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### THE HINDU NEWSPAPER

### 06 APRIL 2026

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GS Paper 1: History,

TOPICS COVERED

06 April 2026

06A Easter celebrated across India; PM extends greetings  
भारत भर में ईस्टर मनाया गया; प्रधानमंत्री ने शुभकामनाएं दीं

06A QUIZ

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**GS I: History: A&C**  
No stone unturned: An artiste performs 'Ottanthullal', a classical satire-dance art form, during an election campaign. #11

No stone unturned: An artiste performs 'Ottanthullal', a classical satire-dance art form, during an election campaign



**GS I: History**

## Easter celebrated across India; PM extends greetings

Devotees across the country on Sunday celebrated Easter, marking the Resurrection of Jesus Christ, with solemn prayers, festivities, and traditional feasts. In a post on social media platform X, Prime Minister Narendra Modi greeted people, wishing that the teachings of Jesus Christ inspire all to be kind and strengthen the spirit of togetherness in society. "Greetings on Easter. This sacred day celebrates hope and renewal. May it bring peace, joy and brightness to everyone's lives," Mr. Modi said on X. May the teachings of Jesus Christ inspire all to be kind and strengthen the spirit of togetherness in society, the Prime Minister said. #11

## **06A. Easter celebrated across India; PM extends greetings**

**भारत भर में ईस्टर मनाया गया; प्रधानमंत्री ने शुभकामनाएं दीं**

- Devotees across the country on Sunday celebrated **Easter**, marking the **Resurrection of Jesus Christ**, with solemn prayers, festivities, and traditional feasts.

देश भर के श्रद्धालुओं ने रविवार को **ईस्टर** मनाया, जो **यीशु मसीह के पुनरुत्थान** का प्रतीक है, इसे श्रद्धापूर्ण प्रार्थनाओं, उत्सवों और पारंपरिक भोज के साथ मनाया गया।

- In a post on social media platform **X**, Prime Minister **Narendra Modi** greeted people, wishing that the teachings of **Jesus Christ** inspire all to be kind and strengthen the spirit of togetherness in society.

सोशल मीडिया प्लेटफॉर्म **X** पर एक पोस्ट में प्रधानमंत्री **नरेंद्र मोदी** ने लोगों को शुभकामनाएं दीं और कहा कि **यीशु मसीह** की शिक्षाएं सभी को दयालु बनने और समाज में एकता की भावना को मजबूत करने के लिए प्रेरित करें।

- "Greetings on **Easter**. This sacred day celebrates **hope** and **renewal**. May it bring peace, joy and brightness to

everyone's lives," Mr. Modi said on **X**.

"**ईस्टर** की शुभकामनाएं। यह पवित्र दिन **आशा** और **नवीनता** का उत्सव है। यह सभी के जीवन में शांति, खुशी और उजाला लाए," श्री मोदी ने **X** पर कहा।

- May the teachings of **Jesus Christ** inspire all to be kind and strengthen the spirit of togetherness in society, the Prime Minister said.

प्रधानमंत्री ने कहा कि **यीशु मसीह** की शिक्षाएं सभी को दयालु बनने और समाज में एकजुटता की भावना को मजबूत करने के लिए प्रेरित करें।



Questions and answers to the previous daily quiz: 1. The informal name for the Cold War competition between the USA and USSR for spaceflight supremacy. **Ans: Space Race**

2. The first spacecraft to orbit the Moon, a feat achieved on April 3, 1966. **Ans: Soviet Union's Luna 10**

3. The name of the lander in India's Chandrayaan-2 lunar mission, and the person was it named after. **Ans: Vikram, named after Vikram Sarabhai**

4. Project A119 was a secret U.S. Air Force plan from the late 1950s. What did it propose? **Ans: detonate a nuclear bomb on the Moon**

5. This animal became the first to orbit Earth. **Ans: A dog named Laika, aboard the Sputnik 2**

6. This country's mission made the first-ever soft landing on the Moon's far side. **Ans: China's Chang'e 4**

7. This term originates from the Moon's perceived influence on human behaviour. **Ans: 'Lunatic', referring to the belief that lunar phases could affect mental states.**

8. Famed singer David Bowie's 'Space Oddity' was released in 1969, the same year as this NASA expedition. **Ans: Apollo 11; first to land humans on the Moon**

Visual: Name the silent film released in 1902 which shows a capsule landing on the Moon. **Ans: Le Voyage dans la Lune (A Trip to the Moon)**

Early birds: Sudhir Thapa | Sadhan Panda | Anju Sharma | Ambarin Aslam | Akshita

## 06A. QUIZ

### Space Race (Cold War Competition)

- The **Space Race** was the informal Cold War rivalry between the United States and the Soviet Union to achieve supremacy in space exploration.
  - It began in 1957 with the launch of Sputnik-1 by the USSR. Major milestones included **Yuri Gagarin becoming the first human in space in 1961 and the U.S. Apollo 11 Moon landing in 1969.**
  - It symbolized technological, military, and ideological competition between capitalism and communism.

### Luna 10 (First Spacecraft to Orbit the Moon)

- Luna 10, launched by the Soviet Union on March 31, 1966, became the first spacecraft to successfully orbit the Moon on April 3, 1966.** It marked a major milestone in lunar exploration during the Cold War space race.
- Luna 10 was an unmanned robotic mission designed to study the Moon's gravitational field, radiation, and magnetic environment.
- It orbited the Moon for about 56 days, completing over 460 orbits. The mission provided crucial scientific data about lunar composition and conditions, paving the way for future human and robotic lunar missions.

### Vikram Lander (Chandrayaan-2 Mission)

- The lander of India's Chandrayaan-2 mission was named Vikram,** after Dr. Vikram Sarabhai, the father of the Indian space programme.
- The mission was launched by ISRO in July 2019 to explore the Moon's south polar region.
- Significance and Features** The Vikram lander was designed for a soft landing and carried instruments to study lunar surface properties.
- Although communication was lost during landing, the mission demonstrated India's advanced space capabilities. Its legacy continued with Chandrayaan-3 (2023), where a successful soft landing was achieved near the lunar south pole.

### Project A119 (U.S. Lunar Nuclear Plan)

- Project A119 was a secret U.S. Air Force project developed in 1958 during the Cold War.**
- It proposed detonating a nuclear bomb on the Moon as a demonstration of military and technological superiority over the Soviet Union.
- The plan aimed to create a visible explosion from Earth to showcase U.S. strength.** However, it was never executed due to concerns about scientific risks, global criticism, and ethical issues.
- The project remained classified for decades and later became an example of extreme Cold War strategies.

### Laika (First Animal to Orbit Earth)

- Laika, a stray dog from Moscow, became the first animal to orbit Earth aboard the Soviet spacecraft Sputnik 2 on November 3, 1957.**
- This mission marked an early milestone in space exploration during the Cold War.
- Significance and Outcome** Laika's flight proved that living organisms could survive launch and microgravity conditions.



- However, the spacecraft lacked a re-entry system, and Laika died a few hours after launch due to overheating.
- The mission provided critical biomedical data that later supported human spaceflight programs.

### Chang'e-4 Mission (First Landing on Moon's Far Side)

- China's Chang'e-4 mission achieved the first-ever soft landing on the Moon's far side on January 3, 2019.
- It was launched by the China National Space Administration as part of its lunar exploration programme.
- The mission deployed a lander and rover (Yutu-2) to study the unexplored far side of the Moon.
- It used a relay satellite (Queqiao) for communication with Earth. Chang'e-4 provided valuable data on lunar geology and demonstrated advanced space technology, marking China's growing leadership in space exploration.

### Term 'Lunatic' (Origin and Meaning)

- The term "lunatic" originates from the Latin word *luna*, meaning Moon. Historically, it was believed that the Moon's phases could influence human behaviour and mental health, especially during full moons.
- In medieval and early modern Europe, unusual behaviour was often linked to lunar cycles.
- Although modern science has found no conclusive evidence supporting this belief, the term persisted in language. Today, "lunatic" is considered outdated and inappropriate in medical contexts, replaced by scientific understanding of mental health disorders.

### Apollo 11 and "Space Oddity" (1969 Context)

- The song *Space Oddity* by David Bowie was released in 1969, coinciding with Apollo 11, the first mission to land humans on the Moon.
- Apollo 11, conducted by NASA, successfully landed astronauts Neil Armstrong and Buzz Aldrin on July 20, 1969.
- The mission marked a historic milestone in space exploration, symbolizing U.S. victory in the Space Race and inspiring global cultural expressions like Bowie's song.

<b>GS Paper 1: Society</b>	
<b>TOPICS COVERED</b>	<b>06 April 2026</b>
<b>06A</b>	<b>Amaranth, brick, crimson, and 48 other shades of red</b> <b>अमरंथ, ईंट, क्रिमसन और लाल के 48 अन्य शेड्स</b>



# Amaranth, brick, crimson, and 48 other shades of red

**A mass wedding ceremony in India's capital, supported financially by an NGO and endorsed by the Delhi government, is a relief from dowry and wedding expenses. Through conversations with brides, grooms, and their kin, Ashna Butani finds that though couples and families are happy to have broken out of the cycle of spending a chunk of their savings on a ceremony, the rituals reinforce endogamy and traditional expectations**

**R**ukmini, 19, turns away from the vanity mirror after her makeup and hair has been completed by professionals, to face her mother. "Dulhan nahi, baar by doll lag rahi hu na? (I look like a doll, not a bride, right?)," she says. Her mother laughs.

Rukmini is one of 51 brides in a room saturated with tins and shades of red. The brides take their turns to sit in front of mirrors. They pin their lehengas securely, slip on their bangles, and reapply lipstick. One end of the hall in Zora Convention Centre on Delhi's Lodhi Road is lined with vanity mirrors, and on the other end, the grooms line up to walk towards the main ceremony hall.

Abhishek, 22, is among the grooms walking to the stage, where Rukmini will soon join him. As the evening progresses, the brides and grooms find each other from the numbers pinned onto their outfits.

On stage, beneath the flashy lights, the 51 brides and grooms simultaneously exchange garlands and the rituals ensue, with one pandit assigned to each couple. On the loudspeaker, Sanskrit religious chants play on, while smoke is pumped out of a fog machine, and firework go off in the background.

Once the *pheras* are done, signifying that the couples are now married, Delhi Chief Minister Rekha Gupta takes the stage to remind families: "This is not just a wedding ceremony, but a powerful step towards ensuring dignity, empowerment, and a brighter future for our daughters." Former President Ram Nath Kovind reiterates her comments and congratulates the couples.

Beneath the laughs and the smiles, each family has chosen to marry in a *sammelan* or mass wedding for a plethora of reasons. Almost all are tied to financial troubles at home, and the relief of not having to spend lakhs of rupees on a wedding and dowry. Rukmini's mother, Godswari, who works as a domestic worker, says that her employer, who is associated with the foundation organising the mass wedding, told her about it.

The mass wedding is part of the Shagun (meaning auspicious) initiative by Ladi Foundation, a non-profit that aims to uplift marginalised communities. The initiative seeks to end dowry-related abuse, human trafficking that results from delayed marriages, and child marriage. The initiative also provides vocational training and educational support to women.

Between the dressing room and the marriage hall is a corridor where the incentives are displayed. Sitting atop a new bed, mattress, and bed linen is a large representational cheque that reads "Fixed deposit for Laxmi" of ₹1 lakh. The bed is surrounded with an almirah, a television set, a laptop, sarees, crockery, and two side tables. Volunteers say that every couple will receive these gifts when they go home. Private companies pitch in to contribute.

A bride complains that her "best friends" could not be accommodated because every bride and groom can invite only five people each. This the organisers say, is to ensure that there is no overcrowding. Some couples say that they might have to organise a similar function because "not all friends and family could be invited".

Despite the uniformity in the ceremony, every

**Q**

I have five daughters and I was relieved because this saves me from wedding planning expenses and from dowry, which is otherwise unavoidable.

**RAMVATI DOKHARE**  
Mother of a bride, shoe-shop owner in Delhi

couple has something unique. For Rukmini and Abhishek, it was their friendship of five years, and her rani pink lehenga that she points out "suits me more than the traditional red".

**Financial relief**

Ramvati Dokhare, who runs a shoe-shop in Delhi's Seelampur, is among the families trying to catch a glimpse of their children as they partake in the rituals. As the only working member in her family, she says, "I got to know about the mass wedding via messages sent by acquaintances. I have five daughters and I was relieved because this saves me from wedding planning expenses and from dowry, which is otherwise unavoidable."

As per the National Crime Records Bureau (NCRB) report, 2023, Delhi recorded 104 cases of dowry deaths, the highest among metropolitan cities. Among the states, Uttar Pradesh recorded the most dowry deaths, with 2,218 women being killed because her in-laws felt she hadn't brought enough money or property with her.

Meanwhile, Subhagi and her husband Hiralal, both in their 60s, have travelled from Uttar Pradesh's Azamgarh for the ceremony, to witness their last child getting married. "Even a simple wedding in our village will cost at least ₹3-4 lakh," says Hiralal, who used to work as a daily-wage worker till a few years ago.

Subhagi elaborates on how mass weddings can benefit families: "For people who do not have property, this is the best way. Otherwise, you have to sell everything you have to get your children married."

Kamini Vaid, a trustee of the Ladi Foundation, elaborates on this, saying, "We have been running this initiative since 2012 and have got thousands of couples married. Grooms undergo a police verification to ensure that there is no criminal record." She points out that the initiative is not limited to just marriage, but also provides ₹21,000 if a girl is born to the couple and ₹1,000 if a boy is born to them. Health insurance, skill training, and continued education are also part of the initiative.

India's Total Fertility Rate, the average num-

ber of children a woman would bear by the end of her reproductive age, as per the Sample Registration System data for 2023 stood at 1.5, and has gradually been falling over the years. Delhi's TFR stood at 1.2 for the same year. While experts argue that increasing costs of living, and increased women's autonomy could be among the reasons for the downward trend, RSS chief Mohan Bhagwat has appealed to the Hindu population to have at least three children to prevent declines in fertility rate.

Organisers say that to avoid couples who may "fake it for the benefits", the fixed deposit matures in a few years, after checks are conducted to ensure that "the couple is still living together".

**Endogamous marriages**

Rukmini and Abhishek live only a few houses away from each other in Delhi's Tughlakabad. They have known each other for 5 years, and their families were happy to facilitate the union, as they belong to the same community.

Some couples blush while they say "Humaara toh love marriage hai" (Ours is a love marriage). But Pooja, 25, from Shahbad Dairy in Delhi, smiles coyly, while seated beside her soon-to-be husband, "Groom number 38", after she is ready in her deep red lehenga. She says that this is the first time they are meeting. Her sister had made the arrangements and signed her up for the ceremony. Pooja says shyly, "The family is nice. I'm looking forward to entering my new home."

Almost every family says that since they belong to the "same *biradri*" or caste, there were hardly any second thoughts while registering for the mass wedding, given the benefits that it comes with. The couples filled in forms, which were signed by parents or guardians, provided documentation, and soon received the date for the wedding. When asked whether inter-religious or inter-caste marriages are supported, the organisers say that while there is no explicit barrier, these are usually socially-acceptable marriages as they require a parent's consent. However, in India, the law does not require parental consent for a wedding.

The event was endorsed by Swami Adveshnand Giri, a Hindu priest who heads the Juna *akhara* (group of ascetics). The grooms wear kurtas and suits while the brides wear almost identical deep red lehengas with golden work. Some decided to buy their own, and the jewellery is a mix of some personal trinkets and some gifted by the organiser.

**Hopes to continue studying**

As she applies her makeup, Kiran, 22, says that she has met her soon-to-be husband and is happy to be getting married. Due to troubles at home, she could not study beyond Class 9. "They [the foundation] said that they will help me resume my studies at a government school. Once I complete my studies, I can also take up some work," she says. To support their education, each bride is given a laptop along with e-learning material.

For Rukmini too, who is currently in the second year of her BA course from Indira Gandhi National Open University (IGNOU), the laptop is a plus, and she hopes to use it for her studies. She wants to become a teacher, she says. Abhishek is currently working at a private company. With her mother, she jokes about how she is ready to teach anything "but arithmetic and science".

Confident about her goals, she says hours before tying the knot, "Even if I can teach a few children, and help them read, that will mean a lot. Because, everywhere you go, even the metro station, you need to be able to read to understand where the train is going. Or else, you have to ask 20 people for directions. To avoid scams, you need to have basic computer and technological literacy. Education is the most important aspect of our lives."

**Traditions intact**

While mass weddings have a deep-rooted history, some States have introduced schemes for them, including Uttar Pradesh. Some such weddings are specifically conducted for Persons with Disabilities and for orphans.

During the ceremony, some brides say they knew of friends who had got married in mass weddings. Parents too, had attended some, and hence, had gained faith in the process.

Mothers of daughters, however, wonder if the groom's family will push them for dowry, regardless. Some questions continue to linger in the empty halls after the *baraat* has left, and the brides have entered their new homes.

Two days after the wedding, Rukmini settles in with Abhishek. Some of the gifts they received during the wedding, such as the crockery, have already found their place in the house. While she knows that she wants to graduate, she adds that the wedding was preponed by a year because such an opportunity to get married with such assistance is rare.

Now, she says that she will follow the traditions that both her family and the groom's family expect her to follow. Hazy on the details, she says, "I won't go out for one year because it is believed that Lakshmi (wealth) will embrace the house if I stay at home." The rest, the couple says, they will figure out along the way, together.

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Some brides wear clothes and imitation jewellery supplied by the organisers, while some wear their own. SHASHI SHEKHAR KASHYAP

## 06A. Amaranth, brick, crimson, and 48 other shades of red अमरंथ, ईट, क्रिमसन और लाल के 48 अन्य शेड्स

- Amaranth, brick, crimson, and 48 other shades of red.  
अमरंथ, ईट, क्रिमसन और लाल के 48 अन्य शेड्स।
- A mass wedding ceremony in India's capital, supported financially by an NGO and endorsed by the Delhi government, is a relief from dowry and wedding expenses.  
भारत की राजधानी में आयोजित एक सामूहिक विवाह समारोह, जिसे एक NGO द्वारा आर्थिक सहयोग मिला और दिल्ली सरकार का समर्थन प्राप्त है, दहेज और शादी के खर्चों से राहत प्रदान करता है।
- Through conversations with brides, grooms, and their kin, Ashna Butani finds that though couples and families are happy to have broken out of the cycle of spending a chunk of their savings on a ceremony, the rituals reinforce endogamy and traditional expectations.  
दुल्हनों, दूल्हों और उनके परिजनों से बातचीत के माध्यम से, अश्रा बुटानी पाती हैं कि यद्यपि जोड़े और परिवार समारोह पर अपनी बचत का बड़ा हिस्सा खर्च करने के चक्र से बाहर निकलकर खुश हैं, लेकिन रस्में अंतोगामी विवाह और पारंपरिक अपेक्षाओं को मजबूत करती हैं।
- Rukmini, 19, turns away from the vanity mirror after her makeup and hair has been completed by professionals, to face her mother.  
19 वर्षीय रुक्मिणी, पेशेवरों द्वारा मेकअप और बाल तैयार होने के बाद, वैनिटी मिरर से हटकर अपनी मां की ओर मुड़ती है।



- “Dulhan nahi, baby doll lag rahi hu na? (I look like a doll, not a bride, right?),” she says.  
“दुल्हन नहीं, बेबी डॉल लग रही हूँ ना?” वह कहती है।

