** तक, अधिकारियों ने अतिरिक्त **1.05 एकड़** के स्वामित्व दस्तावेज भी रद्द कर दिए और अतिक्रमित भूमि पर बने एक **रिसॉर्ट** को जब्त कर लिया।
- Since the government takeover, the absence of unregulated **tourism** has allowed nature to rebound.  
सरकारी अधिग्रहण के बाद, अनियंत्रित **पर्यटन** की अनुपस्थिति ने प्रकृति को फिर से उभरने का अवसर दिया।
- Botanist **Jomy Augustine** said that the hills have become an active habitat for the **Nilgiri tahrs** and **Neelakurinji**.  
वनस्पतिशास्त्री **जोमी ऑगस्टीन** ने कहा कि ये पहाड़ अब **नीलगिरी तहर** और **नीलकुरिंजी** का सक्रिय आवास बन गए हैं।
- "The climate and **grasslands** here are most favourable for the **tahr**," he said.  
उन्होंने कहा, "यहाँ की जलवायु और **घास के मैदान तहर** के लिए सबसे अनुकूल हैं।"
- The hills are set to witness a massive flowering of **Neelakurinji**.  
ये पहाड़ **नीलकुरिंजी** के बड़े पैमाने पर फूलने के लिए तैयार हैं।



GS III: Environment

## Oceans more than gases helped earth cool

When researchers recently analysed Antarctic ice cores to reconstruct the earth's climate over the last three million years, they found that the world's oceans cooled by 2.5 C, most of it around 2.7 million years ago. While methane levels were unchanged, those of carbon dioxide did so barely 2.9-1.2 million years ago. The findings suggest that factors like ocean circulation and ice sheet growth, rather than gas levels alone, primarily drove long-term cooling.

## 22Mar. Oceans more than gases helped earth cool

गैसों से अधिक महासागरों ने पृथ्वी को ठंडा करने में मदद की

### Climate reconstruction from Antarctic ice cores अंटार्कटिक बर्फ कोर से जलवायु पुनर्निर्माण

- When researchers recently analysed **Antarctic ice cores** to reconstruct the earth's climate over the last **three million years**, they found that the world's oceans cooled by **2.5°C**, most of it around **2.7 million years ago**. जब शोधकर्ताओं ने हाल ही में **अंटार्कटिक बर्फ कोर** का विश्लेषण कर पिछले **तीन मिलियन वर्षों** की जलवायु का अध्ययन किया, तो पाया कि महासागरों का तापमान **2.5°C घटा**, जिसमें से अधिकतर गिरावट **2.7 मिलियन वर्ष पहले** हुई।



- While **methane levels** were unchanged, those of **carbon dioxide** did so barely **2.9–1.2 million years ago**.  
जबकि **मीथेन स्तर** में बदलाव नहीं हुआ, **कार्बन डाइऑक्साइड स्तर** में परिवर्तन केवल **2.9–1.2 मिलियन वर्ष पहले** हुआ।
- The findings suggest that factors like **ocean circulation** and **ice sheet growth**, rather than gas levels alone, primarily drove **long-term cooling**.  
निष्कर्ष बताते हैं कि केवल गैस स्तर नहीं, बल्कि **समुद्री परिसंचरण** और **बर्फ चादरों की वृद्धि** जैसे कारकों ने **दीर्घकालिक ठंडक** को प्रमुख रूप से प्रभावित किया।

<b>GS Paper III: DM,</b>	
<b>TOPICS COVERED</b>	<b>22 March 2026</b>
<b>22Mar</b>	<b>Cost concerns delay safer building codes for Himalayas</b> लागत संबंधी चिंताएँ हिमालय के लिए सुरक्षित भवन कोड में देरी कर रही हैं

PATRIOTIC IAS



# Cost concerns delay safer building codes for Himalayas

India's earthquake safety codes are under scrutiny after the government withdrew updated building standards backed by a decade of scientific research; the revision would have nearly doubled hazard estimates in the Himalaya and northeast

**GS III: Disaster Management**

**A**re the risks to structures in the Himalayas and northeastern states from earthquakes overestimated? Scientists, structural engineers, and representatives from several government ministries are expected to deliberate and report to the Cabinet Secretariat in the coming weeks.