### Her mother laughs. उसकी मां हंसती है।

- Rukmini is one of 51 brides in a room saturated with tints and shades of red.  
रुक्मिणी उन 51 दुल्हनों में से एक है जो लाल रंग के विभिन्न शेड्स से भरे कमरे में हैं।
- The brides take their turns to sit in front of mirrors.  
दुल्हनें बारी-बारी से आईनों के सामने बैठती हैं।
- They pin their lehengas securely, slip on their bangles, and reapply lipstick.  
वे अपने लहंगे ठीक से पिन करती हैं, चूड़ियां पहनती हैं और लिपस्टिक दोबारा लगाती हैं।
- One end of the hall in Zora Convention Centre on Delhi's Lodhi Road is lined with vanity mirrors, and on the other end, the grooms line up to walk towards the main ceremony hall.  
दिल्ली के लोधी रोड स्थित जोरा कन्वेंशन सेंटर के एक छोर पर वैनिटी मिरर लगे हैं और दूसरे छोर पर दूल्हे मुख्य समारोह हॉल की ओर जाने के लिए कतार में खड़े हैं।
- Abhishek, 22, is among the grooms walking to the stage, where Rukmini will soon join him.  
22 वर्षीय अभिषेक उन दूल्हों में शामिल है जो मंच की ओर जा रहे हैं, जहां रुक्मिणी जल्द ही उसके साथ शामिल होगी।
- As the evening progresses, the brides and grooms find each other from the numbers pinned onto their outfits.  
जैसे-जैसे शाम बढ़ती है, दुल्हनें और दूल्हे अपने कपड़ों पर लगे नंबरों के आधार पर एक-दूसरे को पहचानते हैं।
- On stage, beneath the flashy lights, the 51 brides and grooms simultaneously exchange garlands and the rituals ensue, with one pandit assigned to each couple.  
मंच पर चमकदार रोशनी के नीचे, 51 दुल्हनें और दूल्हे एक साथ जयमाला करते हैं और प्रत्येक जोड़े के लिए एक पंडित के साथ रस्में शुरू होती हैं।
- On the loudspeaker, Sanskrit religious chants play on, while smoke is pumped out of a fog machine, and fireworks go off in the background.  
लाउडस्पीकर पर संस्कृत मंत्र बजते हैं, जबकि फॉग मशीन से धुआं निकलता है और पृष्ठभूमि में आतिशबाजी होती है।
- Once the pheras are done, signifying that the couples are now married, Delhi Chief Minister Rekha Gupta takes the stage to remind families.  
जब फेरे पूरे हो जाते हैं, जो विवाह का संकेत है, तब दिल्ली की मुख्यमंत्री रेखा गुप्ता मंच पर आती हैं और परिवारों को याद दिलाती हैं।
- “This is not just a wedding ceremony, but a powerful step towards ensuring dignity, empowerment, and a brighter future for our daughters.”  
“यह केवल एक विवाह समारोह नहीं है, बल्कि हमारी बेटियों के सम्मान, सशक्तिकरण और उज्वल भविष्य की दिशा में एक मजबूत कदम है।”
- Former President Ram Nath Kovind reiterates her comments and congratulates the couples.  
पूर्व राष्ट्रपति राम नाथ कोविंद उनके विचारों को दोहराते हैं और जोड़ों को बधाई देते हैं।
- Beneath the laughs and the smiles, each family has chosen to marry in a sammelan or mass wedding for a plethora of reasons.  
हंसी और मुस्कान के पीछे, हर परिवार ने कई कारणों से सामूहिक विवाह का विकल्प चुना है।
- **Almost all are tied to financial troubles at home, and the relief of not having to spend lakhs of rupees on a wedding and dowry.**  
लगभग सभी कारण घर की आर्थिक समस्याओं और शादी व दहेज पर लाखों रुपये खर्च न करने की राहत से जुड़े हैं।
- Rukmini's mother, Godavari, who works as a domestic worker, says that her employer, who is associated with the foundation organising the mass wedding, told her about it.  
रुक्मिणी की मां गोदावरी, जो घरेलू कामगार हैं, बताती हैं कि उनके नियोजक ने उन्हें इस सामूहिक विवाह के बारे में बताया।
- The mass wedding is part of the Shagun initiative by Ladli Foundation, a non-profit that aims to uplift marginalised communities.  
यह सामूहिक विवाह लाडली फाउंडेशन के शगुन पहल का हिस्सा है, जिसका उद्देश्य वंचित समुदायों का उत्थान करना है।



- The initiative seeks to end dowry-related abuse, human trafficking that results from delayed marriages, and child marriage.  
यह पहल दहेज से जुड़े अत्याचार, देरी से होने वाली शादी से जुड़े मानव तस्करी और बाल विवाह को समाप्त करना चाहती है।
- The initiative also provides vocational training and educational support to women.  
यह पहल महिलाओं को व्यावसायिक प्रशिक्षण और शैक्षिक सहायता भी प्रदान करती है।

## GS Paper II: Polity,

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06 April 2026

**06A The executive office without a limit**  
**सीमाहीन कार्यपालिका कार्यालय**

# The executive office without a limit

India has developed a convention limiting a third presidential term, but the Constitution places no such restriction on the Prime Minister's tenure. With Prime Minister Narendra Modi completing 8,931 days in office, this asymmetry invites closer scrutiny.

GS II: Polity

POA

#### LETTER AND SPIRIT

V. Venkatesan

**I**n March 22, 2026, Narendra Modi completed 8,931 days as head of an elected government in India, combining over thirteen years as Chief Minister of Gujarat (from October 7, 2001 to May 21, 2014) with three consecutive terms as Prime Minister. The milestone surpassed the record of Pawan Kumar Chamling, who served as Chief Minister of Sikkim for 8,530 days. Neither the congratulations from within the ruling dispensation nor the alarm from its critics engages the constitutional question the milestone makes unavoidable: why does India's Constitution impose no limit on how long a single individual may hold the office that wields actual executive power?

India is unusual among large democracies in this respect. The United States adopted the Twenty-Second Amendment in 1951, responding to Franklin Roosevelt's four consecutive terms. South Korea, Brazil, Colombia, and Indonesia all impose presidential term limits. Among parliamentary democracies, the question is considered less urgent because the Prime Minister serves at the confidence of the legislature. But this theoretical availability of removal is what requires scrutiny in the Indian context.

#### Constituent Assembly's rationale

The Constituent Assembly's reasoning was articulated by B.R. Ambedkar in his speech of November 4, 1948 introducing the Draft Constitution. Ambedkar drew a distinction between "the daily assessment of responsibility," available through questions, no-confidence motions, and adjournment motions, and the "periodic assessment" offered by fixed-term elections. The daily assessment, he argued, was far more effective. No term limit was needed because the legislature's confidence served as a rolling check.



**Return to office:** Prime Minister Narendra Modi during the swearing-in ceremony at the Rashtrapati Bhavan in New Delhi in 2024. RV MOORTHY

#### What the Tenth Schedule broke

The Fifty-Second Amendment (1985) inserted the Tenth Schedule, providing for the disqualification of any legislator who votes against the party whip. The Supreme Court in *Kihoto Hollohan vs. Zachillhu* (1992) upheld its constitutionality as a measure to protect the integrity of the electoral mandate. But the Tenth Schedule fundamentally altered the relationship between legislature and executive that Ambedkar had relied upon. Under the anti-defection regime, a ruling-party member who votes against the government on a confidence motion faces disqualification. The no-confidence motion becomes a dead letter whenever the ruling party has a working majority.

Nor does the British safety valve operate in India. Indian political parties have no institutionalised mechanism for leadership challenges. The anti-defection law locks legislators into party loyalty; the absence of intra-party democracy locks the party into loyalty to its leader.

#### The comparative evidence

Tom Ginsburg, James Melton, and Zachary Elkins, in their study of executive

term-limit evasion, showed that leaders in multiple regions have sought to extend their tenure through constitutional amendment, replacement, or judicial interpretation. Ginsburg and Aziz Huq further argued that democratic decline more often proceeds through incremental institutional decay than through sudden authoritarian rupture. India has not needed to abolish a term limit because it never had one. The question is whether the absence of a formal constraint, combined with the neutralisation of parliamentary accountability, produces the same structural risks that term limits elsewhere are designed to prevent.

#### The presidential irony

India has developed a convention against a third presidential term, though the presidency is largely ceremonial. No President has served more than two terms. The expectation satisfies the three-part test for constitutional conventions laid down by Ivor Jennings in *The Law and the Constitution* (1959): precedents exist, the actors believed themselves bound by a rule, and the rule has a reason. The office that holds no real

executive power is constrained by convention. The office that holds virtually all executive power is constrained only by the electorate's periodic verdict, with the anti-defection law largely disabling other accountability mechanisms.

The strongest counter-argument is that voters have endorsed Mr. Modi's tenure three consecutive times, and that a term limit would override their expressed preference. The objection is serious; a term limit is, in a real sense, anti-democratic. But it rests on the premise that Ambedkar relied upon: that periodic elections, combined with parliamentary accountability, suffice to discipline executive power. If that accountability has been structurally impaired by the Tenth Schedule, elections must carry a heavier burden. And elections, however free, are a weak constraint on the compounding advantages of prolonged incumbency: control over appointments to regulatory bodies, the Election Commission, and the higher judiciary; the capacity to shape the information environment; and the ability to calibrate policy for electoral benefit across multiple cycles.

#### What might be done

The more natural reform is to restore the mechanism the framers relied upon. Exempt votes on confidence motions from the Tenth Schedule's disqualification provision, so that legislators can remove a government without forfeiting their seats. A more ambitious possibility is a constitutional amendment limiting consecutive terms as Prime Minister or Chief Minister, while permitting a return after a gap. The State-level dimension is equally pressing, given the extended tenures of leaders such as Jyoti Basu, Naveen Patnaik, and Pinarayi Vijayan.

The 8,931-day milestone forces attention to whether India's parliamentary system retains the self-correcting capacity the framers relied upon. (V. Venkatesan is a journalist and legal researcher)

#### THE GIST

▼ The Constituent Assembly envisioned a daily assessment of the Prime Minister's office through questions, adjournment motions, and no-confidence motions, reinforced by fixed-term elections as an explicit alternative to explicit term limits. However, the anti-defection law altered this intended system of checks.

▼ An argument against imposing a term limit is that it could override the voters' expressed preference. Yet, if parliamentary accountability is structurally weakened by the Tenth Schedule, elections bear an even heavier responsibility.

## 06A. The executive office without a limit

### सीमाहीन कार्यपालिका कार्यालय

#### India's Executive Tenure Debate

भारत में कार्यपालिका के कार्यकाल पर बहस

- On March 22, 2026, Narendra Modi completed 8,931 days as head of an elected government in India, combining over thirteen years as Chief Minister of Gujarat (from



**October 7, 2001 to May 21, 2014) with three consecutive terms as Prime Minister.**

**22 मार्च 2026** को **नरेंद्र मोदी** ने भारत में निर्वाचित सरकार के प्रमुख के रूप में **8,931 दिन** पूरे किए, जिसमें गुजरात के मुख्यमंत्री के रूप में तेरह वर्षों से अधिक (**7 अक्टूबर 2001 से 21 मई 2014**) और प्रधानमंत्री के रूप में लगातार तीन कार्यकाल शामिल हैं।

- The milestone surpassed the record of **Pawan Kumar Chamling**, who served as Chief Minister of Sikkim for **8,930 days**.

यह उपलब्धि **पवन कुमार चामलिंग** के रिकॉर्ड को पार कर गई, जिन्होंने सिक्किम के मुख्यमंत्री के रूप में **8,930 दिन** सेवा की थी।

- Neither the congratulations from within the ruling dispensation nor the alarm from its critics engages the constitutional question the milestone makes unavoidable: **why does India's Constitution impose no limit on how long a single individual may hold the office that wields actual executive power?**

न तो सत्ताधारी पक्ष की बधाइयाँ और न ही आलोचकों की चिंताएँ उस संवैधानिक प्रश्न पर ध्यान देती हैं: भारत का संविधान एक व्यक्ति के वास्तविक कार्यकारी शक्ति वाले पद पर रहने की अवधि पर कोई सीमा क्यों नहीं लगाता?

- India is unusual among large democracies in this respect. इस संदर्भ में भारत बड़े लोकतंत्रों में असामान्य है।
- The **United States adopted the Twenty-Second Amendment (1951)**, responding to **Franklin Roosevelt's four consecutive terms**.

संयुक्त राज्य अमेरिका ने **1951 में 22वाँ संशोधन** अपनाया, जो **फ्रैंकलिन रूजवेल्ट के लगातार चार कार्यकालों** के जवाब में था।

- **South Korea, Brazil, Colombia, and Indonesia all impose presidential term limits.** दक्षिण कोरिया, ब्राज़ील, कोलंबिया और इंडोनेशिया सभी राष्ट्रपति कार्यकाल सीमाएँ लागू करते हैं।
- **Among parliamentary democracies, the question is considered less urgent because the Prime Minister serves at the confidence of the legislature.**

संसदीय लोकतंत्रों में यह प्रश्न कम महत्वपूर्ण माना जाता है क्योंकि प्रधानमंत्री विधायिका के विश्वास पर कार्य करता है।

- But this theoretical availability of removal is what requires scrutiny in the Indian context. लेकिन हटाने की यह सैद्धांतिक व्यवस्था ही भारतीय संदर्भ में जांच की मांग करती है।

### Constituent Assembly's rationale संविधान सभा का तर्क

- The Constituent Assembly's reasoning was articulated by **B.R. Ambedkar** in his speech of **November 4, 1948** introducing the Draft Constitution.

संविधान सभा का तर्क **बी.आर. अम्बेडकर** द्वारा **4 नवंबर 1948** को दिए गए भाषण में प्रस्तुत किया गया था।

- **Ambedkar drew a distinction between "the daily assessment of responsibility," available through questions, no-confidence motions, and adjournment motions, and the "periodic assessment" offered by fixed-term elections.**

अम्बेडकर ने "दैनिक जवाबदेही" (प्रश्नकाल, अविश्वास प्रस्ताव, स्थगन प्रस्ताव) और "आवधिक मूल्यांकन" (निर्धारित अवधि के चुनाव) के बीच अंतर बताया।

- **The daily assessment, he argued, was far more effective.**

उन्होंने तर्क दिया कि दैनिक जवाबदेही अधिक प्रभावी है।

- **No term limit was needed because the legislature's confidence served as a rolling check.**

कार्यकाल सीमा की आवश्यकता नहीं थी क्योंकि विधायिका का विश्वास एक सतत नियंत्रण के रूप में कार्य करता है।

### What the Tenth Schedule broke दसवीं अनुसूची ने क्या बदला

- The **Fifty-Second Amendment (1985)** inserted the **Tenth Schedule**, providing for the **disqualification of any legislator who votes against the party whip**.

**52वाँ संशोधन (1985)** द्वारा **दसवीं अनुसूची** जोड़ी गई, जिसमें पार्टी व्हिप के खिलाफ वोट देने पर अयोग्यता का प्रावधान है।



- The Supreme Court in **Kihoto Hollohan vs. Zachillhu (1992)** upheld its constitutionality as a measure to protect the integrity of the electoral mandate.  
सुप्रीम कोर्ट ने **Kihoto Hollohan बनाम Zachillhu (1992)** में इसे वैध ठहराया।
- **But the Tenth Schedule fundamentally altered the relationship between legislature and executive that Ambedkar had relied upon.**  
लेकिन दसवीं अनुसूची ने विधायिका और कार्यपालिका के बीच उस संबंध को बदल दिया जिस पर अम्बेडकर ने भरोसा किया था।
- **Under the anti-defection regime, a ruling-party member who votes against the government on a confidence motion faces disqualification.**  
दल-बदल विरोधी कानून के तहत सत्तारूढ़ दल का सदस्य यदि विश्वास मत में सरकार के खिलाफ वोट देता है तो अयोग्य हो जाता है।
- **The no-confidence motion becomes a dead letter whenever the ruling party has a working majority.**  
जब सत्तारूढ़ दल के पास बहुमत होता है, तो अविश्वास प्रस्ताव निष्प्रभावी हो जाता है।
- **Nor does the British safety valve operate in India.**  
ब्रिटेन जैसा सुरक्षा तंत्र भारत में लागू नहीं होता।
- **Indian political parties have no institutionalised mechanism for leadership challenges.**  
भारतीय राजनीतिक दलों में नेतृत्व को चुनौती देने का कोई संस्थागत तंत्र नहीं है।
- **The anti-defection law locks legislators into party loyalty; the absence of intra-party democracy locks the party into loyalty to its leader.**  
दल-बदल विरोधी कानून विधायकों को पार्टी के प्रति बांधता है और आंतरिक लोकतंत्र की कमी पार्टी को नेता के प्रति बांध देती है।

### The comparative evidence

#### तुलनात्मक प्रमाण

- Tom Ginsburg, James Melton, and Zachary Elkins, in their study of executive term-limit evasion, showed that leaders in multiple regions have sought to extend their tenure through **constitutional amendment, replacement, or judicial interpretation.**  
टॉम गिन्सबर्ग, जेम्स मेल्टन और जैकरी एल्किन्स ने अपने अध्ययन में दिखाया कि विभिन्न क्षेत्रों के नेता अपने कार्यकाल को **संवैधानिक संशोधन, प्रतिस्थापन या न्यायिक व्याख्या** के माध्यम से बढ़ाने का प्रयास करते हैं।
- Ginsburg and Aziz Huq further argued that **democratic decline more often proceeds through incremental institutional decay than through sudden authoritarian rupture.**  
गिन्सबर्ग और अज़ीज़ हुक ने तर्क दिया कि लोकतंत्र का पतन अधिकतर **धीरे-धीरे संस्थागत क्षरण** के माध्यम से होता है, न कि अचानक अधिनायकवादी बदलाव से।
- India has not needed to abolish a term limit because it **never had one.**  
भारत को कार्यकाल सीमा समाप्त करने की आवश्यकता नहीं पड़ी क्योंकि यहाँ **कभी कोई सीमा थी ही नहीं।**
- **The question is whether the absence of a formal constraint, combined with the neutralisation of parliamentary accountability, produces the same structural risks that term limits elsewhere are designed to prevent.**  
प्रश्न यह है कि **औपचारिक सीमा की अनुपस्थिति** और संसदीय जवाबदेही के कमजोर होने से क्या वही **संरचनात्मक जोखिम** उत्पन्न होते हैं, जिन्हें अन्य देशों में कार्यकाल सीमा रोकती है।

### The presidential irony

#### राष्ट्रपति विडंबना

- India has developed a convention against a **third presidential term**, though the presidency is largely ceremonial.  
भारत में **तीसरे राष्ट्रपति कार्यकाल** के विरुद्ध एक परंपरा विकसित हुई है, जबकि राष्ट्रपति पद मुख्यतः औपचारिक है।
- **No President has served more than two terms.**  
किसी भी राष्ट्रपति ने **दो से अधिक कार्यकाल** नहीं निभाए हैं।
- The expectation satisfies the three-part test for constitutional conventions laid down by **Ivor Jennings (1959).**  
यह अपेक्षा **आइवर जेनिंग्स (1959)** द्वारा दिए गए संवैधानिक परंपराओं के तीन-भाग परीक्षण को पूरा करती है।



- precedents exist, the actors believed themselves bound by a rule, and the rule has a reason. जहाँ परंपरा मौजूद है, लोग स्वयं को नियम से बंधा मानते हैं और उस नियम के पीछे तर्क भी होता है।
- The office that holds no real executive power is **constrained by convention**, while the office that holds virtually all executive power is constrained only by the electorate's periodic verdict. जिस पद के पास वास्तविक कार्यकारी शक्ति नहीं है वह **परंपरा से नियंत्रित** है, जबकि जिस पद के पास लगभग सारी शक्ति है वह केवल चुनावों द्वारा नियंत्रित है।
- with the anti-defection law largely disabling other **accountability mechanisms**. जहाँ दल-बदल विरोधी कानून अन्य **जवाबदेही तंत्रों** को काफी हद तक निष्क्रिय कर देता है।
- The strongest counter-argument is that voters have endorsed Mr. Modi's tenure **three consecutive times**, and that a term limit would override their expressed preference. सबसे मजबूत तर्क यह है कि मतदाताओं ने Mr. Modi को **लगातार तीन बार समर्थन दिया है**, और कार्यकाल सीमा उनकी इच्छा के विरुद्ध होगी।
- The objection is serious; a term limit is, in a real sense, **anti-democratic**. यह आपत्ति गंभीर है क्योंकि कार्यकाल सीमा एक हद तक **लोकतंत्र विरोधी** मानी जा सकती है।
- But it rests on the premise that **elections and parliamentary accountability** are sufficient to discipline executive power. लेकिन यह इस धारणा पर आधारित है कि **चुनाव और संसदीय जवाबदेही** कार्यपालिका को नियंत्रित करने के लिए पर्याप्त हैं।
- If that accountability has been structurally impaired by the **Tenth Schedule**, elections must carry a heavier burden. यदि यह जवाबदेही **दसवीं अनुसूची** के कारण कमजोर हो गई है, तो चुनावों पर अधिक जिम्मेदारी आ जाती है।
- And elections, however free, are a weak constraint on the compounding advantages of **prolonged incumbency**. और चुनाव, चाहे कितने भी स्वतंत्र हों, **लंबे समय तक सत्ता में रहने के लाभों** को रोकने में कमजोर होते हैं।
- including control over **appointments to regulatory bodies, Election Commission, and higher judiciary**, and shaping the information environment and policies for electoral benefit. जिसमें **नियामक संस्थाओं, चुनाव आयोग और उच्च न्यायपालिका में नियुक्तियों पर नियंत्रण**, सूचना वातावरण को प्रभावित करना और चुनावी लाभ के लिए नीतियाँ बनाना शामिल है।

### What might be done क्या किया जा सकता है

- The more natural reform is to restore the mechanism the framers relied upon. सबसे स्वाभाविक सुधार यह है कि संस्थापकों द्वारा अपनाए गए तंत्र को पुनः स्थापित किया जाए।
- Exempt votes on **confidence motions** from the Tenth Schedule's disqualification provision so that legislators can remove a government without losing their seats. **विश्वास मत** को दसवीं अनुसूची की अयोग्यता से मुक्त किया जाए ताकि विधायक अपनी सदस्यता खोए बिना सरकार को हटा सकें।
- A more ambitious possibility is a **constitutional amendment** limiting consecutive terms as Prime Minister or Chief Minister, while permitting a return after a gap. एक अधिक महत्वाकांक्षी विकल्प यह है कि **संवैधानिक संशोधन** के माध्यम से प्रधानमंत्री या मुख्यमंत्री के लगातार कार्यकालों को सीमित किया जाए, लेकिन अंतराल के बाद वापसी की अनुमति दी जाए।
- The State-level dimension is equally pressing, given the extended tenures of leaders such as **Jyoti Basu, Naveen Patnaik, and Pinarayi Vijayan**. राज्य स्तर पर भी यह मुद्दा महत्वपूर्ण है, क्योंकि **ज्योति बसु, नवीन पटनायक और पिनराई विजयन** जैसे नेताओं के लंबे कार्यकाल रहे हैं।
- The **8,931-day milestone** forces attention to whether India's parliamentary system retains the **self-correcting capacity** the framers relied upon. **8,931 दिन की उपलब्धि** यह प्रश्न उठाती है कि क्या भारत की संसदीय प्रणाली में अब भी वह **स्व-सुधार क्षमता** बनी हुई है जिस पर संविधान निर्माताओं ने भरोसा किया था।



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### Telangana joins new RBI strategy for State loans

GS II: Center-State Relations

HYDERABAD

Telangana has joined the list of nine States where the Reserve Bank of India (RBI) is rolling out the Benchmark Issuance Strategy (BIS) for State development loans, starting from the current financial year.

The central bank said that it has been sensitising the States about the adoption of BIS aimed at enhancing transparency and providing greater clarity to investors. The Strategy involves issuing securities in specific benchmark tenor buckets as per the pre-announced calendar.

The framework is aimed at creating a larger, more liquid benchmark bonds improving price discovery and providing investors with better visibility into supply in the State bond market. It envisages the issuance of standardised benchmark bonds across specific tenors to reduce market fragmentation.

The RBI said it has decided to introduce BIS on a pilot basis in nine States including Telangana based on the concurrence of the respective State governments, starting the financial year 2026-27.

The State government has accordingly submitted an indent for raising market borrowings to the tune of ₹18,900 crore during the first quarter of the current fiscal.

In line with the BIS, the State has decided to avail loans with different tenures ranging from six to 10 years to over 25 years. The tenure for ₹2,000 crore and ₹1,900 crore borrowings proposed on April 7 is 16-25 years and above 25 years, respectively.

### 06A. Telangana joins new RBI strategy for State loans तेलंगाना राज्य ऋण के लिए नई RBI रणनीति में शामिल

- Telangana has joined the list of nine States where the Reserve Bank of India (RBI) is rolling out the Benchmark Issuance Strategy (BIS) for State development loans, starting from the current financial year.

तेलंगाना उन नौ राज्यों की सूची में शामिल हो गया है जहां भारतीय रिज़र्व बैंक (RBI) राज्य विकास ऋणों के लिए बेंचमार्क इश्यूएंस स्ट्रेटेजी (BIS) लागू कर रहा है, जो वर्तमान वित्तीय वर्ष से शुरू हो रही है।

- The central bank said that it has been sensitising the States about the adoption of BIS aimed at enhancing transparency and providing greater clarity to investors.

केंद्रीय बैंक ने कहा कि वह राज्यों को BIS अपनाने के लिए जागरूक कर रहा है, जिसका उद्देश्य पारदर्शिता बढ़ाना और निवेशकों को अधिक स्पष्टता प्रदान करना है।

- The Strategy involves issuing securities in specific benchmark tenor buckets as per the pre-announced calendar.

इस रणनीति में पूर्व-घोषित कैलेंडर के अनुसार विशेष बेंचमार्क अवधि वर्गों में प्रतिभूतियां (securities) जारी करना शामिल है।

- The framework is aimed at creating larger, more liquid benchmark bonds, improving price discovery and providing investors with better visibility into supply in the State bond market.

इस ढांचे का उद्देश्य बड़े और अधिक तरल बेंचमार्क बॉन्ड बनाना है, जिससे मूल्य खोज (price discovery) में सुधार हो और राज्य बॉन्ड बाजार में आपूर्ति की बेहतर जानकारी निवेशकों को मिले।

- It envisages the issuance of standardised benchmark bonds across specific tenors to reduce market fragmentation.

यह विशेष अवधियों में मानकीकृत बेंचमार्क बॉन्ड जारी करने की परिकल्पना करता है ताकि बाजार विखंडन कम हो सके।

- The RBI said it has decided to introduce BIS on a pilot basis in nine States including Telangana based on the concurrence of the respective State governments, starting the financial year 2026-27.

RBI ने कहा कि उसने संबंधित राज्य सरकारों की सहमति से 2026-27 वित्तीय वर्ष से तेलंगाना सहित नौ राज्यों में पायलट आधार पर BIS लागू करने का निर्णय लिया है।

- The State government has accordingly submitted an indent for raising market borrowings to the tune of ₹18,900 crore during the first quarter of the current fiscal.

राज्य सरकार ने वर्तमान वित्तीय वर्ष की पहली तिमाही में ₹18,900 करोड़ के बाजार उधार जुटाने के लिए प्रस्ताव प्रस्तुत किया है।

- In line with the BIS, the State has decided to avail loans with different tenures ranging from six to 10 years to over 25 years.

BIS के अनुरूप, राज्य ने छह से 10 वर्ष से लेकर 25 वर्ष से अधिक अवधि के ऋण लेने का निर्णय किया है।



- The tenure for ₹2,000 crore and ₹1,900 crore borrowings proposed on April 7 is 16-25 years and above 25 years, respectively.  
7 अप्रैल को प्रस्तावित ₹2,000 करोड़ और ₹1,900 करोड़ के उधार की अवधि क्रमशः 16-25 वर्ष और 25 वर्ष से अधिक है।

# Water sharing, visa likely on Bangladesh Minister's agenda

**Foreign Minister Khalilur Rahman to visit India this week, say officials; newly elected BNP govt. indicates more willingness to negotiate water sharing treaty renewal, compared with interim govt.**

GS II: IR

**Kallol Bhattacharjee**  
NEW DELHI

Sharing of river water, energy cooperation, normalisation of visa services, and war in West Asia are all expected to feature in bilateral talks with Bangladesh Foreign Minister Khalilur Rahman, who is expected to visit India this week, according to diplomatic sources.

This will be the first visit by a Bangladeshi Foreign Minister since the fall of Sheikh Hasina's government in Dhaka on August 5, 2024 pushed bilateral relations downhill.

The Bangladeshi Foreign Ministry held internal meetings on Sunday in preparation for the visit, which is likely to take place on April 7 and 8, sources said.

## Ganga treaty

Indian officials said it is important to fast-track negotiations to renew the Ganga water treaty of 1996, noting that subcommittees constituted for this purpose did not make much progress during the 15-month tenure of Dhaka's interim government headed by chief adviser Mu-



Bangladesh Foreign Minister Khalilur Rahman, right, with Indian High Commissioner Pranay Verma in Dhaka on February 22. ANI

hammad Yunus. The newly elected government of Prime Minister Tarique Rahman, who was sworn in to office on February 17, has, however, indicated that it is willing to take the dialogue forward and conclude negotiations ahead of December 2026, the deadline for treaty renewal.

Bangladesh Water resources Minister Shahid Uddin Choudhury Anee said on April 1 that the technical committee on the subject has started its work in Dhaka. Bangladeshi diplomatic sources have also hinted that, if necessary, temporary renewal of the treaty can be at-

tempted before the two sides commit to a long-term renewal. It is understood that both New Delhi and Dhaka are walking a tightrope in view of the upcoming Assembly election in West Bengal, where the sharing of the waters of the Ganga could become a political issue.

Mr. Rahman's visit also indicates New Delhi's willingness to engage with an elected government in Dhaka. Mr. Rahman, who served as the National Security Adviser under Mr. Yunus, is one of the few officials of the interim government who managed to retain significant positions in the elected government

of the Bangladesh Nationalist Party (BNP).

Given the delicate condition of bilateral relations, the Indian side has not yet announced the visit, and sources in Dhaka have described the visit as "transiting through Delhi" before Mr. Rahman proceeds to the Indian Ocean Conference in Mauritius that is being organised by the India Foundation, in association with the External Affairs Ministry and the government of Mauritius. Official sources, however, have indicated that during his stay in Delhi, Mr. Rahman will meet his counterpart, External Affairs Minister S. Jaishankar, and other senior officials, senior editors, and Delhi-based diplomats.

The war in West Asia and the resultant energy insecurity that has emerged as a major challenge for the Tarique Rahman government is one of the issues that is expected to feature prominently in talks as well. Bangladeshi diplomats have also highlighted the need to normalise the Indian visa process for Bangladeshi tourists and business people as a high priority for Dhaka.

## 06A. Water sharing, visa likely on Bangladesh Minister's agenda जल बंटवारा, वीजा बांग्लादेश मंत्री के एजेंडा में संभावित

- Foreign Minister **Khalilur Rahman** to visit India this week, say officials; newly elected **BNP govt.** indicates more willingness to negotiate water sharing treaty renewal, compared with interim govt.



विदेश मंत्री **खालिलुर रहमान** इस सप्ताह भारत का दौरा करेंगे, अधिकारियों ने कहा; नव-निर्वाचित **बीएनपी सरकार** अंतरिम सरकार की तुलना में जल बंटवारा संधि के नवीनीकरण पर बातचीत के लिए अधिक इच्छुक दिखाई देती है।

- **Sharing of river water, energy cooperation, normalisation of visa services, and war in West Asia** are all expected to feature in bilateral talks with Bangladesh Foreign Minister Khalilur Rahman, who is expected to visit India this week, according to diplomatic sources. **नदी जल बंटवारा, ऊर्जा सहयोग, वीजा सेवाओं का सामान्यीकरण, और पश्चिम एशिया में युद्ध** जैसे मुद्दे बांग्लादेश के विदेश मंत्री खालिलुर रहमान के साथ द्विपक्षीय वार्ता में शामिल होने की संभावना है, जो इस सप्ताह भारत आने वाले हैं, कूटनीतिक सूत्रों के अनुसार।

- Indian officials said it is important to fast-track negotiations to renew the **Ganga water treaty of 1996**, noting that subcommittees constituted for this purpose did not make much progress during the 15-month tenure of Dhaka's interim government headed by chief adviser **Muhammad Yunus**.

भारतीय अधिकारियों ने कहा कि **1996 की गंगा जल संधि** के नवीनीकरण के लिए बातचीत को तेज करना महत्वपूर्ण है, यह बताते हुए कि इस उद्देश्य के लिए गठित उप-समितियों ने मुख्य सलाहकार **मुहम्मद यूनुस** के नेतृत्व वाली ढाका की 15 महीने की अंतरिम सरकार के दौरान अधिक प्रगति नहीं की।

- Given the delicate condition of bilateral relations, the Indian side has not yet announced the visit, and sources in Dhaka have described the visit as "transiting through Delhi" before Mr. Rahman proceeds to the **Indian Ocean Conference in Mauritius that is being organised by the India Foundation, in association with the External Affairs Ministry and the government of Mauritius**.

द्विपक्षीय संबंधों की संवेदनशील स्थिति को देखते हुए, भारतीय पक्ष ने अभी तक इस यात्रा की घोषणा नहीं की है, और ढाका के सूत्रों ने इस यात्रा को "दिल्ली के माध्यम से पारगमन" बताया है, जिसके बाद श्री रहमान मॉरीशस में होने वाले **इंडियन ओशन कॉन्फ्रेंस** में जाएंगे, जिसका आयोजन **इंडिया फाउंडेशन**, विदेश मंत्रालय और मॉरीशस सरकार के साथ मिलकर कर रहा है।

## Why did Iran war not affect China's energy security so far?

How has China diversified its energy sources and consumption patterns to strengthen energy security?

**ISSUE**

**WORLD INSIGHT**

**Avinash Godbole**

**A**s the Israel-US war on Iran has meandered on, India has faced the shortage of liquified petroleum gas (LPG) and experienced a social panic over the possible shortage of petrol and diesel. One does not see similar news from China despite its bigger economy, larger consumer market and role as a supplier to global markets, raising the question of how China escaped the early consequences and how, and in what ways it may be affected in the future. The answer to that question lies in what China has done in the past two decades and how its geography, its position as the world's largest polluter, its stringent actions against the local air pollution

challenges and its concerns over status have combined to protect it from the current crisis.

**How did it tackle the Malacca dilemma?**

About 15 years ago, China's concerns over its dependence on the Malacca strait for trade and energy transits, and the near permanent American presence in the vicinity were real. The country sought to address this by building the capacity to create strategic petroleum reserves (SPR) and used long-term contracts to fill those up. Today China has nearly 120 days of SPR storage and it may be tapping into some of that. Data suggests that a combination of China's oil reserves and diversification may allow it to bypass imports from the Strait of Hormuz for several months.

China's second approach to reducing the dependence on the Malacca strait was

to build pipelines to import oil and gas from Central Asia and Russia. If the straits were a geopolitical challenge, its stable relations with its Central Asian neighbours made the geography an opportunity.

Now almost 20 per cent of China's crude oil imports happen through these pipelines, including an estimated 900,000 barrels per day from Russia. Consider that against the failed attempts to establish the Iran-Pakistan-India and the Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipelines, which have been stalled for a combination of reasons. On the other hand, China's national oil companies like Sinopec, CNPC and CNOOC, have traditionally had deeper pockets and China has been an active negotiator in conflict zones like Sudan or Angola and their proactive strategies have also helped it create a good diversification in its imports sources.

**What are China's climate and energy strategies?**

For its part, China joined hands with India, South Africa, and Brazil, to protect their carbon space, forming the BASIC bloc during the early days of global climate change negotiations.

However, it also used its status as the world's largest polluter and managed to get the US-China Ten-Year Framework Cooperation on Energy and Environment, in June 2008, before it agreed to any commitments under the United Nations Framework Convention on Climate Change (UNFCCC). This cooperation and the subsequent knowledge and technology transfer led to the success of the Paris Climate Accord and allowed China to create a foundation for its industrial surge in sectors like solar panels, wind and tidal energy, energy efficiency and management, carbon storage and sequestration, electric mobility including cars and buses.

Along with this, China has also faced a significant criticism for its role as the world's largest coal consumer. China has also worked to undertake energy transition plans and address the air pollution challenge that Beijing and other cities have faced via time-bound targets declared in its numerous white papers, task forces and bureaucratic restructuring initiatives.

**How did EVs help lower oil demand?**

China's role as a large middle-class economy also matters. China is also the largest consumer of electric vehicles. Its preferential policies favour EV via tax concessions, mandates and preferential lottery chances and its scaling capabilities and larger size of consumer markets have contributed to their popularity. This has allowed China to significantly reduce its imports in 2025 and this number is bound to grow in the coming years.

**Is economic slowdown a factor?**

Lastly, China is indeed facing a serious economic slowdown which means its overall energy consumption is lower. It has set a modest target of growth at 4.5% for 2026. Its construction sector has nearly stalled and it means that sectors such as cement, iron and steel and others are not doing well too. China's role as the world's factory is changing gradually compared to how it was a decade ago, and it has been a good thing for its energy demand.

To sum it up, a combination of opportunities, proactive strategies and strategic and status concerns have helped China to stay afloat stronger in the current crisis. (Avinash Godbole is a Professor and Associate Academic Dean, JSLH, JGU. Views expressed are personal)

## 06A. Why did the Iran war not affect China's energy security so far? ईरान युद्ध का चीन की ऊर्जा सुरक्षा पर अब तक सीमित प्रभाव क्यों पड़ा?

**China and the Energy Crisis amid Israel-US-Iran War**  
**इज़राइल-अमेरिका-ईरान युद्ध के बीच चीन और ऊर्जा संकट**

- As the **Israel-US war on Iran** has meandered on, India has faced the shortage of **liquified petroleum gas (LPG)** and experienced a social panic over the possible shortage of petrol and diesel.



जैसे-जैसे इज़राइल-अमेरिका-ईरान युद्ध जारी रहा, भारत को LPG की कमी और पेट्रोल-डीजल की संभावित कमी को लेकर सामाजिक घबराहट का सामना करना पड़ा।

- One does not see similar news from China despite its bigger economy, larger consumer market and role as a supplier to global markets, raising the question of how China escaped the early consequences and how, and in what ways it may be affected in the future. चीन से ऐसी खबरें नहीं आतीं, जबकि उसकी अर्थव्यवस्था और उपभोक्ता बाजार बड़ा है, जिससे यह प्रश्न उठता है कि चीन इस संकट से कैसे बचा और भविष्य में कैसे प्रभावित हो सकता है।
- The answer to that question lies in what China has done in the past two decades and how its geography, its position as the world's largest polluter, its stringent actions against local air pollution challenges and its concerns over status have combined to protect it from the current crisis.

इसका उत्तर पिछले दो दशकों में चीन की रणनीतियों, उसकी भौगोलिक स्थिति, विश्व के सबसे बड़े प्रदूषक होने, वायु प्रदूषण के खिलाफ सख्त कदमों और उसकी वैश्विक स्थिति की चिंता में निहित है।

### How did it tackle the Malacca dilemma?

#### मलक्का दुविधा का समाधान कैसे किया?

- About 15 years ago, China's concerns over its dependence on the Malacca Strait for trade and energy transits and the near permanent American presence in the vicinity were real. लगभग 15 वर्ष पहले, चीन की मलक्का जलडमरूमध्य पर निर्भरता और अमेरिकी उपस्थिति को लेकर चिंता वास्तविक थी।
- The country sought to address this by building the capacity to create strategic petroleum reserves (SPR) and used long-term contracts to fill those up. चीन ने रणनीतिक पेट्रोलियम भंडार (SPR) बनाकर और दीर्घकालिक अनुबंधों से इसे भरकर समाधान किया।
- Today China has nearly 120 days of SPR storage and it may be tapping into some of that. आज चीन के पास लगभग 120 दिनों का SPR भंडार है।
- Data suggests that a combination of China's oil reserves and diversification may allow it to bypass imports from the Strait of Hormuz for several months. डेटा बताता है कि तेल भंडार और विविधीकरण के कारण चीन कई महीनों तक हॉर्मुज़ जलडमरूमध्य से आयात टाल सकता है।
- China's second approach to reducing dependence on the Malacca Strait was to build pipelines to import oil and gas from Central Asia and Russia. चीन ने मध्य एशिया और रूस से पाइपलाइन द्वारा तेल-गैस आयात शुरू किया।
- If the straits were a geopolitical challenge, its stable relations with its Central Asian neighbours made the geography an opportunity. जहाँ जलडमरूमध्य चुनौती थी, वहीं मध्य एशियाई देशों से संबंध अवसर बन गए।
- Now almost 20% of China's crude oil imports happen through these pipelines, including an estimated 900,000 barrels per day from Russia. अब लगभग 20% तेल आयात पाइपलाइन से होता है, जिसमें रूस से लगभग 900,000 बैरल/दिन शामिल है।
- Consider that against the failed attempts to establish the Iran-Pakistan-India and TAPI pipelines, which have been stalled. इसके विपरीत IPI और TAPI पाइपलाइन असफल रही हैं।
- China's national oil companies like Sinopec, CNPC and CNOOC have deeper pockets and proactive strategies in conflict zones like Sudan and Angola, helping diversification. Sinopec, CNPC, CNOOC जैसी कंपनियों ने सूडान और अंगोला जैसे क्षेत्रों में सक्रिय रणनीति से विविधीकरण किया।

### What are China's climate and energy strategies?

#### चीन की जलवायु और ऊर्जा रणनीतियाँ क्या हैं?

- China joined hands with India, South Africa, and Brazil forming the BASIC bloc to protect carbon space. चीन ने भारत, दक्षिण अफ्रीका और ब्राज़ील के साथ मिलकर BASIC समूह बनाया।
- It also secured the US-China Ten-Year Framework (2008) before committing under UNFCCC. इसने 2008 में अमेरिका-चीन समझौता किया, फिर UNFCCC के तहत प्रतिबद्धता दी।



- This led to success in the **Paris Climate Accord** and growth in **solar, wind, tidal energy, EVs, carbon storage**.  
इससे पेरिस समझौते और सौर, पवन, ज्वारीय ऊर्जा, EV, कार्बन भंडारण में वृद्धि हुई।
- **China has faced criticism as the largest coal consumer but has implemented energy transition and pollution control measures.**  
चीन को सबसे बड़ा कोयला उपभोक्ता होने पर आलोचना मिली, पर उसने ऊर्जा संक्रमण और प्रदूषण नियंत्रण उपाय अपनाए।

**How did EVs help lower oil demand?**  
**EVs ने तेल मांग कैसे घटाई?**

- **China is the largest consumer of electric vehicles supported by tax concessions, mandates and policy incentives.**  
चीन इलेक्ट्रिक वाहनों का सबसे बड़ा उपभोक्ता है, जिसे कर छूट और नीतिगत समर्थन मिला।
- Its large market and scaling capacity increased EV adoption.  
इसके बड़े बाजार और उत्पादन क्षमता ने EV अपनाने को बढ़ाया।
- This reduced imports significantly in **2025** and will grow further.  
इससे **2025** में आयात घटा और आगे भी घटेगा।

<b>GS Paper III: Economy,</b>	
<b>TOPICS COVERED</b>	<b>06 April 2026</b>
<b>06A</b>	<b>The silent siren of Samastipur</b> समस्तीपुर की खामोश सायरन
<b>06A</b>	<b>Oil marketing firms to pay discounted rates to refiners</b> तेल विपणन कंपनियाँ रिफाइनरों को रियायती दरें देंगी
<b>06A</b>	<b>The World Trade Organization is failing</b> विश्व व्यापार संगठन विफल हो रहा है
<b>06A</b>	<b>Kerala's spending falls short of its green ambitions</b> केरल का व्यय उसके हरित लक्ष्यों से पीछे रह गया है
<b>06A</b>	<b>Personal loan, EMI, interest cost</b> पर्सनल लोन, ईएमआई, ब्याज लागत
<b>06A</b>	<b>When all assets look dull, it is the time to stay calm</b> जब सभी परिसंपत्तियाँ कमजोर दिखें, तब शांत रहने का समय है
<b>06A</b>	<b>Strong dollar pounds gold, silver</b> मजबूत डॉलर से सोना, चांदी पर दबाव
<b>06A</b>	<b>Why Indian Ports have to transform using AI</b> भारतीय बंदरगाहों को AI का उपयोग करके क्यों परिवर्तन करना होगा
<b>06A</b>	<b>LEGO aces, brick by brick, in the age of NVIDIA</b> NVIDIA के युग में LEGO की ईट-दर-ईट सफलता



**SPOTLIGHT**

**Tabshir Shams**

It is evening in Bhagirathpur village of Bihar's Samastipur district. Naushad Alam, 53, a leader of the Rameshwar Jute Mill Mazdoor Union, sits erect on a worn-down plastic chair on his veranda. The birds chirp in a chorus, but his gravelly voice carries over them: "About 15 to 20 years ago, around 5,000 labourers were on the payroll of the mill. Now only 1,200 remain. The working shifts gradually reduced from three to two, and workers were retrenched slowly year after year."