This follows the Bureau of Indian Standards (BIS) withdrawing updated criteria that construction projects ought to incorporate to guard against collapse during earthquakes. The withdrawal was prompted, *The Hindu* reported on March 7, by a Cabinet Secretariat order stating the new standards "materially affected ... ongoing and future infrastructure projects including metro rail projects" and that a "holistic and comprehensive review of the revised IS 1893 be conducted, taking into account the perspectives of all stakeholders."

However, a decade of government-commissioned studies involving scientists from geological, seismological, and geotechnical and structural engineering institutions are clear: the potential damage to structures such as residential buildings, bridges, and power plants in the Himalayan States is higher than current risk assessments.

Engineers and architects are required to follow the IS 1893 standard. India's zoning map delineates four zones.

Zone II is the calmest;

## Shaky ground

Potential damage to all structures in Himalayan States exceed what current assessments predict



**Quake fury:** A view of a building destroyed in the 2001 Bhuj earthquake. An estimated 20,000 people are thought to have been killed in the event. AFP

■ The Indian government recently withdrew updated **earthquake construction standards** due to concerns about high infrastructure project costs

■ Scientific studies indicate that existing seismic assessments for the **Himalayan region** significantly underestimate the risk

■ Experts believe that most earthquake fatalities occur in small houses that **lack adequate structural design**

■ Government officials argue the **proposed standards** are too theoretical and would drastically increase public infrastructure spending

**Proposed revisions would have nearly doubled peak ground acceleration values to match international safety standards for construction**

■ The Bureau of Indian Standards is reviewing the **seismic code** to balance scientific accuracy with economic feasibility

Zone V is assigned to areas along the Himalayan front, where magnitude 8 quakes have occurred in living memory. At such forces, buildings experience stresses that can buckle steel columns and have floors pancaking onto one another.

For context, a magnitude 7 quake 20 km from a fault can produce peak ground acceleration (PGA) exceeding Zone V's design threshold.

The withdrawn update originated from a 2024 paper in the *Indian Journal of Earth System Sciences* that proposed a way to estimate earthquake hazards consonant with global methods.

It was the outcome of a project the National Disaster Management Authority (NDMA) had commissioned in 2019 from IIT-Madras and BIS. It was pre-

ceded by projects in 2007-11 and 2013-17 – all to move the hazard assessment towards a "probabilistic framework". This framework differs from India's existing approach to assess risk to regions only based on past seismicity; it incorporates several variables to forecast forces on a structure in the event of the strongest probable quakes.

The NDMA accepted the study and BIS published its outcomes in IS 1893 as a 2025 update – which was then withdrawn.

The authors comprise scientists from the IITs in Mumbai and Chennai, the Atomic Energy Regulatory Board, and the Geological Survey.

"These PGA values are not derived based on any quantitative earthquake hazard assessment and are abysmally low, especially

for the higher earthquake zones," the authors report. "The 1897 Great Shillong Plateau earthquake in northeast India is reported to have resulted in PGA values more than [1 g]." They note that "design accelerations in similar areas worldwide are taken to be two times (or more) compared to that in the existing zone map of India." The study was led by S.T.G. Raghukanth, C.V.R. Murty, Bhargavi Podili, and K.P. Sreejaya of IIT Madras.

Previously, regions were assigned Zone IV or V only after a significant earthquake; the surrounding areas were assumed to be at lower risk despite decades of pent-up strain. The framework also didn't account for local soil conditions that amplify seismic waves or data from 168 Himalayan monitoring stations.

"The earth is a dynamic system. Every 50 years or so, PGA values change by about 10%," said O.P. Mishra, former director, National Centre for Seismology.

"In a probabilistic assessment you account for a variety of factors that might influence shaking."

The new map assigns PGA values of 0.15-0.75 g for Zones II through a newly introduced Zone VI. It draws on 69,519 earthquake events from 2600 BC to 2019, 36 seismogenic source zones, and ground motion models. These values have likely rattled agencies such as the Delhi Metro Rail Corporation and the National Dam Safety Authority.

"Recent evidence shows that 95% of those who die in earthquakes are those who live in 1-3 storey houses that are inadequately designed," said a scientist involved in the exercise. "The 0.75 factor is also a lower number." Pakistan and Nepal use values close to 0.75g, while the U.S. and Japan routinely calculate 1 g or more, he added.