Rameshwar Jute Mill was temporarily closed in November 2025, bringing to an end the company's 100-year-old legacy. Now, workers are fighting for pending arrears, a raise in salary when the mill reopens, and elections to be held for the union. Over the past couple of decades, with the rise of plastic packaging, low jute supply, and obsolete production processes, the demand for jute bags has been sliding. As per the 'Annual Report 2024 of the Ministry of Agriculture', jute production itself has gone down from 106 lakh bales in 2014 to 84 lakh bales in 2024.

Alam claims the immediate cause of the mill shutting was corruption. A

manager who "ran away with crores worth of raw jute" and the owners, Winsome International, who defaulted on a ₹24 crore loan. Others, who have started a parallel, unregistered union, say Alam has controlled the union, has not held elections for at least four years, and is in cahoots with the management.

**Worker demands**

"There is a case of non-payment of dues by the Bihar State Food and Civil Supplies Corporation Ltd to Winsome International pending in the Patna High Court," Alam says. About 500 metres from gate no. 3 is the shuttered gate no. 1. On it is a notice pasted by the Rameshwar Jute Mill Sangharsh Samiti, the unregistered union, formed in 2003. Dated March 1, 2026, it demands immediate reopening of the mill, revised wages, processing of provident fund (PF) dues, implementation of 'samman bhatta (honorary allowance)' and other demands. It is signed by chairperson Rambali Mahto.

Alam and the 1,200 workers on the rolls want the government to provide alternative employment so skilled labour does not end up in unskilled jobs or migrate to urban centres like Delhi, Mumbai, and Hyderabad for casual work. "We have been demanding a

## The silent siren of Samastipur

Once the pulse of Bihar and Samastipur's industrial growth, the Rameshwar Jute Mill stands shuttered for four months now, leaving more than 5,000 workers out of jobs. A siren, which once sounded three times in a day, loud enough to be heard across villages has gone silent



The main gate of the jute mill; (right) unregistered union members led by Mahto (in red shirt) protesting outside the mill. SPECIAL ARRANGEMENT



wage of ₹660 per day for five years now. This is also mandated by the Bihar government, but the demands went unheeded," Alam says. In October 2025, the Bihar government implemented the Code of Wages, Rules 2025. The new rates fix the minimum daily wage of ₹660 for highly skilled workers, ₹444 for semi-skilled, and ₹428 for unskilled workers. The jute mill labourers claim they fall under the

category of highly skilled workers. Rameshwar Jute Mills was established by the Darbhanga Maharaja Rameshwar Singh in 1926 on 84 acres of land. In 1954, it was taken over by Birla Gwalior Limited, which managed it till 1976. Birla sold the mill in 1986 to Winsome International Limited, a Kolkata-based company. The government mandates the use of jute bags under the Jute Pack-

ing Material (JPM) Act, 1987. As of 2024-25, up to 100% of food grains and 20% of sugar must be packed in jute bags. This supports jute mill workers and farmers across several States. Rameshwar Jute mill's daily production was 80 tons of gunny sacks a day till 2014, says Alam, and while its capacity remained the same, the output was about half. It supplied jute bags to food grain procure-

ment corporations in multiple States. As per the India Jute Mills Association, there are 3.7 to 4 lakh jute mill workers across 80 to 120 composite jute mills in India, mostly in West Bengal. Bihar has a few in the Purne region and contributes 9.62% to India's jute production, as per the Economic Survey 2024-2025.

The mill village Bhagirathi village, as locals call it, is clustered around

the jute mill near Muktapur railway station. It holds a population of about 10,000 and until a few years ago almost all families depended on the mill. Suresh Paswan, 80, a retired worker, now sells *samosa-jalebi* from a roadside setup. "I used to work two shifts in a day when the mill was fully functioning. I retired 15 years ago. I used to receive a monthly pension of ₹7,000. From 2017 to 2019, the mill was closed, and I stopped receiving the pension. The mill owes me more than ₹5 lakh. Now this shop is my only source of income," he says. Alam says over 500 workers have filed complaints in the provident fund commissioner's office in Muzaffarpur. "He has assured us that our dues will be cleared once the mill reopens. We have filed a case with the District Labour Commissioner in Darbhanga as well," he says. No government official responded to *The Hindu's* queries.

**Other employment**

Within 300 metres of Alam's home, Gopal Das, 55, sits with friends near a local temple. "I used to work regularly in the mill till 2017. Our main contribution was wages. They gave us ₹400 a day while we demanded ₹660," he says. He went to Kolkata to find work in a mill but found it irregular. "I worked as a plumber in Kolkata for a

few years, but I had to return during the COVID-19 lockdown," he says. Alam says some workers have retrained as painters and plumbers. A few found work in jute mills in West Bengal, but closures there have also led to reverse migration. He says they approached local MLA Maheshwar Hazari, who raised the issue in the Bihar Vidhan Sabha. They also approached Samastipur MP Shambhavi Choudhary, but received no response.

Mahto, a farmer and labour leader, founded the Rameshwar Jute Mill Sangharsh Samiti with the support of more than 1,500 ex-workers. "My father was a jute mill worker. One day, he was humiliated for his caste by a mill official. Then I decided to work for the labourers... We will fight till they agree to the wage of ₹660," he says.

Mahto's neighbour, Sunita Devi, 45, says, "Life was better when my husband worked for the mill. He made ₹20,000 a month. This house was made from his earnings. But when the mill closed, he left the job. The mill still has not paid his wages and PF." Her husband is in Kolkata looking for work. The mill siren that rang out three times a day to indicate a shift change has gone silent. The only sound that reverberates through the village is the temple bell.

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### 06A. The silent siren of Samastipur समस्तीपुर की खामोश सायरन

- Once the pulse of Bihar and Samastipur's industrial growth, the Rameshwar Jute Mill stands shuttered for four months now, leaving more than 5,000 workers out of jobs. कभी बिहार और समस्तीपुर के औद्योगिक विकास की धड़कन रही रामेश्वर जूट मिल अब चार महीनों से बंद है, जिससे 5,000 से अधिक श्रमिक बेरोजगार हो गए हैं।
- The birds chirp in a chorus, but his gravelly voice carries over them: "About 15 to 20 years ago, around 5,000 labourers were on the payroll of the mill. पक्षी चहचहा रहे हैं, लेकिन उनकी भारी आवाज उन पर हावी हो जाती है: "लगभग 15-20 साल पहले मिल में करीब 5,000 मजदूर काम करते थे।
- Now only 1,200 remain. अब केवल 1,200 बचे हैं।
- Over the past couple of decades, with the rise of plastic packaging, low jute supply, and obsolete production processes, the demand for jute bags has been sliding. पिछले कुछ दशकों में प्लास्टिक पैकेजिंग, कम जूट आपूर्ति और पुराने उत्पादन तरीकों के कारण जूट बैग की मांग घटती गई है।
- As per the Annual Report 2024 of the Ministry of Agriculture, jute production itself has gone down from 106 lakh bales in 2014 to 84 lakh bales in 2024. कृषि मंत्रालय की 2024 की वार्षिक रिपोर्ट के अनुसार जूट उत्पादन 2014 में 106 लाख गांठ से घटकर 2024 में 84 लाख गांठ रह गया है।
- Alam claims the immediate cause of the mill shutting was corruption. आलम का दावा है कि मिल बंद होने का तत्काल कारण भ्रष्टाचार था।
- On it is a notice pasted by the Rameshwar Jute Mill Sangharsh Samiti, the unregistered union, formed in 2003. उस पर 2003 में बनी गैर-पंजीकृत यूनियन रामेश्वर जूट मिल संघर्ष समिति का नोटिस चिपका है।
- Dated March 1, 2026, it demands immediate reopening of the mill, revised wages, processing of provident fund (PF) dues, implementation of 'samman bhatta (honorary allowance)' and other demands. 1 मार्च 2026 के इस नोटिस में मिल को तुरंत खोलने, वेतन संशोधन, भविष्य निधि (PF) भुगतान और 'सम्मान भत्ता' लागू करने की मांग की गई है।



- In October 2025, the **Bihar government implemented the Code of Wages, Rules 2025**. अक्टूबर 2025 में बिहार सरकार ने वेतन संहिता नियम 2025 लागू किए।
- The new rates fix the minimum daily wage of ₹660 for highly skilled workers, ₹444 for semi-skilled, and ₹428 for unskilled workers. नई दरों में अत्यधिक कुशल के लिए ₹660, अर्ध-कुशल के लिए ₹444 और अकुशल के लिए ₹428 न्यूनतम दैनिक वेतन तय किया गया है।
- The jute mill labourers claim they fall under the category of highly skilled workers. जूट मिल मजदूर दावा करते हैं कि वे अत्यधिक कुशल श्रेणी में आते हैं।
- **Rameshwar Jute Mills** was established by the **Darbhanga Maharaja Rameshwar Singh in 1926 on 84 acres of land**. रामेश्वर जूट मिल की स्थापना दरभंगा महाराजा रामेश्वर सिंह ने 1926 में 84 एकड़ भूमि पर की थी।
- In 1954, it was taken over by **Birla Gwalior Limited**, which managed it till 1976. 1954 में इसे बिरला ग्वालियर लिमिटेड ने संभाला और 1976 तक चलाया।
- Birla sold the mill in 1986 to **Winsome International Limited**, a Kolkata-based company. बिरला ने 1986 में इसे कोलकाता स्थित विंसम इंटरनेशनल लिमिटेड को बेच दिया।
- The government mandates the use of jute bags under the **Jute Packaging Material (JPM) Act, 1987**. सरकार जूट पैकेजिंग सामग्री अधिनियम, 1987 के तहत जूट बैग के उपयोग को अनिवार्य करती है।
- As of 2024-25, up to **100% of food grains and 20% of sugar** must be packed in jute bags. 2024-25 तक **100% खाद्यान्न और 20% चीनी** को जूट बैग में पैक करना अनिवार्य है।
- As per the **India Jute Mills Association**, there are **3.7 to 4 lakh jute mill workers** across **80 to 120 composite jute mills** in India, mostly in West Bengal. **इंडिया जूट मिल्स एसोसिएशन** के अनुसार भारत में **80-120 जूट मिलों में 3.7 से 4 लाख मजदूर** काम करते हैं, जिनमें अधिकांश पश्चिम बंगाल में हैं।
- **Bihar has a few in the Purnea region and contributes 9.62% to India's jute production, as per the Economic Survey 2024-2025**. बिहार में पूर्णिया क्षेत्र में कुछ मिलें हैं और **आर्थिक सर्वेक्षण 2024-25 के अनुसार भारत के जूट उत्पादन में 9.62% योगदान** देता है।
- We have filed a case with the **District Labour Commissioner in Darbhanga** as well," he says. हमने **दरभंगा जिला श्रम आयुक्त** के पास भी मामला दर्ज किया है," वे कहते हैं।
- No government official responded to The Hindu's queries. सरकारी अधिकारियों ने द हिंदू के सवालों का जवाब नहीं दिया।

## Oil marketing firms to pay discounted rates to refiners

GS III: Economy  
Press Trust of India  
NEW DELHI

In a first since fuel price deregulation, state-run oil marketing companies will pay refineries a discounted price for petrol, diesel, aviation turbine fuel (ATF) and kerosene to limit mounting losses from a self-imposed freeze on retail fuel prices, sources said.

With no immediate end to the conflict in sight, OMCs have decided to fix a discount on the **refinery transfer price (RTP)** — the internal price at which refineries sell fuel to marketing arms — to effectively pay refineries less than the import-parity cost of the fuels such as petrol and diesel.

For the second half of March, a discount of ₹22,342 per kilolitre (₹22.34 per litre) was fixed on diesel to bring down the



State-run firms like IOC can offset losses between refining and marketing. REUTERS

RTP of ₹85,349 per kl to ₹63,007 per kl. For the first fortnight of April, the discount on diesel has been fixed at ₹60,239 per kl to lower RTP from ₹1,46,243 per kl to ₹86,004 per kl.

On ATF, the RTP has been slashed to ₹76,923 per kl from ₹1,27,486 per kl after considering a discount of ₹50,564 per kl. The RTP for kerosene after a discount of ₹46,311 per kl has been fixed at ₹77,534

per kl from ₹1,23,845 per kl, they said.

The discounted pricing would prevent refiners from fully passing on higher crude costs through RTP, forcing them to absorb part of the impact of elevated global oil prices.

While integrated state-run firms such as Indian Oil Corporation Ltd (IOC), Bharat Petroleum Corporation Ltd (BPCL) and Hindustan Petroleum Corporation Ltd (HPCL) can offset part of the hit between refining and marketing operations, standalone refiners that rely on market-linked RTP for revenue could face a sharper margin squeeze, they said.

Mangalore Refinery and Petrochemicals Ltd., Chennai Petroleum Corporation Ltd. and HPCL-Mittal Energy Ltd. — which have negligible retail presence — would be the most hit by the move.

## 06A. Oil marketing firms to pay discounted rates to refiners तेल विपणन कंपनियाँ रिफाइनरों को रियायती दरें देंगी

- In a first since **fuel price deregulation**, state-run **oil marketing companies (OMCs)** will pay refineries a **discounted price** for petrol, diesel, aviation turbine fuel (ATF) and kerosene to limit mounting losses from a self-imposed freeze on retail fuel prices, sources said.

**ईंधन मूल्य उदारीकरण** के बाद पहली बार, सरकारी तेल विपणन कंपनियाँ (OMCs) पेट्रोल, डीजल, एविएशन टर्बाइन फ्यूल (ATF) और केरोसिन के लिए रिफाइनरियों को **रियायती कीमत** देंगी ताकि खुद लगाए गए खुदरा ईंधन कीमतों के स्थिर रहने से हो रहे बढ़ते नुकसान को सीमित किया जा सके, सूत्रों ने कहा।

- With no immediate end to the **conflict** in sight, OMCs have decided to fix a discount on the **refinery transfer price (RTP)** — the internal price at which refineries sell fuel to marketing arms — to effectively pay refineries less than the **import-parity cost** of the fuels



such as petrol and diesel.

संघर्ष के जल्द समाप्त होने के कोई संकेत नहीं होने के कारण, OMCs ने रिफाइनरी ट्रांसफर प्राइस (RTP) — वह आंतरिक मूल्य जिस पर रिफाइनरियाँ ईंधन को विपणन इकाइयों को बेचती हैं — पर छूट तय करने का निर्णय लिया है, ताकि पेट्रोल और डीजल जैसे ईंधनों की आयात-समता लागत से कम भुगतान किया जा सके।

- For the second half of March, a discount of ₹22,342 per kilolitre (₹22.34 per litre) was fixed on diesel to bring down the RTP of ₹85,349 per kl to ₹63,007 per kl.  
मार्च के दूसरे पखवाड़े के लिए, डीजल पर ₹22,342 प्रति किलोलीटर (₹22.34 प्रति लीटर) की छूट तय की गई, जिससे RTP ₹85,349 प्रति किलोलीटर से घटकर ₹63,007 प्रति किलोलीटर हो गया।
- For the first fortnight of April, the discount on diesel has been fixed at ₹60,239 per kl to lower RTP from ₹1,46,243 per kl to ₹86,004 per kl.  
अप्रैल के पहले पखवाड़े के लिए, डीजल पर छूट ₹60,239 प्रति किलोलीटर तय की गई, जिससे RTP ₹1,46,243 प्रति किलोलीटर से घटकर ₹86,004 प्रति किलोलीटर हो गया।
- On ATF, the RTP has been slashed to ₹76,923 per kl from ₹1,27,486 per kl after considering a discount of ₹50,564 per kl.  
ATF पर, ₹50,564 प्रति किलोलीटर की छूट के बाद RTP ₹1,27,486 प्रति किलोलीटर से घटाकर ₹76,923 प्रति किलोलीटर कर दिया गया है।
- The RTP for kerosene after a discount of ₹46,311 per kl has been fixed at ₹77,534 per kl from ₹1,23,845 per kl, they said.  
केरोसिन के लिए ₹46,311 प्रति किलोलीटर की छूट के बाद RTP ₹1,23,845 प्रति किलोलीटर से घटाकर ₹77,534 प्रति किलोलीटर तय किया गया है, उन्होंने कहा।
- The discounted pricing would prevent refiners from fully passing on higher crude costs through RTP, forcing them to absorb part of the impact of elevated global oil prices.  
यह रियायती मूल्य निर्धारण रिफाइनरों को RTP के माध्यम से बढ़ी हुई कच्चे तेल की लागत को पूरी तरह पास करने से रोकेगा, जिससे उन्हें बढ़ी हुई वैश्विक तेल कीमतों के प्रभाव का एक हिस्सा खुद वहन करना पड़ेगा।
- While integrated state-run firms such as Indian Oil Corporation Ltd (IOC), Bharat Petroleum Corporation Ltd (BPCL) and Hindustan Petroleum Corporation Ltd (HPCL) can offset part of the hit between refining and marketing operations, standalone refiners that rely on market-linked RTP for revenue could face a sharper margin squeeze, they said.  
जबकि इंडियन ऑयल कॉर्पोरेशन लिमिटेड (IOC), भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड (BPCL) और हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड (HPCL) जैसी एकीकृत सरकारी कंपनियाँ रिफाइनरिंग और मार्केटिंग संचालन के बीच कुछ नुकसान की भरपाई कर सकती हैं, वहीं बाजार-आधारित RTP पर निर्भर स्वतंत्र रिफाइनरों को अधिक मार्जिन दबाव का सामना करना पड़ सकता है।
- Mangalore Refinery and Petrochemicals Ltd., Chennai Petroleum Corporation Ltd. and HPCL-Mittal Energy Ltd. — which have negligible retail presence — would be the most hit by the move.  
मैंगलोर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड, चेन्नई पेट्रोलियम कॉर्पोरेशन लिमिटेड और HPCL-मित्तल एनर्जी लिमिटेड — जिनकी खुदरा उपस्थिति बहुत कम है — इस कदम से सबसे अधिक प्रभावित होंगी।



# The World Trade Organization is flailing

ISS III: Economy

Trade multilateralism is facing its biggest stress test since the Second World War. The United States' coercive unilateralism and attempts to dilute foundational rules such as the most-favoured nation (MFN) treatment threaten to hollow out the entire system. At such a critical juncture in history, the World Trade Organization (WTO)'s fourteenth Ministerial Conference (MC14), which recently concluded in Yaoundé, Cameroon (March 2026), was expected to reassure the global community about the importance of a rules-based global trading order, which limits hegemonic tendencies.

Regrettably, the MC14 failed to meet this challenge. While no one expected the MC14 to turn up trumps, the fact that the 166-member WTO failed to reach consensus on even issuing a ministerial declaration outlining future work is disconcerting. To paper over the cracks, the WTO's Director General declared that the MC14 had produced a Yaoundé package comprising certain draft decisions, that is, decisions yet to be finalised, which will be discussed at Geneva in the months ahead.

## Tale of two moratoriums

The MC14 will go down in history as the one that broke the long-standing consensus on moratoriums for two things. First, customs duties on electronic commerce transactions. Since 1998, WTO member-countries agreed not to impose customs duties on electronic commerce transactions to keep digital trade flows free. The moratorium has been extended every two years since its inception. However, at MC14, countries were unable to reach an agreement on extending the moratorium, which, thus, lapsed on March 31.