One NDMA official said the recommended values "were too high" and would strain public spending. "On one hand we have the situation that a large proportion do not follow even the [2016] codes. Then with these stringent numbers, steel, cement costs will go up manifold; where there is money to build four schools or clinics in a village, only one will be made."

The NDMA didn't respond to requests for official comment.

## 22Mar. Cost concerns delay safer building codes for Himalayas लागत संबंधी चिंताएँ हिमालय के लिए सुरक्षित भवन कोड में देरी कर रही हैं

- Are the risks to structures in the **Himalayas and northeastern states** from earthquakes **overestimated**?  
क्या हिमालय और उत्तर-पूर्वी राज्यों में भूकंप से संरचनाओं के जोखिम को अधिक आंका गया है?
- Scientists, structural engineers, and representatives from several **government ministries** are expected to deliberate and report to the **Cabinet Secretariat** in the coming weeks.  
वैज्ञानिक, संरचनात्मक इंजीनियर और कई **सरकारी मंत्रालयों** के प्रतिनिधि आने वाले हफ्तों में विचार-विमर्श कर **कैबिनेट सचिवालय** को रिपोर्ट देंगे।
- This follows the **Bureau of Indian Standards (BIS)** withdrawing updated criteria that construction projects ought to incorporate to guard against collapse during earthquakes.



यह कदम **भारतीय मानक ब्यूरो (BIS)** द्वारा नए मानकों को वापस लेने के बाद आया, जो भूकंप के दौरान ढहने से बचाव के लिए बनाए गए थे।

- The withdrawal was prompted, The Hindu reported on **March 7**, by a Cabinet Secretariat order stating the new standards “materially affected ... ongoing and future infrastructure projects including metro rail projects” and that a “holistic and comprehensive review of the revised IS 1893 be conducted, taking into account the perspectives of all stakeholders.”  
**7 मार्च** को रिपोर्ट के अनुसार, कैबिनेट सचिवालय के आदेश ने कहा कि नए मानकों ने “चल रही और भविष्य की परियोजनाओं, जैसे मेट्रो रेल परियोजनाओं को प्रभावित किया” और **IS 1893** की व्यापक समीक्षा आवश्यक है।
- However, a decade of **government-commissioned studies** involving scientists from geological, seismological, geotechnical and structural engineering institutions are clear: the potential damage to structures such as residential buildings, bridges, and power plants in the **Himalayan States** is higher than current risk assessments.  
हालांकि, एक दशक के **सरकारी अध्ययनों** से स्पष्ट है कि **हिमालयी राज्यों** में भवनों, पुलों और बिजली संयंत्रों को संभावित नुकसान वर्तमान आकलन से अधिक है।
- Engineers and architects are required to follow the **IS 1893 standard**.  
इंजीनियर और वास्तुकारों को **IS 1893 मानक** का पालन करना आवश्यक है।
- India’s zoning map delineates **four zones**.  
भारत का जोनिंग मानचित्र **चार क्षेत्रों** में विभाजित है।
- **Zone II** is the calmest; **Zone V** is assigned to areas along the Himalayan front, where **magnitude 8 quakes** have occurred in living memory.  
**जोन II** सबसे शांत है; **जोन V** हिमालयी क्षेत्र को दिया गया है, जहां **8 तीव्रता के भूकंप** आ चुके हैं।
- At such forces, buildings experience stresses that can **buckle steel columns** and have floors **pancaking onto one another**.  
ऐसे बलों में इमारतों में तनाव उत्पन्न होता है जिससे **स्टील कॉलम मुड़ सकते हैं** और मंजिलें एक-दूसरे पर गिर सकती हैं।
- For context, a **magnitude 7 quake 20 km** from a fault can produce **peak ground acceleration (PGA)** exceeding Zone V’s design threshold.  
संदर्भ के लिए, **20 किमी दूरी पर 7 तीव्रता का भूकंप PGA** को जोन V सीमा से अधिक कर सकता है।
- The withdrawn update originated from a **2024 paper in the Indian Journal of Earth System Sciences** that proposed a way to estimate earthquake hazards consonant with global methods.  
वापस लिया गया अपडेट **2024 के शोध पत्र** से आया था, जिसने वैश्विक मानकों के अनुसार जोखिम आकलन का तरीका सुझाया था।
- It was the outcome of a project the **National Disaster Management Authority (NDMA)** had commissioned in **2019** from **IIT-Madras and BIS**.  
यह **2019** में **NDMA** द्वारा **IIT-मद्रास और BIS** को दिए गए प्रोजेक्ट का परिणाम था।
- It was preceded by projects in **2007-11 and 2013-17** — all to move the hazard assessment towards a “**probabilistic framework**”.  
इससे पहले **2007-11 और 2013-17** में भी प्रोजेक्ट हुए थे, जिनका उद्देश्य “**प्रायिकता आधारित ढांचा**” अपना था।
- This framework differs from India’s existing approach based only on **past seismicity**; it incorporates several variables to forecast forces on a structure in the event of the strongest probable quakes.  
यह ढांचा पुराने **भूकंपीय इतिहास आधारित** दृष्टिकोण से अलग है और कई कारकों को शामिल कर भविष्य के भूकंप के प्रभाव का अनुमान लगाता है।
- The **NDMA accepted** the study and **BIS published** its outcomes in **IS 1893 as a 2025 update — which was then withdrawn**.  
**NDMA** ने अध्ययन स्वीकार किया और **BIS** ने इसे **2025 अपडेट (IS 1893)** के रूप में प्रकाशित किया, जिसे बाद में वापस ले लिया गया।
- The authors comprise scientists from the **IITs in Mumbai and Chennai**, the **Atomic Energy Regulatory Board**, and the **Geological Survey**.  
इस अध्ययन के लेखक **IIT मुंबई, IIT चेन्नई, परमाणु ऊर्जा नियामक बोर्ड, और भूवैज्ञानिक सर्वेक्षण** से जुड़े वैज्ञानिक हैं।
- **PGA values and earthquake risk assessment**  
**PGA मान और भूकंप जोखिम आकलन**



- “These **PGA values** are not derived based on any **quantitative earthquake hazard assessment** and are abysmally low, especially for the higher earthquake zones,” the authors report.  
“ये **PGA मान** किसी भी **मात्रात्मक भूकंप जोखिम आकलन** पर आधारित नहीं हैं और विशेष रूप से उच्च भूकंप क्षेत्रों के लिए अत्यंत कम हैं,” लेखकों ने कहा।
- “The **1897 Great Shillong Plateau earthquake** in northeast India is reported to have resulted in **PGA values more than [1 g].**”  
“**1897 का ग्रेट शिलॉन्ग प्लेटो भूकंप** (पूर्वोत्तर भारत) में **PGA मान 1 g से अधिक** दर्ज किए गए थे।”
- They note that “design accelerations in similar areas worldwide are taken to be **two times (or more)** compared to that in the existing zone map of India.”  
उन्होंने कहा कि विश्व के समान क्षेत्रों में **डिज़ाइन त्वरण भारत के वर्तमान जोन मानचित्र से दो गुना या अधिक** लिया जाता है।
- The study was led by **S.T.G. Raghukanth, C.V.R. Murty, Bhargavi Podili, and K.P. Sreejaya of IIT Madras.**  
इस अध्ययन का नेतृत्व **S.T.G. Raghukanth, C.V.R. Murty, Bhargavi Podili और K.P. Sreejaya (IIT मद्रास)** ने किया।
- Previously, regions were assigned **Zone IV or V** only after a significant earthquake; the surrounding areas were assumed to be at lower risk despite decades of pent-up strain.  
पहले, क्षेत्रों को **जोन IV या V** केवल बड़े भूकंप के बाद ही दिया जाता था, जबकि आसपास के क्षेत्रों में दशकों से तनाव जमा था।
- The framework also didn't account for **local soil conditions** that amplify seismic waves or data from **168 Himalayan monitoring stations.**  
इस ढांचे में **स्थानीय मिट्टी की स्थिति और 168 हिमालयी मॉनिटरिंग स्टेशनों** के डेटा को शामिल नहीं किया गया।
- “The earth is a **dynamic system**. Every **50 years**, PGA values change by about **10%**,” said **O.P. Mishra**, former director, National Centre for Seismology.  
“पृथ्वी एक **गतिशील प्रणाली** है। हर **50 वर्षों** में PGA मान लगभग **10% बदलते हैं**,” **ओ.पी. मिश्रा** (पूर्व निदेशक, राष्ट्रीय भूकंप विज्ञान केंद्र) ने कहा।
- “In a **probabilistic assessment** you account for a variety of factors that might influence shaking.”  
“**प्रायिकता आधारित आकलन** में कई कारकों को शामिल किया जाता है जो कंपन को प्रभावित कर सकते हैं।”
- The new map assigns **PGA values of 0.15-0.75 g** for Zones II through a newly introduced **Zone VI.**  
नए मानचित्र में **0.15 से 0.75 g** तक के PGA मान दिए गए हैं और एक नया **जोन VI** जोड़ा गया है।
- It draws on **69,519 earthquake events from 2600 BC to 2019, 36 seismogenic source zones**, and ground motion models.  
यह **2600 ईसा पूर्व से 2019 तक के 69,519 भूकंप, 36 भूकंपीय स्रोत क्षेत्र, और ग्राउंड मोशन मॉडल** पर आधारित है।
- These values have likely rattled agencies such as the **Delhi Metro Rail Corporation** and the **National Dam Safety Authority.**  
इन मानों ने **दिल्ली मेट्रो रेल कॉर्पोरेशन और राष्ट्रीय बांध सुरक्षा प्राधिकरण** जैसी एजेंसियों को चिंतित किया है।
- “Recent evidence shows that **95%** of those who die in earthquakes are those who live in **1-3 storey houses** that are inadequately designed,” said a scientist involved in the exercise.  
“हालिया साक्ष्य बताते हैं कि **95% मौतें** उन लोगों की होती हैं जो **1-3 मंजिला कमजोर घरों** में रहते हैं,” एक वैज्ञानिक ने कहा।
- “The **0.75 factor** is also a lower number.”  
“**0.75 g का मान भी कम है।**”
- **Pakistan and Nepal** use values close to **0.75g**, while the **U.S. and Japan** routinely calculate **1 g or more**, he added.  
**पाकिस्तान और नेपाल** लगभग **0.75 g** का उपयोग करते हैं, जबकि **अमेरिका और जापान** में **1 g या उससे अधिक** लिया जाता है।
- One **NDMA official** said the recommended values “were too high” and would strain **public spending.**  
एक **NDMA अधिकारी** ने कहा कि ये मान “बहुत अधिक हैं” और **सरकारी खर्च बढ़ाएंगे।**