Today, countries are free to impose tariffs on digital trade flows, though it is expected that the WTO's General Council will deliberate on this issue again in the months ahead. While this may provide developing countries with an



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The WTO's  
fourteenth  
Ministerial  
Conference has  
showed up the  
cracks in the  
rules-based  
system

opportunity to augment their revenue, it will burden consumers and businesses. A significant development that accompanied the end of the e-commerce moratorium was the signing of an e-commerce agreement (ECA) by 66 WTO members, which prohibits customs duties on digital trade.

Although not yet part of the WTO rulebook and binding only for the signatories, this agreement will establish two separate legal frameworks: the WTO, which allows tariffs on digital trade, and the ECA, which does not.

The second moratorium, in force since 1995, barred non-violation complaints under the WTO's TRIPS Agreement. The WTO allows countries to file claims not only for legal violations but also when a country's measures nullify another country's anticipated benefits, even if those measures are legal.

This raises concerns for developing nations that their laws to promote public health could provoke complaints from developed countries alleging that they nullify the benefits of their intellectual property. Although such complaints are possible, history suggests they are unlikely to succeed, as evidenced by the failure of all 10 non-violation complaints related to trade in goods at the WTO.

## Plurilateral innovation

A so-called low-hanging fruit at the MC14 was the incorporation of the plurilateral Investment Facilitation for Development (IFD) agreement into Annex 4 of the WTO Agreement, with support from 129 of 166 countries. However, it did not materialise due to India's opposition. New Delhi opposed the IFD's inclusion for multiple reasons, including the absence of legal safeguards to incorporate plurilateral agreements into the WTO acquis.

Plurilateral agreements to be incorporated into the WTO should be open and inclusive rather

than exclusive. The failure to include the IFD Agreement has deepened the WTO's legislative crisis, as the organisation struggles to establish rules for 21st century challenges.

## No road map for the future

The MC14 failed to provide a clear road map for WTO reforms. Critical issues such as reviving the stalled appellate function of the WTO's dispute settlement system have been postponed. Any attempts by the developed world, especially the U.S., to undermine key principles, such as MFN and the special and differential treatment, must be strongly resisted.

It is often said that those who do not learn from history are doomed to repeat it. The history of trade multilateralism demonstrates that whenever trade multilateralism slows, American unilateralism tends to rise. This occurred in the early 1970s when the General Agreement on Tariffs and Trade (GATT) negotiations floundered, leading to the enactment of strict measures such as Section 301 of the U.S. Trade Act of 1974. This provision empowers the U.S. President to take unilateral action against perceived unfair trade practices. We are currently witnessing a similar situation, but this time without Congressional approval and with far greater vengeance. A setback at the MC14 will exacerbate these trends.

Additionally, the failure of the MC14 will accelerate the trend of countries creating new trade rules outside the WTO. To keep the WTO relevant, innovative solutions must be found, such as plurilateralising the WTO. India should take the lead in developing the legal guardrails needed for the development and adoption of plurilateral agreements within the WTO. Achieving this will require a novel approach and unflinching political commitment to trade multilateralism.

*The views expressed are personal*

## 06A. The World Trade Organization is failing विश्व व्यापार संगठन विफल हो रहा है

### Trade Multilateralism and WTO MC14 व्यापार बहुपक्षवाद और WTO MC14

- Trade **multilateralism** is facing its biggest stress test since the **Second World War**. व्यापार **बहुपक्षवाद** द्वितीय विश्व युद्ध के बाद अपने सबसे बड़े संकट का सामना कर रहा है।
- The **United States' coercive unilateralism** and attempts to dilute foundational rules such as the **most-favoured nation (MFN) treatment** threaten to hollow out the entire system. संयुक्त राज्य अमेरिका का दबावपूर्ण एकतरफावाद और सर्वाधिक अनुकूल राष्ट्र (MFN) सिद्धांत जैसे मूलभूत नियमों को कमजोर करने के प्रयास पूरे तंत्र को खोखला करने का खतरा पैदा करते हैं।
- At such a critical juncture, the **World Trade Organization (WTO)'s fourteenth Ministerial Conference (MC14)**, held in **Yaoundé, Cameroon (March 2026)**, was expected to reassure the **global community about a rules-based global trading order**. ऐसे महत्वपूर्ण समय में **विश्व व्यापार संगठन (WTO)** की चौदहवीं मंत्रिस्तरीय बैठक (MC14), जो याओउंडे, कैमरून (मार्च 2026) में आयोजित हुई, से अपेक्षा थी कि यह नियम-आधारित वैश्विक व्यापार व्यवस्था को मजबूत करेगी।
- which limits **hegemonic tendencies**. जो वर्चस्ववादी प्रवृत्तियों को सीमित करती है।
- Regrettably, the **MC14 failed** to meet this challenge. दुर्भाग्यवश, **MC14** इस चुनौती को पूरा करने में विफल रही।
- the **166-member WTO failed to reach consensus on even issuing a ministerial declaration outlining future work**. **166 सदस्यीय WTO** भविष्य की कार्ययोजना पर एक मंत्रिस्तरीय घोषणा जारी करने पर भी सहमति नहीं बना सका।
- To paper over the cracks, the WTO's **Director General** declared a **Yaoundé package** comprising draft decisions to be discussed in **Geneva** in coming months.



स्थिति को संभालने के लिए WTO के महानिदेशक ने याओडे पैकेज की घोषणा की, जिसमें मसौदा निर्णय शामिल हैं जिन्हें आने वाले महीनों में जिनेवा में चर्चा की जाएगी।

## Tale of two moratoriums दो स्थगनों की कहानी

- The **MC14 will go down in history as the one that broke consensus on moratoriums.**  
**MC14** इतिहास में उस सम्मेलन के रूप में दर्ज होगी जिसने **स्थगन समझौते** को तोड़ा।
- First, customs duties on **electronic commerce transactions.**  
पहला, **ई-कॉमर्स लेनदेन** पर सीमा शुल्क से संबंधित है।
- Since **1998**, WTO members had agreed not to impose duties on e-commerce to keep **digital trade flows free.**  
**1998** से WTO सदस्य देशों ने **डिजिटल व्यापार प्रवाह** को मुक्त रखने के लिए ई-कॉमर्स पर शुल्क न लगाने का निर्णय लिया था।
- The moratorium had been extended every **two years.**  
यह स्थगन हर **दो वर्ष** में बढ़ाया जाता रहा।
- However, at **MC14**, no agreement was reached, and it **lapsed on March 31.**  
लेकिन **MC14** में कोई सहमति नहीं बनी और यह **31 मार्च** को समाप्त हो गया।
- Now, countries are free to impose **tariffs on digital trade flows.**  
अब देश **डिजिटल व्यापार पर शुल्क** लगाने के लिए स्वतंत्र हैं।
- though the WTO's **General Council** may revisit the issue.  
हालाँकि WTO की **सामान्य परिषद** इस मुद्दे पर पुनर्विचार कर सकती है।
- While this may help developing countries increase **revenue**, it will burden **consumers and businesses.**  
यह विकासशील देशों को **राजस्व बढ़ाने** में मदद कर सकता है, लेकिन **उपभोक्ताओं और व्यवसायों** पर बोझ डालेगा।
- A significant development was the signing of an **e-commerce agreement (ECA) by 66 WTO members**, prohibiting duties on digital trade.  
एक महत्वपूर्ण विकास यह था कि **66 WTO सदस्य देशों** ने **ई-कॉमर्स समझौते (ECA)** पर हस्ताक्षर किए, जो डिजिटल व्यापार पर शुल्क को प्रतिबंधित करता है।
- This agreement is not yet part of the WTO rulebook and applies only to **signatories.**  
यह समझौता अभी WTO के नियमों का हिस्सा नहीं है और केवल **हस्ताक्षरकर्ता देशों** पर लागू होता है।
- It creates **two legal frameworks** — WTO (allowing tariffs) and ECA (prohibiting tariffs).  
यह **दो कानूनी ढाँचे** बनाता है — WTO (जहाँ शुल्क की अनुमति है) और ECA (जहाँ शुल्क प्रतिबंधित है)।
- The second moratorium, in force since **1995**, barred **non-violation complaints under TRIPS.**  
दूसरा स्थगन, जो **1995** से लागू था, **TRIPS के तहत गैर-उल्लंघन शिकायतों** को रोकता था।
- The WTO allows complaints even when measures **nullify anticipated benefits**, even if they are legal.  
WTO ऐसे मामलों में भी शिकायत की अनुमति देता है जहाँ उपाय **अपेक्षित लाभों को समाप्त** कर देते हैं, भले ही वे कानूनी हों।
- This raises concerns for developing countries regarding **public health laws.**  
यह विकासशील देशों के लिए **सार्वजनिक स्वास्थ्य कानूनों** को लेकर चिंता उत्पन्न करता है।
- that developed countries may claim such laws **nullify intellectual property benefits.**  
कि विकसित देश ऐसे कानूनों को **बौद्धिक संपदा लाभों को समाप्त करने वाला** बता सकते हैं।
- However, history shows such complaints are unlikely to succeed.  
हालाँकि, इतिहास बताता है कि ऐसी शिकायतें सफल होने की संभावना कम होती है।
- as seen from the failure of all **10 non-violation complaints** related to trade in goods at the WTO.  
जैसा कि WTO में वस्तु व्यापार से जुड़े सभी **10 गैर-उल्लंघन शिकायतों** के असफल होने से स्पष्ट है।

## Plurilateral innovation बहुपक्षीय नवाचार



- A so-called **low-hanging fruit** at the MC14 was the incorporation of the plurilateral **Investment Facilitation for Development (IFD) agreement** into **Annex 4 of the WTO Agreement**, with support from **129 of 166 countries**.  
MC14 में एक तथाकथित **आसान उपलब्ध अवसर** बहुपक्षीय **Investment Facilitation for Development (IFD) समझौते** को **WTO समझौते के Annex 4** में शामिल करना था, जिसे **166 में से 129 देशों** का समर्थन प्राप्त था।
- However, it did not materialise due to **India's opposition**.  
हालाँकि, **भारत के विरोध** के कारण यह संभव नहीं हो सका।
- New Delhi opposed the IFD's inclusion for multiple reasons, including the absence of **legal safeguards** to incorporate plurilateral agreements into the WTO acquis.  
नई दिल्ली ने IFD को शामिल करने का विरोध कई कारणों से किया, जिनमें **कानूनी सुरक्षा उपायों की कमी** प्रमुख थी, ताकि ऐसे समझौतों को WTO व्यवस्था में शामिल किया जा सके।
- Plurilateral agreements to be incorporated into the WTO should be **open and inclusive** rather than **exclusive**.  
WTO में शामिल किए जाने वाले बहुपक्षीय समझौते **खुले और समावेशी** होने चाहिए, न कि **विशेषाधिकार आधारित**।
- The failure to include the **IFD Agreement** has deepened the WTO's **legislative crisis**.  
**IFD समझौते** को शामिल न कर पाने से WTO का **विधायी संकट** और गहरा गया है।
- as the organisation struggles to establish rules for **21st century challenges**.  
क्योंकि संगठन **21वीं सदी की चुनौतियों** के लिए नियम बनाने में संघर्ष कर रहा है।

### No road map for the future भविष्य के लिए कोई रोडमैप नहीं

- The **MC14** failed to provide a clear **road map** for WTO reforms.  
**MC14** WTO सुधारों के लिए स्पष्ट **रोडमैप** देने में विफल रही।
- Critical issues such as reviving the stalled **appellate function** of the WTO's dispute settlement system have been postponed.  
महत्वपूर्ण मुद्दे जैसे WTO की विवाद निपटान प्रणाली के रुके हुए **अपील कार्य** को पुनर्जीवित करना टाल दिया गया।
- Any attempts by the developed world, especially the **U.S.**, to undermine key principles such as **MFN** and **special and differential treatment** must be strongly resisted.  
विकसित देशों, विशेषकर **अमेरिका**, द्वारा **MFN** और **विशेष एवं विभेदक उपचार** जैसे सिद्धांतों को कमजोर करने के प्रयासों का दृढ़ता से विरोध किया जाना चाहिए।
- It is often said that those who do not learn from history are doomed to repeat it.  
अक्सर कहा जाता है कि जो इतिहास से नहीं सीखते, वे उसे दोहराने के लिए अभिशप्त होते हैं।
- The history of **trade multilateralism** demonstrates that whenever it slows, **American unilateralism** tends to rise.  
**व्यापार बहुपक्षवाद** का इतिहास बताता है कि जब भी यह कमजोर होता है, **अमेरिकी एकतरफावाद** बढ़ता है।
- This occurred in the early **1970s** when **GATT negotiations** faltered.  
यह **1970 के दशक** की शुरुआत में हुआ जब **GATT वार्ताएँ** विफल हो गईं।
- leading to measures such as **Section 301 of the U.S. Trade Act of 1974**.  
जिससे **1974 के अमेरिकी व्यापार अधिनियम की धारा 301** जैसे कठोर उपाय लागू हुए।
- This provision empowers the **U.S. President** to take unilateral action against perceived **unfair trade practices**.  
यह प्रावधान **अमेरिकी राष्ट्रपति** को कथित **अनुचित व्यापार प्रथाओं** के खिलाफ एकतरफा कार्रवाई करने का अधिकार देता है।
- We are currently witnessing a similar situation, but with far greater **vengeance**.  
वर्तमान में हम ऐसी ही स्थिति देख रहे हैं, लेकिन कहीं अधिक **कठोरता** के साथ।
- A setback at the **MC14** will exacerbate these trends.  
**MC14** में असफलता इन प्रवृत्तियों को और बढ़ाएगी।
- Additionally, the failure of the MC14 will accelerate the trend of countries creating new **trade rules outside the WTO**.  
इसके अतिरिक्त, MC14 की विफलता देशों द्वारा WTO के बाहर नए **व्यापार नियम** बनाने की प्रवृत्ति को तेज करेगी।



- To keep the WTO relevant, innovative solutions such as **plurilateralising the WTO** must be found.  
WTO को प्रासंगिक बनाए रखने के लिए **बहुपक्षीयकरण** जैसे नवाचारी समाधान खोजने होंगे।
- India should take the lead in developing **legal guardrails** for plurilateral agreements within the WTO.  
भारत को WTO के भीतर बहुपक्षीय समझौतों के लिए **कानूनी ढाँचा** विकसित करने में नेतृत्व करना चाहिए।
- Achieving this will require a **novel approach** and strong **political commitment** to trade multilateralism.  
इसे प्राप्त करने के लिए **नवीन दृष्टिकोण** और व्यापार बहुपक्षवाद के प्रति मजबूत **राजनीतिक प्रतिबद्धता** की आवश्यकता होगी।

## When all assets look dull, it is the time to stay calm

Amid geopolitical tensions and market volatility, all of equity, debt and gold are looking insipid; a portfolio review and rebalancing should help one steer clear of the choppy seas

### WARNOMICS

GS III: Economy  
Joydeep Sen

Investors would like to get bang for the buck. This gives rise to 'behavioural finance' issues e.g. chasing an asset class giving the highest return. Till sometime earlier, equity was recovering and gold rallying. Now, equity is correcting and gold lost some lustre. Investors are wondering, what to do. Stay calm and do not be hasty. Let's look at three asset classes before coming to action.

#### Equity

Equity is growth asset and the preferred asset class to grow wealth over a long period of time. However returns are less stable than debt. As equity prices rise, valuations get stretched leading to corrections in equity market. People tend to think of 10% fall in equity prices as correction. Equity guru Warren Buffet said if you cannot tolerate a 30% price fall don't invest in equity.

Indian equities started correcting from October 2024 on multiple issues. Valuations as measured by the price-to-earnings (P/E) multiple, were expensive. Firms' growth rate, measured by earnings per share (EPS), slowed. Foreign Portfolio Investors (FPIs) started selling. The U.S.-Iran war is the latest event to hit equity prices. Net-net, from October 2024 till date, equity market has disappointed.

Globally, India is the fas-



FPIs sold hugely over the last one year. In FPIs' perspective, they have the choice of many emerging economies. However, India being the growth centre, they will return in future.

test growing major economy and is likely to stay so in the near, medium and long term. EPS growth rate, like any other metric, goes in cycles. The growth rate, which has been moderate for some time, will pick up going forward. P/E multiples, after price correction, are much better compared with September 2024. FPIs sold hugely over the last one year. In FPIs' perspective, they have the choice of many emerging economies. However, India being the growth centre, they will return in future. However, the now available discounted prices are a better level to enter than in September 2024.

#### Debt

The debt component is the 'Rahul Dravid' of portfolio. Not much of fireworks expected; it will keep portfolio steady, when other assets are volatile to the extent of your exposure. If exposure is say 30% of the portfolio, in the wealth accumulation phase of life, it is decent. In retirement phase, it should move up to say 70%. Assuming debt investments are via debt mutual funds (MFs), then returns expect-



The usual positioning of gold is, you should have an allocation of say 10% of portfolio. Gold is a portfolio diversifier i.e. over long period of time, it leads to higher Sharpe Ratio for the portfolio.

tion is somewhere around the portfolio yield-to-maturity (YTM) of the fund invested in. The YTM is a data point available in the fund factsheet published on the website of MFs. If debt exposure is via bank or corporate deposits, then it is a defined return. Currently, portfolio YTM of debt funds are moderate, a reason for sagging investor interest.

#### Gold

Recent comparisons of gold with equity over the last one or five years will show how gold outperformed equity. However, this happened over the last one year or so. The usual positioning of gold is, you should have an allocation of say 10% of the portfolio. Gold is known as portfolio diversifier i.e. over a long period of time, it leads to a higher Sharpe Ratio for the portfolio. The implication is, the risk-adjusted return of the portfolio, or the volatility-adjusted returns, turns better with an allocation of say 10% to gold.

Multiple experts are giving multiple views on gold. One view is, since central banks all over the world, apart from the U.S. are

buying gold to diversify away from U.S. assets, gold prices would boom. The other view is, since gold prices have risen so much, there will be a correction or at least time correction. It is better to take a more balanced view given the geopolitical tensions and global investors and central banks buying supporting gold prices.

#### What should you do?

The allocation to equity, debt, gold, or any other asset e.g. silver/real estate is a function of your situation and not of the market. It is about risk appetite, investment objectives and investment horizon. The conventional approach is 60:30:10 between equity, debt and gold. It can be different as per your needs.

#### Review and rebalancing

Portfolio review is relevant irrespective of market level. To be noted, portfolio review and rebalancing are distinct. A review need not lead to rebalancing. If you have deviated from intended allocation, then rebalancing would be required. For example, if due to the correction in the equity market, allocation to equity is lower than intended, then there is reason to sell some other asset and buy equity. This would give you the benefit of buying some equity relatively cheap. If rebalancing is not needed, sail through difficult waters in time-tested boat of appropriate asset allocation.

(Joydeep Sen is a corporate trainer (financial markets) and author)

### 06A. When all assets look dull, it is the time to stay calm जब सभी परिसंपत्तियाँ कमजोर दिखें, तब शांत रहने का समय है

• Amid **geopolitical tensions** and **market volatility**, all of **equity, debt and gold** are looking insipid; a **portfolio review** and **rebalancing** should help one steer clear of the choppy seas

भू-राजनीतिक तनाव और बाजार की अस्थिरता के बीच, **इक्विटी, डेट और सोना** सभी फीके दिख रहे हैं; **पोर्टफोलियो समीक्षा और रीबैलेंसिंग** अस्थिर परिस्थितियों से बचने में मदद कर सकती है

• Investors would like to get bang for the buck.  
निवेशक अपने पैसे का अधिकतम लाभ प्राप्त करना चाहते हैं।

• This gives rise to 'behavioural finance' issues e.g. chasing an asset class giving the highest return.

यह **'व्यवहारिक वित्त'** से जुड़ी समस्याएँ उत्पन्न करता है जैसे सबसे अधिक रिटर्न देने वाली परिसंपत्ति के पीछे भागना।

• Till sometime earlier, equity was recovering and gold rallying.

कुछ समय पहले तक **इक्विटी** में सुधार हो रहा था और **सोना** तेजी में था।

• Now, equity is correcting and gold

has lost some luster.

अब **इक्विटी** में गिरावट है और **सोने** की चमक कम हो गई है।

- Investors are wondering what to do.  
निवेशक सोच रहे हैं कि क्या करें।
- Stay calm and do not be hasty.  
शांत रहें और जल्दबाजी न करें।
- Let's look at three asset classes before coming to action.  
कार्यवाही से पहले तीन परिसंपत्ति वर्गों को देखें।



## Equity इक्विटी

- Equity is a growth asset and the preferred asset class to grow wealth over a long period of time.  
इक्विटी एक विकासशील परिसंपत्ति है और लंबे समय में धन बढ़ाने के लिए पसंदीदा है।
- However, returns are less stable than debt.  
हालांकि इसके रिटर्न डेट की तुलना में कम स्थिर होते हैं।
- As equity prices rise, valuations get stretched leading to corrections in the equity market.  
जैसे-जैसे कीमतें बढ़ती हैं, मूल्यांकन बढ़ता है जिससे बाजार में सुधार आता है।
- People tend to think of 10% fall in equity prices as a correction.  
लोग 10% गिरावट को सुधार मानते हैं।
- Equity guru Warren Buffet said if you cannot tolerate a 30% price fall don't invest in equity.  
इक्विटी विशेषज्ञ वॉरेन बफेट ने कहा कि यदि आप 30% गिरावट सहन नहीं कर सकते तो निवेश न करें।
- Indian equities started correcting from October 2024 on multiple issues.  
भारतीय इक्विटी अक्टूबर 2024 से कई कारणों से गिरने लगी।
- Valuations as measured by the price-to-earnings (P/E) multiple, were expensive.  
P/E अनुपात के अनुसार मूल्यांकन महंगा था।
- Firms' growth rate, measured by earnings per share (EPS), slowed Foreign Portfolio Investors (FPIs) started selling.  
EPS के आधार पर वृद्धि दर धीमी हुई और FPI ने बिकवाली शुरू की।
- The U.S.-Iran war is the latest event to hit equity prices.  
अमेरिका-ईरान युद्ध ने भी इक्विटी को प्रभावित किया।
- Net-net, from October 2024 till date, the equity market has disappointed.  
कुल मिलाकर अक्टूबर 2024 से अब तक बाजार निराशाजनक रहा।
- Globally, India is the fastest growing major economy and is likely to stay so in the near, medium and long term.  
वैश्विक स्तर पर भारत सबसे तेजी से बढ़ती अर्थव्यवस्था है और आगे भी रहने की संभावना है।
- EPS growth rate, like any other metric, goes in cycles.  
EPS वृद्धि दर चक्रों में चलती है।
- The growth rate, which has been moderate for some time, will pick up going forward.  
जो वृद्धि दर अभी मध्यम है, आगे बढ़ेगी।
- P/E multiples, after price correction, are much better compared with September 2024.  
सुधार के बाद P/E बेहतर हो गया है।
- FPIs sold hugely over the last one year.  
पिछले एक वर्ष में FPI ने भारी बिकवाली की।
- In FPIs' perspective, they have the choice of many emerging economies.  
FPI के पास कई उभरती अर्थव्यवस्थाओं के विकल्प होते हैं।
- However, India being the growth centre, they will return in future.  
भारत विकास केंद्र होने के कारण वे लौटेंगे।
- However, the now available discounted prices are a better level to enter than in September 2024.  
वर्तमान सस्ते मूल्य निवेश के लिए बेहतर अवसर हैं।

## Debt डेट

- The debt component is the 'Rahul Dravid' of the portfolio.  
डेट पोर्टफोलियो का 'राहुल द्रविड़' है।
- Not much fireworks expected; it will keep the portfolio steady, when other assets are volatile to the extent of your exposure.  
इससे ज्यादा रिटर्न नहीं लेकिन यह स्थिरता देता है।
- If exposure is say 30% of the portfolio, in the wealth accumulation phase of life, it is decent.  
30% निवेश उचित माना जाता है।



- In the retirement phase, it should move up to say 70%.  
रिटायरमेंट में इसे 70% तक होना चाहिए।
- Assuming debt investments are via debt mutual funds (MFs), then returns expectation is somewhere around the portfolio **yield-to-maturity (YTM)** of the fund invested in.  
यदि निवेश MFs के माध्यम से है, तो रिटर्न YTM के आसपास होता है।
- The YTM is a data point available in the fund factsheet published on the website of MFs.  
YTM फंड फैक्टशीट में उपलब्ध होता है।
- If debt exposure is via bank or corporate deposits, then it is a defined return.  
बैंक या जमा में निश्चित रिटर्न मिलता है।
- Currently, portfolio YTM of debt funds are moderate, a reason for sagging investor interest.  
वर्तमान में YTM मध्यम है जिससे निवेशकों की रुचि कम है।

## Gold सोना

- Recent comparisons of gold with equity over the last one or five years will show how gold outperformed equity.  
हाल के वर्षों में सोना ने इक्विटी से बेहतर प्रदर्शन किया।
- However, this happened over the last one year or so.  
यह हाल का ट्रेंड है।
- The usual positioning of gold is, you should have an allocation of say 10% of the portfolio.  
सोने में लगभग 10% निवेश होना चाहिए।
- Gold is known as **portfolio diversifier** i.e. over a long period of time, it leads to a higher **Sharpe Ratio** for the portfolio.  
सोना एक **डाइवर्सिफायर** है और **Sharpe Ratio** को बढ़ाता है।
- The implication is, the risk-adjusted return of the portfolio, or the volatility-adjusted returns, turns better with an allocation of say 10% to gold.  
इससे जोखिम-समायोजित रिटर्न बेहतर होता है।
- Multiple experts are giving multiple views on gold.  
विशेषज्ञों की अलग-अलग राय है।
- One view is, since central banks all over the world, apart from the U.S. are buying gold to diversify away from U.S. assets, gold prices would boom.  
एक राय है कि केंद्रीय बैंक सोना खरीद रहे हैं इसलिए कीमतें बढ़ेंगी।
- The other view is, since gold prices have risen so much, there will be a correction or at least time correction.  
दूसरी राय है कि कीमतों में सुधार हो सकता है।
- It is better to take a more balanced view given the geopolitical tensions and global investors and central banks buying supporting gold prices.  
संतुलित दृष्टिकोण रखना बेहतर है।

## What should you do? आपको क्या करना चाहिए?

- The allocation to equity, debt, gold, or any other asset e.g. silver/real estate is a function of your situation and not of the market.  
निवेश आपके हालात पर निर्भर करता है, बाजार पर नहीं।
- It is about **risk appetite**, **investment objectives** and **investment horizon**.  
यह जोखिम क्षमता, लक्ष्य और समय पर आधारित है।
- The **conventional approach** is **60:30:10 between equity, debt and gold**.  
परंपरागत अनुपात 60:30:10 है।
- It can be different as per your needs.  
यह जरूरत अनुसार बदल सकता है।

## Review and rebalancing समीक्षा और पुनर्संतुलन



- Portfolio review is relevant irrespective of market level.  
पोर्टफोलियो समीक्षा हमेशा आवश्यक है।
- To be noted, portfolio review and rebalancing are distinct.  
समीक्षा और रीबैलेंसिंग अलग-अलग हैं।
- A review need not lead to rebalancing.  
हर समीक्षा में रीबैलेंसिंग जरूरी नहीं होती।
- If you have deviated from intended allocation, then rebalancing would be required.  
यदि अनुपात बदल गया है तो रीबैलेंसिंग आवश्यक है।
- For example, if due to the correction in the equity market, allocation to equity is lower than intended, then there is reason to sell some other asset and buy equity.  
यदि इक्विटी कम हो गई है तो अन्य परिसंपत्ति बेचकर खरीदें।
- This would give you the benefit of buying some equity relatively cheaply.  
इससे सस्ते में इक्विटी खरीदने का लाभ मिलता है।
- If rebalancing is not needed, sail through difficult waters in a time-tested boat of appropriate asset allocation.  
यदि रीबैलेंसिंग जरूरी नहीं है तो सही एसेट एलोकेशन के साथ आगे बढ़ें।

## Strong dollar pounds gold, silver

GS III: Economy  
B. Krishnakumar

Precious metal prices lost sheen in March on strengthening U.S. Dollar and concerns over a likely rise in interest rates. The rise in the prices of crude oil stoked inflation-related concerns that may warrant an increase in interest rates.

As a result, Comex gold closed well below the psychological \$5,000-mark and settled at \$4,678.6 by end March, representing a 10.85% fall last month.

The damage to Comex silver was even more pronounced closing 19.69% lower at \$74.92 at the end of March. Mirroring the trend in global markets, the precious metals closed on a weak note in the local markets. However, the fall was cushioned to some extent by the weakening of the Rupee.

### Stay range-bound

MCX gold closed at ₹1,50,761/10gm at the end of March, a 9% dip. MCX silver closed 14.77% lower to settle at ₹2,40,892/kg. As anticipated, precious metal prices stayed range-bound.

Comex gold was confined to \$4,400-\$5,650 zone mentioned last month. Though there was a brief excursion below the \$4,400m mark, it recovered immediately and closed way above this level on March 23.

Though the long-term trend for Comex gold is positive, there are still no signs of the price getting out of the trading range of \$4,400-\$5,650. Unless the price moves above \$5,260, there is no point in expecting any meaningful uptrend in gold. Expect Comex gold price to see volatile price action within the range until this breakout happens.

Comex silver price breached the lower end of the earlier range at \$75-\$110. This is a sign of weakness and could push the prices to lower levels of \$60-\$62 in the near term. While the long-term trend is positive, the price has to move above the resistance level of \$83 before any meaningful uptrend can resume.

### Swing price action

In the local market too, gold price was stuck in the ₹1,45,000-₹1,90,000 range mentioned last month. A breakout from the recent range of ₹1,30,000-₹1,75,000 would set the tone for the next big directional move in gold in the local market. Until then, expect back and forth price action within this range.

MCX silver breached lower end of prior range of ₹2,40,000-₹3,85,000, which is a sign of weakness. The short-term trend is weak and the price can slip lower to ₹1,90,000-₹1,95,000. Only a breakout above ₹3,10,000 would indicate the resumption of the long-term uptrend.

To summarise, gold is likely to remain range bound while silver could see some weakness in the near term. The long-term trend, however, remains strong for both the metals.

*(The author is a Chennai based analyst / trader. The views and opinion featured in this column is based on the analysis of short-term price movement in gold and silver futures at COMEX & Multi Commodity Exchange of India. This is not meant to be a trading or investment advice.)*

some extent by the weakening of the Rupee.

हालांकि, रुपये की कमजोरी से गिरावट कुछ हद तक संतुलित हुई।

## Strong dollar pounds gold, silver मजबूत डॉलर से सोना, चांदी पर दबाव

- Precious metal prices lost sheen in March on strengthening U.S. Dollar and concerns over a likely rise in interest rates.

मार्च में कीमती धातुओं की कीमतों में गिरावट आई क्योंकि अमेरिकी डॉलर मजबूत हुआ और ब्याज दरों में संभावित वृद्धि की चिंता रही।

- The rise in the prices of crude oil stoked inflation-related concerns that may warrant an increase in interest rates.

कच्चे तेल की कीमतों में वृद्धि ने मुद्रास्फीति की चिंता बढ़ाई, जिससे ब्याज दरों में वृद्धि की संभावना बनी।

- As a result, Comex gold closed well below the psychological \$5,000-mark and settled at \$4,678.6 by end March, representing a 10.85% fall last month.

परिणामस्वरूप, कोमेक्स सोना \$5,000 के स्तर से नीचे बंद हुआ और मार्च अंत में \$4,678.6 पर रहा, जो 10.85% गिरावट दर्शाता है।

- The damage to Comex silver was even more pronounced, closing 19.69% lower at \$74.92 at the end of March.

कोमेक्स चांदी में और अधिक गिरावट आई और यह मार्च अंत में \$74.92 पर 19.69% नीचे बंद हुई।

- Mirroring the trend in global markets, the precious metals closed on a weak note in the local markets.

वैश्विक रुझान के अनुसार, स्थानीय बाजार में भी कीमती धातुएं कमजोर रहीं।

- However, the fall was cushioned to



## Why Indian Ports have to transform using AI



Smooth sailing: Artificial Intelligence can add value to the existing digital initiatives.

GS III: Economy  
T.K. Ramachandran  
T.R. Shreyas

Ports are important links in complex logistics chains. The major ports in India have, over the last few years, transformed into smart ports, with IT and automation bringing about major gains in efficiencies. However, with the AI wave, the smart ports will have to become intelligent.

The digital initiatives include enterprise-wide business systems, the National Logistics Portal (Marine), Maritime Single Window module, Sagar Setu platform, and e-Samudra (unified maritime services portal). Processes earlier handled physically are now performed digitally.

The 'One-Nation-One-Document' and 'One-Nation-One-Process' (ONOD and ONOP) exercises launched last year showed each port ecosystem (customs, immigration, health, and so on) demanded its own set of documents and processes, many redundant. The exercises arrived at a core set of standardised documents and processes across ports.

### Why AI in ports

AI can add value to the existing digital initiatives.

AI can enhance project planning, provide decision support in operations, facilitate trade, ease compliance with safety and environmental norms, and

**OPINION** rationalise energy usage. A pilot project by IIT-Madras for VO Chidambaranar Port, in Tuticorin, to determine how AI can help in congestion forecasting and just-in-time berthing showed many potential gains, including saving on fuel and time.

AI requires enormous amounts of data to learn. Existing deployments are project-driven, terminal- or port-based, and vendor-led, with the data being fragmented, the intelligence siloed and limited reuse of data across ports. So, even if an AI layer is built on top of this existing ecosystem, there is another 'to-do' list – AI needs to be institutionalised and treated as 'digital public infrastructure' (DPI). This approach will lead to standardised data, more interoperability and shared registries, services, identities, workflows, analytics and ensure cybersecurity.

### Challenges ahead

When it comes to the challenges in implementing AI at ports, first existing fragmented data systems imply AI cannot see the full system. Common port standards and registries can help resolve this issue. Weak decision-integration will mean dashboards without impact, which can be corrected by embedding AI into SOPs and workflows. Lack of institutional capacity will lead to either blind trust or under-use of AI, both of which are dangerous; mitigation can be through shared analytic platforms and training.

(Ramachandran was till recently Secretary, Ministry of Ports, Shipping, and Waterways and earlier Secretary (IT, Tamil Nadu Govt.; Shreyas is a public policy and IT consultant. Views are personal)

दिखाया कि AI भीड़ पूर्वानुमान और समय पर बर्thing में मदद कर सकता है, जिससे ईंधन और समय की बचत जैसे कई लाभ मिल सकते हैं।

- AI requires enormous amounts of data to learn.  
AI को सीखने के लिए बहुत अधिक मात्रा में डेटा की आवश्यकता होती है।
- Existing deployments are project-driven, terminal- or port-based, and vendor-led, with the data being fragmented, the intelligence siloed and limited reuse of data across ports.

## 06A. Why Indian Ports have to transform using AI भारतीय बंदरगाहों को AI का उपयोग करके क्यों परिवर्तन करना होगा

- Ports are important links in complex logistics chains.  
बंदरगाह जटिल लॉजिस्टिक्स श्रृंखलाओं में महत्वपूर्ण कड़ी हैं।
- The major ports in India have, over the last few years, transformed into smart ports, with IT and automation bringing about major gains in efficiencies.  
भारत के प्रमुख बंदरगाह पिछले कुछ वर्षों में स्मार्ट पोर्ट में बदल गए हैं, जहां IT और ऑटोमेशन ने दक्षता में बड़ा सुधार किया है।
- However, with the AI wave, the smart ports will have to become intelligent.  
हालांकि, AI के दौर में स्मार्ट पोर्ट को अब इंटेलिजेंट बनना होगा।
- The digital initiatives include enterprise-wide business systems, the National Logistics Portal (Marine), Maritime Single Window module, Sagar Setu platform, and e-Samudra (unified maritime services portal).  
डिजिटल पहलों में एंटरप्राइज-वाइड बिजनेस सिस्टम, National Logistics Portal (Marine), Maritime Single Window module, Sagar Setu प्लेटफॉर्म और e-Samudra (एकीकृत समुद्री सेवाएं पोर्टल) शामिल हैं।
- Processes earlier handled physically are now performed digitally.  
जो प्रक्रियाएं पहले भौतिक रूप से होती थीं, अब डिजिटल रूप से की जा रही हैं।
- The 'One-Nation-One-Document' and 'One-Nation-One-Process' (ONOD and ONOP) exercises launched last year showed each port ecosystem (customs, immigration, health, and so on) demanded its own set of documents and processes, many redundant.  
पिछले वर्ष शुरू किए गए 'One-Nation-One-Document' और 'One-Nation-One-Process' (ONOD और ONOP) अभ्यासों से पता चला कि प्रत्येक पोर्ट इकोसिस्टम (कस्टम्स, इमिग्रेशन, स्वास्थ्य आदि) अपने-अपने दस्तावेज़ और प्रक्रियाएं मांगता था, जिनमें से कई अनावश्यक थीं।
- The exercises arrived at a core set of standardised documents and processes across ports.  
इन अभ्यासों ने बंदरगाहों के लिए मानकीकृत दस्तावेज़ों और प्रक्रियाओं का एक मूल सेट तैयार किया।

### Why AI in ports बंदरगाहों में AI क्यों

- AI can add value to the existing digital initiatives.  
AI मौजूदा डिजिटल पहलों में मूल्य जोड़ सकता है।
- AI can enhance project planning, provide decision support in operations, facilitate trade, ease compliance with safety and environmental norms, and rationalise energy usage.  
AI परियोजना योजना को बेहतर बना सकता है, संचालन में निर्णय समर्थन दे सकता है, व्यापार को सुगम बना सकता है, सुरक्षा और पर्यावरण मानकों के अनुपालन को आसान बना सकता है और ऊर्जा उपयोग को तर्कसंगत बना सकता है।
- A pilot project by IIT-Madras for VO Chidambaranar Port, in Tuticorin, to determine how AI can help in congestion forecasting and just-in-time berthing showed many potential gains, including saving on fuel and time.

IIT-मद्रास द्वारा तूतीकोरिन के VO Chidambaranar Port के लिए एक पायलट परियोजना ने



वर्तमान कार्यान्वयन परियोजना-आधारित, टर्मिनल या पोर्ट-आधारित और विक्रेता-नेतृत्व वाले हैं, जहां डेटा बिखरा हुआ है, इंटेलिजेंस अलग-अलग है और बंदरगाहों के बीच डेटा का पुनः उपयोग सीमित है।

- So, even if an AI layer is built on top of this existing ecosystem, there is another 'to-do' list — AI needs to be institutionalised and treated as 'digital public infrastructure' (DPI). इसलिए, यदि इस मौजूदा प्रणाली पर AI की परत बनाई भी जाए, तब भी एक और कार्य सूची है — AI को संस्थागत बनाना होगा और 'डिजिटल पब्लिक इंफ्रास्ट्रक्चर' (DPI) के रूप में अपनाना होगा।
- This approach will lead to standardised data, more interoperability and shared registries, services, identities, workflows, analytics and ensure cybersecurity. यह दृष्टिकोण मानकीकृत डेटा, अधिक इंटरऑपरेबिलिटी, साझा रजिस्ट्रियां, सेवाएं, पहचान, वर्कफ्लो, एनालिटिक्स और साइबर सुरक्षा सुनिश्चित करेगा।

## Challenges ahead आगे की चुनौतियाँ

- When it comes to the challenges in implementing AI at ports, first existing fragmented data systems imply AI cannot see the full system. जब बंदरगाहों पर AI लागू करने की बात आती है, तो पहली चुनौती यह है कि बिखरी हुई डेटा प्रणालियों के कारण AI पूरे सिस्टम को नहीं देख पाता।
- Common port standards and registries can help resolve this issue. सामान्य पोर्ट मानक और रजिस्ट्रियां इस समस्या को हल करने में मदद कर सकती हैं।
- Weak decision-integration will mean dashboards without impact, which can be corrected by embedding AI into SOPs and workflows. कमजोर निर्णय-एकीकरण का मतलब होगा कि डैशबोर्ड का कोई प्रभाव नहीं होगा, जिसे SOPs और वर्कफ्लो में AI को शामिल करके सुधारा जा सकता है।
- Lack of institutional capacity will lead to either blind trust or under-use of AI, both of which are dangerous; mitigation can be through shared analytic platforms and training. संस्थागत क्षमता की कमी से या तो AI पर अंधविश्वास होगा या उसका कम उपयोग होगा, दोनों ही खतरनाक हैं; इसका समाधान साझा विश्लेषणात्मक प्लेटफॉर्म और प्रशिक्षण के माध्यम से किया जा सकता है।

## LEGO aces, brick by brick, in the age of NVIDIA

**OPINION**

**Harish Bhat**

Each year, I look forward to the report on the world's most valuable and strongest brands, published by Brand Finance, a respected brand valuation consultancy firm. Here are some of the top conclusions of the 2026 report.

**Apple, Tata and NVIDIA** Apple remains the world's most valuable brand, while Tata retains top spot in India. Both the iconic brands have strengthened valuation this year through consistent focus on core purpose and by enhancing the trust and love they earned among customers. NVIDIA's brand value

has more than doubled since last year and it is now the fifth most valued globally. This is an amazing rise in a single year, making it more valuable than Facebook and Walmart. NVIDIA's rise signals the age of artificial intelligence which is now upon us.

Of the top eight — Apple, Microsoft, Google, Amazon, NVIDIA, Tik Tok, Walmart and Samsung — seven are native technology brands with Walmart being the sole exception.

**Strongest brands** The report also lists the world's 'strongest' brands, which is quite different from the 'most valuable' brands. They enjoy the strongest brand perception which leads to the best outcome on customer be-



No toy story: Lego is the fifth strongest brand in the world. AFP

haviour. The five strongest brands are YouTube, WeChat, Microsoft, Google and LEGO.