- “On one hand we have the situation that a large proportion do not follow even the [2016] codes. Then with these stringent numbers, **steel, cement costs will go up manifold**; where there is money to build four schools or clinics in a village, only one will be made.”  
“एक ओर बहुत लोग 2016 के कोड्स का पालन नहीं करते, दूसरी ओर सख्त मानों से स्टील और सीमेंट की लागत कई गुना बढ़ेगी, जिससे चार की जगह केवल एक स्कूल या क्लिनिक बन पाएगा।”
- The **NDMA didn't respond** to requests for official comment.  
NDMA ने आधिकारिक प्रतिक्रिया नहीं दी।

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# Navy's state-of-the-art stealth frigate *Taragiri* to be commissioned on April 3

## GS III: Internal Security

Press Trust of India  
NEW DELHI

**Indigenous stealth frigate Taragiri**, equipped with cutting-edge weapons, including supersonic missiles, will be commissioned into the Indian Navy on April 3, the Defence Ministry said in a press release on Saturday. The ceremony will be presided over by Defence Minister Rajnath

Singh in Visakhapatnam, and “will serve as a powerful testament to the nation's journey toward becoming a completely self-reliant naval power”.

As the fourth potent platform of the **Project 17A** class, “Taragiri is not merely a ship; it is a 6,670-tonne embodiment of the ‘Make in India’ spirit and the sophisticated engineering capabilities of our indige-

nous shipyards,” the release read. *Taragiri*, the fourth ship of Nilgiri-class and the third one built by Mazagon Dock Shipbuilders Ltd, was delivered to the Navy on November 28 last year, marking a milestone in achieving self-reliance in design and construction.