While many of these headlines are not surprising, I would like to dwell on

some of the traditional brands — such as LEGO, Walmart, Deloitte and Michelin — that truly surprised me with their resilience and strength in a world dominated by the

rise and rise of AI. LEGO is more than 90 years old and yet this toy maker holds its own as the fifth strongest brand in the world. It draws high admiration and enjoys a high

reputation. How does a toy brand manage this? First, it appeals both to children and adults through toy sets of different complexities.

### High familiarity

As the Brand Finance report points out, familiarity with toy brands generally falls among older groups. Defying this trend, LEGO has a familiarity of 86% even among 55- to 64-year-olds. To bolster this inter-generational appeal, LEGO developed strategic partnerships with popular brands such as Ferrari and Harry Potter. It has also built deep emotional links with its customers based on the timeless human desires of creativity, imagination and joy.

Here is a case study in marvellous brand reinven-

tion, particularly given that LEGO was virtually bankrupt about 20 years ago.

### Shopping at Walmart

Walmart is not as old as LEGO, but still grey haired at 64. Until around 15 years ago, it was slotted in our minds as a 'traditional retailer' in a world overtaken by e-commerce.

However, Walmart evolved to become even more robust during the past few years. It began life with a hugely appealing consumer value proposition of 'everyday low prices,' backed by a strong supply chain and economies of scale.

In the past decade, it also added 'convenience' through its successful e-commerce business, powered by a treasure trove

of data and thousands of its own stores as fulfillment centres. Its market capitalisation recently touched an astronomical \$1 trillion.

### Resilience of brands

Marketers may wish to study what has contributed to the continuing strength of traditional brands.

A big takeaway for me from the Brand Finance report is that, while native digital and AI brands currently enjoy a tailwind, the stars of our brand universe include many traditional names that have built and evolved sharp and compelling customer value propositions. In the final analysis, this is what matters the most.

(Harish Bhat is an avid marketer and bestselling author)

## 06A. LEGO aces, brick by brick, in the age of NVIDIA NVIDIA के युग में LEGO की ईट-दर-ईट सफलता

- Each year, I look forward to the report on the world's most valuable and strongest brands, published by **Brand Finance, a respected brand valuation consultancy firm.** हर साल, मैं Brand Finance द्वारा प्रकाशित दुनिया के सबसे मूल्यवान और सबसे मजबूत ब्रांडों की रिपोर्ट का इंतजार करता हूँ, जो एक प्रतिष्ठित ब्रांड मूल्यांकन कंसल्टेंसी फर्म है।
- Here are some of the top conclusions of the 2026 report. यहां 2026 की रिपोर्ट के कुछ प्रमुख निष्कर्ष दिए गए हैं।



## Apple, Tata and NVIDIA Apple, Tata और NVIDIA

- **Apple remains the world's most valuable brand, while Tata retains top spot in India.**  
Apple दुनिया का सबसे मूल्यवान ब्रांड बना हुआ है, जबकि Tata भारत में शीर्ष स्थान बनाए हुए है।
- Both the iconic brands have strengthened valuation this year through consistent focus on core purpose and by enhancing the trust and love they earned among customers.  
इन दोनों प्रतिष्ठित ब्रांडों ने अपने मूल उद्देश्य पर लगातार ध्यान केंद्रित करके और ग्राहकों के बीच अर्जित विश्वास और प्रेम को बढ़ाकर इस वर्ष अपनी वैल्यू बढ़ाई है।
- NVIDIA's brand value has more than doubled since last year and it is now the 5th most valued globally.  
NVIDIA का ब्रांड मूल्य पिछले वर्ष से दोगुना से अधिक हो गया है और अब यह वैश्विक स्तर पर पांचवां सबसे मूल्यवान ब्रांड है।
- This is an amazing rise in a single year, making it more valuable than Facebook and Walmart.  
यह एक वर्ष में अद्भुत वृद्धि है, जिसने इसे Facebook और Walmart से अधिक मूल्यवान बना दिया है।
- NVIDIA's rise signals the age of artificial intelligence which is now upon us.  
NVIDIA का उदय कृत्रिम बुद्धिमत्ता के युग का संकेत देता है, जो अब हमारे सामने है।
- Of the top eight — Apple, Microsoft, Google, Amazon, NVIDIA, Tik Tok, Walmart and Samsung — seven are native technology brands with Walmart being the sole exception.  
शीर्ष आठ — Apple, Microsoft, Google, Amazon, NVIDIA, Tik Tok, Walmart और Samsung — में से सात मूल तकनीकी ब्रांड हैं, जिनमें Walmart एकमात्र अपवाद है।

## Strongest brands सबसे मजबूत ब्रांड

- The report also lists the world's 'strongest' brands, which is quite different from the 'most valuable' brands.  
रिपोर्ट दुनिया के 'सबसे मजबूत' ब्रांडों को भी सूचीबद्ध करती है, जो 'सबसे मूल्यवान' ब्रांडों से काफी अलग हैं।
- They enjoy the strongest brand perception which leads to the best outcome on customer behaviour.  
इनकी ब्रांड धारणा सबसे मजबूत होती है, जिससे ग्राहक व्यवहार पर सबसे अच्छा प्रभाव पड़ता है।
- The very strongest brands are YouTube, WeChat, Microsoft, Google and LEGO.  
पांच सबसे मजबूत ब्रांड YouTube, WeChat, Microsoft, Google और LEGO हैं।
- While many of these headlines are not surprising, I would like to dwell on some of the traditional brands — such as LEGO, Walmart, Deloitte and Michelin — that truly surprised me with their resilience and strength in a world dominated by the rise and rise of AI.  
हालांकि इनमें से कई बातें आश्चर्यजनक नहीं हैं, लेकिन मैं कुछ पारंपरिक ब्रांडों — जैसे LEGO, Walmart, Deloitte और Michelin — पर ध्यान देना चाहूंगा, जिन्होंने AI के बढ़ते प्रभाव वाली दुनिया में अपनी मजबूती और स्थिरता से मुझे चौंका दिया।
- LEGO is more than 90 years old and yet this toy maker holds its own as the fifth strongest brand in the world.  
LEGO 90 साल से अधिक पुराना है, फिर भी यह खिलौना निर्माता दुनिया का पांचवां सबसे मजबूत ब्रांड बना हुआ है।
- It draws high admiration and enjoys a high reputation.  
यह उच्च प्रशंसा प्राप्त करता है और इसकी प्रतिष्ठा भी बहुत अधिक है।
- How does a toy brand manage this?  
एक खिलौना ब्रांड यह कैसे कर पाता है?
- First, it appeals both to children and adults through toy sets of different complexities.  
पहला, यह विभिन्न जटिलताओं वाले खिलौनों के माध्यम से बच्चों और वयस्कों दोनों को आकर्षित करता है।

## High familiarity उच्च परिचितता



- As the Brand Finance report points out, familiarity with toy brands generally falls among older groups.  
Brand Finance रिपोर्ट के अनुसार, खिलौना ब्रांडों की पहचान आमतौर पर बुजुर्ग समूहों में कम हो जाती है।
- Defying this trend, LEGO has a familiarity of 86% even among 55- to 64-year-olds.  
इस प्रवृत्ति को चुनौती देते हुए, LEGO की 55 से 64 वर्ष के लोगों में भी 86% पहचान है।
- To bolster this intergenerational appeal, LEGO developed strategic partnerships with popular brands such as Ferrari and Harry Potter.  
इस अंतर-पीढ़ी आकर्षण को मजबूत करने के लिए, LEGO ने Ferrari और Harry Potter जैसे लोकप्रिय ब्रांडों के साथ रणनीतिक साझेदारी की।
- It has also built deep emotional links with its customers based on the timeless human desires of creativity, imagination and joy.  
इसने रचनात्मकता, कल्पना और खुशी जैसी मानव इच्छाओं के आधार पर अपने ग्राहकों के साथ गहरे भावनात्मक संबंध भी बनाए हैं।
- Here is a case study in marvellous brand reinvention, particularly given that LEGO was virtually bankrupt about 20 years ago.  
यह एक अद्भुत ब्रांड पुनर्निर्माण का उदाहरण है, खासकर जब लगभग 20 साल पहले LEGO लगभग दिवालिया हो गया था।

## Shopping at Walmart Walmart में खरीदारी

- Walmart is not as old as LEGO, but still grey haired at 64.  
Walmart, LEGO जितना पुराना नहीं है, लेकिन 64 वर्ष की उम्र में यह भी अनुभवी है।
- Until around 15 years ago, it was slotted in our minds as a 'traditional retailer' in a world overtaken by e-commerce.  
लगभग 15 साल पहले तक, इसे ई-कॉमर्स से प्रभावित दुनिया में 'पारंपरिक रिटेलर' के रूप में देखा जाता था।
- However, Walmart evolved to become even more robust during the past few years.  
हालांकि, पिछले कुछ वर्षों में Walmart और अधिक मजबूत बन गया है।
- It began life with a hugely appealing consumer value proposition of 'everyday low prices,' backed by a strong supply chain and economies of scale.  
इसने 'हर दिन कम कीमत' के आकर्षक मूल्य प्रस्ताव के साथ शुरुआत की, जिसे मजबूत सप्लाय चेन और बड़े पैमाने की अर्थव्यवस्थाओं का समर्थन मिला।
- In the past decade, it also added 'convenience' through its successful ecommerce business, powered by a treasure trove of data and thousands of its own stores as fulfillment centres.  
पिछले दशक में, इसने अपने सफल ई-कॉमर्स व्यवसाय के माध्यम से 'सुविधा' भी जोड़ी, जिसे विशाल डेटा और हजारों स्टोर्स द्वारा पूर्ति केंद्र के रूप में समर्थन मिला।
- Its market capitalisation recently touched an astronomical \$1 trillion.  
हाल ही में इसका मार्केट कैपिटलाइजेशन \$1 ट्रिलियन तक पहुंच गया।

## Resilience of brands ब्रांडों की मजबूती

- Marketers may wish to study what has contributed to the continuing strength of traditional brands.  
मार्केटर्स यह अध्ययन करना चाहेंगे कि पारंपरिक ब्रांडों की निरंतर मजबूती के पीछे क्या कारण हैं।
- A big takeaway for me from the Brand Finance report is that, while native digital and AI brands currently enjoy a tailwind, the stars of our brand universe include many traditional names that have built and evolved sharp and compelling customer value propositions.  
Brand Finance रिपोर्ट से मेरे लिए एक बड़ा निष्कर्ष यह है कि जबकि डिजिटल और AI ब्रांडों को वर्तमान में बढ़त मिल रही है, हमारे ब्रांड जगत के सितारों में कई पारंपरिक नाम भी शामिल हैं जिन्होंने मजबूत और आकर्षक ग्राहक मूल्य प्रस्ताव बनाए और विकसित किए हैं।
- In the nal analysis, this is what matters the most.  
अंततः, यही सबसे अधिक महत्वपूर्ण है।



## GS Paper III: S&T,

### TOPICS COVERED

06 April 2026

06A	<b>Hectocotylus: a mating arm</b> हेक्टोकॉटिलस: एक मैथुन भुजा
06A	<b>Transforming India's nuclear power landscape</b> भारत के परमाणु ऊर्जा परिदृश्य का परिवर्तन
06A	<b>The axios hack: how one compromised account put millions of developers at risk</b> Axios हैक: कैसे एक समझौता किया गया अकाउंट लाखों डेवलपर्स को जोखिम में डाल गया
06A	<b>Suspected measles outbreak kills about 100 children: Bangladesh</b> संदिग्ध खसरा प्रकोप से लगभग 100 बच्चों की मौत: बांग्लादेश

### BIG SHOT



NASA astronaut and Artemis II commander Reid Wiseman peers out of one of the Orion spacecraft's main cabin windows, looking back at the earth, as the crew travelled towards the moon on April 2. REUTERS

NASA astronaut and Artemis II commander Reid Wiseman peers out of one of the Orion spacecraft's main cabin windows, looking back at the earth, as the crew travelled towards the moon on April 2

## Hectocotylus: a mating arm

GS III: S&T: Biology  
Vasudevan Mukunth

Octopuses often live solitary lives and rarely encounter mates, which means they need to be very good at recognising other octopuses if they are to have reproductive success.

Now, researchers have found that male octopuses have a specialised arm, known as the hectocotylus, as a sophisticated sensory organ to identify females. Scientists previously thought this arm served as a tool to deliver sperm, but the new work has revealed that the hectocotylus actually 'tastes' the female by touching her.

Specifically, the hectocotylus detects progesterone, a hormone found in the female's reproductive tract and skin. Once it does, the male locates the oviduct for insemination. And the hectocotylus allows males to do this even in complete darkness.

The researchers also found a receptor called CRT1 that triggers mating behaviour. CRT1 evolved from ancient neurotransmitter receptors and today serves two purposes. While the octopus uses similar receptors to hunt for prey by sensing chemical compounds on the seafloor, CRT1 has also specialised over millions of years to recognise progesterone with a high affinity.

By analysing various cephalopod species, the team found that this



Researchers found that male octopuses have a specialised arm, known as the hectocotylus, a sensory organ to identify females. H. ZELL (CC BY-SA)

evolutionary innovation is a widespread trait across both octopuses and squids and that it merges sensory assessment and gamete delivery into a single appendage, allowing the octopuses to reproduce efficiently during their brief encounters.

The findings also highlight how small changes in protein structures can help organisms develop complex new behaviours, and contribute to the already vast biodiversity of the oceans.

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

## 06A. Hectocotylus: a mating arm हेक्टोकॉटिलस: एक मैथुन भुजा

### Octopuses and Reproductive Behaviour ऑक्टोपस और प्रजनन व्यवहार

- Octopuses often live **solitary lives** and rarely encounter mates, which means they need to be very good at recognising other octopuses if they are to have **reproductive success**.

ऑक्टोपस अक्सर एकाकी जीवन जीते हैं और शायद ही कभी साथी से मिलते हैं, जिसका अर्थ है कि उन्हें अन्य ऑक्टोपस को पहचानने में बहुत कुशल होना पड़ता है ताकि उनका प्रजनन सफल हो सके।

- Now, researchers have found that male octopuses have a specialised arm, known as the **hectocotylus**, as a sophisticated sensory organ to identify females.

अब, शोधकर्ताओं ने पाया है कि नर ऑक्टोपस के पास एक विशेष भुजा होती है, जिसे **hectocotylus** कहा जाता है, जो



मादा की पहचान करने के लिए एक उन्नत संवेदी अंग के रूप में कार्य करती है।

- Scientists previously thought this arm served as a tool to deliver sperm, but the new work has revealed that the **hectocotylus actually 'tastes' the female by touching her.**  
वैज्ञानिक पहले मानते थे कि यह भुजा शुक्राणु पहुँचाने का साधन है, लेकिन नए शोध से पता चला है कि **hectocotylus** वास्तव में मादा को छूकर उसका 'स्वाद' लेती है।
- **Specifically, the hectocotylus detects progesterone, a hormone found in the female's reproductive tract and skin.**  
विशेष रूप से, hectocotylus **progesterone** का पता लगाती है, जो मादा के प्रजनन मार्ग और त्वचा में पाया जाने वाला एक हार्मोन है।
- Once it does, the **male locates the oviduct for insemination.**  
इसके बाद, नर निषेचन के लिए **oviduct** का पता लगाता है।
- And the hectocotylus allows males to do this even in **complete darkness.**  
और hectocotylus नर को यह कार्य **पूर्ण अंधकार** में भी करने की अनुमति देती है।
- The researchers also found a receptor called **CRT1 that triggers mating behaviour.**  
शोधकर्ताओं ने **CRT1** नामक एक रिसेप्टर भी पाया जो प्रजनन व्यवहार को सक्रिय करता है।
- CRT1 evolved from ancient **neurotransmitter receptors** and today serves two purposes.  
**CRT1** प्राचीन **neurotransmitter receptors** से विकसित हुआ है और आज यह दो उद्देश्यों की पूर्ति करता है।
- **While the octopus uses similar receptors to hunt for prey by sensing chemical compounds on the seafloor, CRT1 has also specialised over millions of years to recognise progesterone with a high affinity.**  
जहाँ ऑक्टोपस समान रिसेप्टर का उपयोग समुद्र तल पर रासायनिक यौगिकों को पहचानकर शिकार खोजने के लिए करता है, वहीं **CRT1** ने लाखों वर्षों में उच्च क्षमता के साथ **progesterone** को पहचानने में विशेषता विकसित की है।
- By analysing various **cephalopod species**, the team found that this evolutionary innovation is a widespread trait across both octopuses and squids.  
विभिन्न **cephalopod प्रजातियों** का विश्लेषण करके टीम ने पाया कि यह विकासात्मक नवाचार ऑक्टोपस और स्किड दोनों में व्यापक रूप से पाया जाता है।

PATRIOTIC IAS



# Transforming India's nuclear power landscape

GS III: S&T

MOB

In the 2025-26 Budget speech, Finance Minister Nirmala Sitharaman announced that India's installed nuclear power generation capacity would rise from 8,180 MW to 1,00,000 MW (100 GW) by 2047. She also signalled transformative legislative changes, leading to the introduction and rapid passage of the Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Bill in December 2025.

The scope of change envisaged is dramatic. All nuclear activity had hitherto been the exclusive preserve of the Department of Atomic Energy (DAE). The SHANTI Act promises a transformation of India's nuclear energy landscape by bringing in private companies to build, own and operate nuclear power plants, provides statutory status to the Atomic Energy Regulatory Board (AERB), and revises the liability framework to encourage private and even foreign investment. The 1962 Atomic Energy Act and the 2010 Civil Liability for Nuclear Damage Act (CLNDA) stand repealed and replaced by the SHANTI Act (2025).

However, to realise the promise of 100 GW will need putting the nuts and bolts of implementation in place, the notification of supportive rules and regulations, consonant with the transformative spirit underlying the SHANTI Act.

## Driving the reforms

Two key pronouncements drive the reform: achieving Viksit Bharat by 2047 and net-zero emissions by 2070. As society moves up the development ladder, the nature of energy consumption shifts to electricity from traditional modes of energy such as firewood, fossil fuels for transport and heating, and coal for industry. Consequently, the "net zero" target also imposes a parallel shift away from fossil fuel-based power generation towards renewables and other low carbon options. In 2024, India's per capita electricity generation was 1,418 kWh (kilo-watt-hour) compared to 7,097 kWh for China and 12,701 kWh for the United States. The OECD average is a little above 8,000 kWh. This indicates the distance that India needs to travel to achieve the goal of Viksit Bharat. The second goal of "net zero" imposes its own conditionalities. In 2024, India's per capita energy consumption was 7,893 kWh, indicating that only one-fifth of the energy consumption is from electricity.

In June 2025, India's electricity generating capacity reached 476 GW (giga-watt) and approximately 50% was non-fossil fuel sources. Renewable sources made up 227 GW, consisting of solar power 111 GW, wind power 51 GW, and hydropower 48 GW, with an additional 5GW from micro-hydel projects and bioenergy 12 GW. In addition, nuclear power – which is seen as low carbon and not strictly renewable as it consumes fissile material as fuel – was 8.8 GW. Thermal power, primarily based on coal accounted for 240 GW. India has committed to increasing the



**Rakesh Sood**

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installed capacity of renewables to 500 GW by 2030. However, the installed capacity does not reveal the full picture. Renewable sources generation depends on the time of day, climatic and seasonal conditions and geography. India generated a total of 1,824 TWh (tera-watt-hours) during 2024-25. Renewable sources accounted for 403 TWh (solar 144 TWh, wind 83 TWh, hydro power 160 TWh and bioenergy 16 TWh). Nuclear power accounted for 57 TWh while thermal power generation was 1,363 TWh. Thermal power, therefore, accounted for 75% of the electricity generated with 50% of the generating capacity compared to 50% renewables capacity providing 22%, while nuclear power contributed 3% with 1.8% of generating capacity. The reason is that thermal and nuclear sources provide for steady baseload power. For renewables to provide at scale, large investments in energy storage become essential. This is why renewables capacity growth is now facing headwinds with projects of 40 GW languishing without power-purchase contracts.

## India's nuclear power journey and options

Conservative estimates indicate that India will need to grow its electricity generating capacity to over 2,000 GW to reach Viksit Bharat levels. Even with more efficient and cheaper battery storage, renewables such as solar and wind farms are about 10 times more land intensive when compared to thermal power plants; since coal is inconsistent with "net zero", nuclear power remains the preferred baseload means to achieve "net-zero".

India's first nuclear power reactor went operational in 1969 in Tarapur. Today, the Nuclear Power Corporation (NPCIL) is managing 24 nuclear power plants with an installed capacity of 8,780 MW (one reactor in Rawatbhata has been shut down). The two oldest are Boiling Water Reactors (BWR), two at Kudankulam are Russian design VVERs (pressurised water reactor or PWR) and the balance are Pressurised Heavy Water Reactors (PHWR). The original design was 220 MW; this has been successfully indigenised and adapted to 540 MW and 700 MW designs.

The DAE budget has averaged between ₹24,000 crore and ₹26,000 crore during the last three years. India's 700 MW PHWR construction cost is \$2 million per MW, among the lowest globally for nuclear power. To add 90 GW over the next two decades would need an outlay of over \$200 billion (₹18 lakh crore), only feasible with private investment; both domestic and foreign.