This state-of-the-art frigate reflects a “quantum leap” in naval design,

stealth, firepower, automation and survivability, and is a symbol of ‘aatmanirbharta’ in warship building, the Navy had then said.

With indigenous content **exceeding 75%**, the ship highlights the maturity of a domestic industrial ecosystem that now spans over 200 MSMEs, and contributing to the government's *Aatmanirbharta* initiative, it said.

## 22Mar. Navy's state-of-the-art stealth frigate Taragiri to be commissioned on April 3

### नौसेना की अत्याधुनिक स्टेल्थ फ्रिगेट तरागिरी 3 अप्रैल को कमीशन होगी

- Indigenous **stealth frigate Taragiri**, equipped with cutting-edge weapons, including **supersonic missiles**, will be commissioned into the **Indian Navy** on April 3, the **Defence Ministry** said in a press release on Saturday.  
स्वदेशी **स्टेल्थ फ्रिगेट तरागिरी**, जो अत्याधुनिक हथियारों से लैस है, जिसमें **सुपरसोनिक मिसाइलें** शामिल हैं, 3 अप्रैल को **भारतीय नौसेना** में शामिल की जाएगी, यह जानकारी **रक्षा मंत्रालय** ने शनिवार को एक प्रेस विज्ञप्ति में दी।
- The ceremony will be presided over by **Defence Minister Rajnath Singh** in **Visakhapatnam**, and “will serve as a powerful testament to the nation's journey toward becoming a completely self-reliant naval power”.  
इस समारोह की अध्यक्षता **रक्षा मंत्री राजनाथ सिंह विशाखापत्तनम** में करेंगे, और यह “देश की पूरी तरह आत्मनिर्भर नौसैनिक शक्ति बनने की यात्रा का एक सशक्त प्रमाण होगा।”





- As the fourth potent platform of the **Project 17A class**, “Taragiri is not merely a ship; it is a **6,670-tonne** embodiment of the ‘**Make in India**’ spirit and the sophisticated engineering capabilities of our indigenous shipyards,” the release read.  
प्रोजेक्ट 17A वर्ग के चौथे शक्तिशाली प्लेटफॉर्म के रूप में, “तरागिरी केवल एक जहाज नहीं है; यह **6,670 टन** का ‘मेक इन इंडिया’ भावना और हमारे स्वदेशी शिपयार्ड्स की उन्नत इंजीनियरिंग क्षमता का प्रतीक है,” विज्ञप्ति में कहा गया।
- Taragiri, the fourth ship of **Nilgiri-class** and the third one built by **Mazagon Dock Shipbuilders Ltd**, was delivered to the Navy on November 28 last year, marking a milestone in achieving self-reliance in design and construction.  
तरागिरी, **नीलगिरी वर्ग** का चौथा जहाज और **मझगांव डॉक शिपबिल्डर्स लिमिटेड** द्वारा निर्मित तीसरा जहाज, पिछले वर्ष 28 नवंबर को नौसेना को सौंपा गया था, जो डिजाइन और निर्माण में आत्मनिर्भरता हासिल करने की दिशा में एक महत्वपूर्ण उपलब्धि है।
- This state-of-the-art frigate reflects a “quantum leap” in naval design, **stealth, firepower**, automation and survivability, and is a symbol of ‘**aatmanirbharta**’ in warship building, the Navy had then said.  
यह अत्याधुनिक फ्रिगेट नौसैनिक डिजाइन, **स्टेलथ, फायरपावर**, स्वचालन और जीवित रहने की क्षमता में “क्वांटम छलांग” को दर्शाता है, और युद्धपोत निर्माण में ‘**आत्मनिर्भरता**’ का प्रतीक है, नौसेना ने तब कहा था।
- With indigenous content exceeding **75%**, the ship highlights the maturity of a domestic industrial ecosystem that now spans over **200 MSMEs**, and contributing to the government’s **Aatmanirbharta initiative**, it said.  
**75%** से अधिक स्वदेशी सामग्री के साथ, यह जहाज एक परिपक्व घरेलू औद्योगिक पारिस्थितिकी तंत्र को दर्शाता है, जो अब **200 से अधिक एमएसएमई** तक फैला है, और सरकार की **आत्मनिर्भरता पहल** में योगदान दे रहा है, यह कहा गया।

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