In 2017, the government gave administrative and financial approval for building 10 reactors of 700 MW each in fleet mode but work has not begun. The logic of fleet mode was to streamline production to gain economies of scale. Three other locations – Jaitapur (Maharashtra), which is planned to have six reactors of 1,650 MW each based on a French (EDF) design, and Mithi Virdi (Gujarat) and Kovvada (Andhra Pradesh), each

slated to have six reactors of 1,000 MW capacity using Westinghouse-Toshiba and GE-Hitachi designs – have been under consideration for over a decade. The likely power generation costs from these unproven designs is likely to be over \$5 million per MW.

Many industries have captive power plants, ranging from 10 MW to 200 MW; most of these are fossil fuel-based. Current estimates for the installed capacity are 90 GW with plants of 100 MW and above accounting for two-thirds capacity. The government has allocated ₹20,000 crore to research and develop five indigenous models of Small Modular Reactors (SMR) of 5 MW, 55 MW and 200 MW capacity by 2033. Meanwhile, the indigenised 220 MW PHWR model (IS are currently operational), can be a reliable workhorse. With efficient project management, some amount of modularisation, and economies of scale, the time from first pour-of-concrete to going-on-stream can be reduced to 40 months. Steel, primary metals, cement, petrochemicals and paper industries, and now, the data centres, have shown interest.

## Three-front nuclear strategy

To achieve the 100 GW target requires careful planning across three fronts. The EDF and Westinghouse designs are comparatively new and will need to be indigenised to bring down costs. China has demonstrated this by building a supporting industry base and plans to build 33 reactors of 1,000 MW each at below \$2 million per MW over 10 years. Second, the DAE should identify institutions to accelerate research and development for indigenous SMRs, especially of the molten-salt reactor design. Another research area is in the use of Thorium cladding with HALEU (High Assay Low Enriched Uranium) that can provide an alternative to the Breeder Reactor route in order to permit early exploitation of India's thorium reserves. Third, the indigenised 220 MW PHWR model is ready to be modularised as an economically viable replacement for a number of captive power plants; some Indian private sector companies have the requisite design, fabrication and construction experience. Since nuclear power generation requires high upfront capital costs but low operating costs over a long (60 years) operating life, an appropriate financing model will need to be worked out. Existing exclusion zone regulations, intended for multiple reactors at one site will need to be modified for captive single unit reactors.

Conceptually, the SHANTI Act attempts a division between strategic- and defence-related nuclear activities and the civilian power generation; now, the rules and regulations to be issued must make this clear. Issues of nuclear power tariffs, ownership of nuclear fuel, waste management, insurance and liability, dispute settlement mechanism, and an autonomous regulator will need to be dealt with in a transparent manner. Only then will the SHANTI Act deliver on its promise.

Realising the 100 GW target requires SHANTI Act implementation alongside transparent resolution of tariffs, fuel ownership, waste management, insurance, dispute settlement, and regulatory autonomy

## 06A. Transforming India's nuclear power landscape

### भारत के परमाणु ऊर्जा परिदृश्य का परिवर्तन

#### Nuclear Energy Reforms and SHANTI Act

#### परमाणु ऊर्जा सुधार और SHANTI अधिनियम

- In the **2025-26 Budget speech**, Finance Minister **Nirmala Sitharaman** announced that **India's installed nuclear power generation capacity would rise from 8,180 MW to 1,00,000 MW (100 GW) by 2047.**

**2025-26 बजट भाषण** में वित्त मंत्री **Nirmala Sitharaman** ने घोषणा की कि भारत की स्थापित परमाणु ऊर्जा क्षमता **8,180 मेगावाट** से बढ़कर **1,00,000 मेगावाट (100 गीगावाट) 2047** तक हो जाएगी।

- She also signalled transformative legislative changes, leading to the introduction and rapid passage of the **Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Bill in December 2025.**

उन्होंने परिवर्तनकारी विधायी बदलावों का संकेत भी दिया, जिसके परिणामस्वरूप **दिसंबर 2025** में **SHANTI विधेयक** पेश किया गया और तेजी से पारित हुआ।



- The scope of change envisaged is **dramatic**.  
परिवर्तन का दायरा अत्यंत **नाटकीय** है।
- **All nuclear activity had hitherto been the exclusive preserve of the Department of Atomic Energy (DAE).**  
अब तक सभी परमाणु गतिविधियाँ **Department of Atomic Energy (DAE)** के विशेष नियंत्रण में थीं।
- The **SHANTI Act** promises a transformation of India's nuclear energy landscape by bringing in **private companies** to build, own and operate nuclear power plants.  
**SHANTI अधिनियम** भारत के परमाणु ऊर्जा क्षेत्र में परिवर्तन का वादा करता है, जिसमें **निजी कंपनियों** को परमाणु संयंत्र बनाने, स्वामित्व रखने और संचालन करने की अनुमति दी गई है।
- **Provides statutory status to the Atomic Energy Regulatory Board (AERB), and revises the liability framework** to encourage private and even foreign investment.  
यह **Atomic Energy Regulatory Board (AERB)** को वैधानिक दर्जा देता है और **दायित्व ढाँचे** में संशोधन करता है ताकि निजी और विदेशी निवेश को प्रोत्साहित किया जा सके।
- The **1962 Atomic Energy Act** and the **2010 Civil Liability for Nuclear Damage Act (CLNDA)** stand repealed and replaced by the **SHANTI Act (2025)**.  
**1962 का परमाणु ऊर्जा अधिनियम** और **2010 का परमाणु क्षति नागरिक दायित्व अधिनियम (CLNDA)** निरस्त कर दिए गए हैं और उनकी जगह **SHANTI अधिनियम (2025)** ने ले ली है।
- However, to realise the promise of **100 GW** will need putting the nuts and bolts of implementation in place.  
हालांकि **100 गीगावाट** के लक्ष्य को प्राप्त करने के लिए कार्यान्वयन की ठोस व्यवस्था आवश्यक होगी।
- the notification of supportive rules and regulations, consonant with the transformative spirit underlying the **SHANTI Act**.  
सहायक नियमों और विनियमों की अधिसूचना आवश्यक होगी, जो **SHANTI अधिनियम** की परिवर्तनकारी भावना के अनुरूप हों।

### Driving the reforms

#### सुधारों को आगे बढ़ाने वाले कारक

- Two key pronouncements drive the reform: achieving **Viksit Bharat by 2047** and **net-zero emissions by 2070**.  
दो प्रमुख घोषणाएँ इन सुधारों को आगे बढ़ाती हैं: **2047 तक विकसित भारत** और **2070 तक शून्य उत्सर्जन**।
- In **2024**, India's per capita electricity generation was **1,418 kWh** compared to **7,097 kWh (China)** and **12,701 kWh (United States)**.  
**2024** में भारत की प्रति व्यक्ति बिजली उत्पादन **1,418 kWh** था, जबकि **चीन 7,097 kWh** और **अमेरिका 12,701 kWh** था।
- The **OECD average** is a little above **8,000 kWh**.  
**OECD औसत** लगभग **8,000 kWh** से अधिक है।
- In **2024**, India's per capita energy consumption was **7,893 kWh**, indicating that only **one-fifth** of the energy consumption is from electricity.  
**2024** में भारत की प्रति व्यक्ति ऊर्जा खपत **7,893 kWh** थी, जो दर्शाता है कि कुल ऊर्जा खपत का केवल **पाँचवाँ हिस्सा** ही बिजली से आता है।
- In **June 2025**, India's electricity generating capacity reached **476 GW** and approximately **50%** was **non-fossil fuel sources**.  
**जून 2025** में भारत की बिजली उत्पादन क्षमता **476 गीगावाट** तक पहुँच गई, जिसमें लगभग **50% गैर-जीवाश्म स्रोतों** से था।
- Renewable sources made up **227 GW**, consisting of **solar 111 GW**, **wind 51 GW**, and **hydropower 48 GW**, with an additional **5 GW micro-hydel** and **bioenergy 12 GW**.  
नवीकरणीय स्रोतों की क्षमता **227 गीगावाट** थी, जिसमें **सौर 111 GW**, **पवन 51 GW**, और **जलविद्युत 48 GW**, साथ ही **5 GW सूक्ष्म जलविद्युत** और **12 GW जैव ऊर्जा** शामिल थे।
- In addition, **nuclear power was 8.8 GW**.  
इसके अतिरिक्त **परमाणु ऊर्जा 8.8 गीगावाट** थी।
- **Thermal power**, primarily based on **coal**, accounted for **240 GW**.  
**तापीय ऊर्जा**, जो मुख्यतः **कोयले** पर आधारित है, **240 गीगावाट** थी।
- India has committed to increasing the installed capacity of renewables to **500 GW by 2030**.  
भारत ने **2030 तक 500 गीगावाट** नवीकरणीय क्षमता बढ़ाने का संकल्प लिया है।



- Renewable sources generation depends on the **time of day, climatic and seasonal conditions and geography**.  
नवीकरणीय ऊर्जा उत्पादन दिन के समय, जलवायु, मौसम और भौगोलिक स्थिति पर निर्भर करता है।
- India generated a total of **1,824 TWh** during **2024-25**.  
भारत ने **2024-25** में कुल **1,824 TWh** बिजली उत्पन्न की।
- Renewable sources accounted for **403 TWh** (solar 144 TWh, wind 83 TWh, hydro 160 TWh, bioenergy 16 TWh).  
नवीकरणीय स्रोतों का योगदान **403 TWh** था (सौर 144 TWh, पवन 83 TWh, जलविद्युत 160 TWh, जैव ऊर्जा 16 TWh)।
- Nuclear power** accounted for **57 TWh** while **thermal power** was **1,363 TWh**.  
परमाणु ऊर्जा का योगदान **57 TWh** था जबकि तापीय ऊर्जा **1,363 TWh** थी।
- Thermal power accounted for **75%** of electricity generation with **50% capacity**, while renewables with **50% capacity** provided only **22%**, and nuclear contributed **3%** with **1.8% capacity**.  
तापीय ऊर्जा ने **50% क्षमता** के साथ कुल उत्पादन का **75%** प्रदान किया, जबकि नवीकरणीय स्रोतों ने **50% क्षमता** के बावजूद केवल **22%** और परमाणु ऊर्जा ने **1.8% क्षमता** के साथ **3%** योगदान दिया।
- The reason is that thermal and nuclear sources provide **steady baseload power**.  
इसका कारण यह है कि तापीय और परमाणु स्रोत **निरंतर आधारभूत बिजली** प्रदान करते हैं।
- For renewables to provide at scale, large investments in **energy storage** become essential.  
नवीकरणीय ऊर्जा को बड़े पैमाने पर उपयोगी बनाने के लिए **ऊर्जा भंडारण** में बड़े निवेश आवश्यक हैं।
- This is why renewables capacity growth is now facing **headwinds**, with projects of **40 GW** languishing without **power-purchase contracts**.  
इसी कारण नवीकरणीय क्षमता वृद्धि को **चुनौतियों** का सामना करना पड़ रहा है, जहाँ **40 गीगावाट** की परियोजनाएँ बिना **बिजली खरीद अनुबंध** के अटकी हुई हैं।

### India's nuclear power journey and options भारत की परमाणु ऊर्जा यात्रा और विकल्प

- Even with more efficient and cheaper **battery storage**, renewables such as **solar and wind farms** are about **10 times more land intensive** when compared to thermal power plants.  
अधिक कुशल और सस्ते **बैटरी भंडारण** के बावजूद, **सौर और पवन ऊर्जा** परियोजनाएँ तापीय ऊर्जा संयंत्रों की तुलना में लगभग **10 गुना अधिक भूमि** उपयोग करती हैं।
- India's first nuclear power reactor went operational in 1969 in Tarapur.**  
भारत का पहला परमाणु ऊर्जा रिएक्टर **1969** में **तारापुर** में चालू हुआ।
- Today, the Nuclear Power Corporation (NPCIL) is managing 24 nuclear power plants with an installed capacity of 8,780 MW (one reactor in Rawatbhata has been shut down).**  
आज **Nuclear Power Corporation (NPCIL)** **24 परमाणु संयंत्रों** का प्रबंधन कर रहा है, जिनकी कुल स्थापित क्षमता **8,780 मेगावाट** है (रावतभाटा का एक रिएक्टर बंद कर दिया गया है)।
- The two oldest are **Boiling Water Reactors (BWR)**, two at **Kudankulam** are Russian design **VVERs (PWR)** and the balance are **Pressurised Heavy Water Reactors (PHWR)**.  
सबसे पुराने दो **Boiling Water Reactors (BWR)** हैं, **कुडनकुलम** के दो रिएक्टर रूसी डिजाइन के **VVER (PWR)** हैं और शेष **Pressurised Heavy Water Reactors (PHWR)** हैं।
- The original design was **220 MW**; this has been successfully indigenised and adapted to **540 MW** and **700 MW** designs.  
मूल डिजाइन **220 मेगावाट** का था, जिसे सफलतापूर्वक स्वदेशी बनाकर **540 मेगावाट** और **700 मेगावाट** में विकसित किया गया है।
- The **DAE budget** has averaged between **₹24,000 crore and ₹26,000 crore** during the last three years.  
पिछले तीन वर्षों में **DAE बजट** औसतन **₹24,000 करोड़ से ₹26,000 करोड़** के बीच रहा है।
- India's **700 MW PHWR** construction cost is **\$2 million per MW**, among the lowest globally for nuclear power.  
भारत के **700 मेगावाट PHWR** की निर्माण लागत **\$2 मिलियन प्रति मेगावाट** है, जो वैश्विक स्तर पर सबसे कम में से एक है।
- To add **90 GW** over the next two decades would need an outlay of over **\$200 billion (₹18 lakh crore)**, only feasible with private investment; both domestic and foreign.



अगले दो दशकों में **90 गीगावाट** जोड़ने के लिए **\$200 बिलियन (₹18 लाख करोड़)** से अधिक निवेश की आवश्यकता होगी, जो केवल घरेलू और विदेशी निजी निवेश से संभव है।

- In **2017**, the government gave administrative and financial approval for building **10 reactors of 700 MW each** in fleet mode but work has not begun.  
**2017** में सरकार ने **700 मेगावाट के 10 रिएक्टरों** को फ्लीट मोड में बनाने की मंजूरी दी, लेकिन काम शुरू नहीं हुआ।
- The logic of **fleet mode** was to streamline production to gain **economies of scale**.  
**फ्लीट मोड** का उद्देश्य उत्पादन को सुव्यवस्थित कर **आर्थिक पैमाने के लाभ** प्राप्त करना था।
- Three other locations — **Jaitapur (Maharashtra)**, **Mithi Viridi (Gujarat)** and **Kovvada (Andhra Pradesh)** — have been under consideration for over a decade.  
तीन अन्य स्थान — **जैतापुर (महाराष्ट्र)**, **मीठी विर्डी (गुजरात)** और **कोव्वाडा (आंध्र प्रदेश)** — एक दशक से अधिक समय से विचाराधीन हैं।
- Jaitapur is planned to have **six reactors of 1,650 MW each** based on a French (**EDF**) design.  
जैतापुर में **1,650 मेगावाट के छह रिएक्टर** फ्रांसीसी (**EDF**) डिजाइन पर आधारित होंगे।
- Mithi Viridi and Kovvada are each slated to have **six reactors of 1,000 MW capacity** using **Westinghouse-Toshiba** and **GE-Hitachi** designs.  
मीठी विर्डी और कोव्वाडा में प्रत्येक में **1,000 मेगावाट के छह रिएक्टर** होंगे, जो **Westinghouse-Toshiba** और **GE-Hitachi** डिजाइनों पर आधारित होंगे।
- The likely power generation costs from these unproven designs is likely to be over **\$5 million per MW**.  
इन अपरीक्षित डिजाइनों से बिजली उत्पादन की लागत **\$5 मिलियन प्रति मेगावाट** से अधिक होने की संभावना है।

### Captive Power Plants and SMR Development कैप्टिव पावर प्लांट और SMR विकास

- Many industries have **captive power plants**, ranging from **10 MW to 200 MW**; most of these are **fossil fuel-based**.  
कई उद्योगों के पास **कैप्टिव पावर प्लांट** हैं, जिनकी क्षमता **10 मेगावाट से 200 मेगावाट** तक है; इनमें से अधिकांश **जीवाश्म ईंधन आधारित** हैं।
- Current estimates for the installed capacity are **90 GW** with plants of **100 MW and above** accounting for **two-thirds capacity**.  
स्थापित क्षमता का वर्तमान अनुमान **90 गीगावाट** है, जिसमें **100 मेगावाट और उससे अधिक** के संयंत्र कुल क्षमता का **दो-तिहाई** हैं।
- The government has allocated **₹20,000 crore** to research and develop **five indigenous models of Small Modular Reactors (SMR)** of **5 MW, 55 MW and 200 MW capacity by 2033**.  
सरकार ने **₹20,000 करोड़** आवंटित किए हैं ताकि **2033 तक 5 मेगावाट, 55 मेगावाट और 200 मेगावाट क्षमता वाले पाँच स्वदेशी SMR मॉडल** विकसित किए जा सकें।
- Meanwhile, the indigenised **220 MW PHWR model** (15 are currently operational), can be a reliable **workhorse**.  
इस बीच, स्वदेशी **220 मेगावाट PHWR मॉडल** (15 वर्तमान में संचालित) एक विश्वसनीय **मुख्य आधार** बन सकता है।
- With efficient project management, some amount of **modularisation**, and **economies of scale**, the time from first pour-of-concrete to going-on-stream can be reduced to **40 months**.  
कुशल परियोजना प्रबंधन, कुछ स्तर की **मॉड्यूलर प्रणाली**, और **आर्थिक पैमाने के लाभ** के साथ, निर्माण से संचालन तक का समय **40 महीनों** तक कम किया जा सकता है।
- **Steel, primary metals, cement, petrochemicals, paper industries and data centres** have shown interest.  
**इस्पात, प्राथमिक धातु, सीमेंट, पेट्रोकेमिकल, कागज उद्योग और डेटा सेंटर** ने इसमें रुचि दिखाई है।

### Three-front nuclear strategy तीन-स्तरीय परमाणु रणनीति



- To achieve the **100 GW target** requires careful planning across **three fronts**.  
**100 गीगावाट लक्ष्य** प्राप्त करने के लिए **तीन मोर्चों** पर सावधानीपूर्वक योजना बनानी होगी।
- The **EdF and Westinghouse designs** are comparatively new and will need to be indigenised to bring down costs.  
**EdF और Westinghouse डिजाइन** अपेक्षाकृत नए हैं और लागत कम करने के लिए इन्हें स्वदेशी बनाना होगा।
- China** has demonstrated this by building a supporting industry base and plans to build **33 reactors of 1,000 MW each** at below **\$2 million per MW** over **10 years**.  
**चीन** ने इसका उदाहरण प्रस्तुत किया है, जहाँ उसने सहायक औद्योगिक आधार बनाकर **10 वर्षों में 1,000 मेगावाट के 33 रिएक्टर \$2 मिलियन प्रति मेगावाट से कम लागत पर बनाने की योजना** बनाई है।
- Second, the **DAE** should identify institutions to accelerate **research and development** for indigenous SMRs, especially of the **molten-salt reactor design**.  
दूसरे, **DAE** को स्वदेशी SMR के लिए **अनुसंधान और विकास** को तेज करने हेतु संस्थानों की पहचान करनी चाहिए, विशेष रूप से **molten-salt reactor डिजाइन** के लिए।
- Another research area is in the use of **Thorium cladding with HALEU (High Assay Low Enriched Uranium)**.  
एक अन्य अनुसंधान क्षेत्र **Thorium क्लैडिंग और HALEU (उच्च संवर्धित कम समृद्ध यूरेनियम)** के उपयोग में है।
- that can provide an alternative to the **Breeder Reactor route** in order to permit early exploitation of India's **thorium reserves**.  
जो **Breeder Reactor मार्ग** का विकल्प प्रदान कर सकता है और भारत के **थोरियम भंडार** के शीघ्र उपयोग को संभव बना सकता है।
- Third, the indigenised **220 MW PHWR model** is ready to be modularised as an economically viable replacement for a number of **captive power plants**.  
तीसरे, स्वदेशी **220 मेगावाट PHWR मॉडल** कई **कैप्टिव पावर प्लांटों** के आर्थिक रूप से व्यवहार्य विकल्प के रूप में मॉड्यूलर रूप में तैयार है।
- some Indian private sector companies have the requisite **design, fabrication and construction experience**.  
कुछ भारतीय निजी कंपनियों के पास आवश्यक **डिजाइन, निर्माण और ढांचा विकास का अनुभव** है।
- Since nuclear power generation requires high **upfront capital costs** but low operating costs over a long (**60 years**) operating life, an appropriate **financing model** will need to be worked out.  
चूंकि परमाणु ऊर्जा उत्पादन में प्रारंभिक **उच्च पूंजी लागत** होती है लेकिन लंबे (**60 वर्ष**) संचालन जीवन में कम लागत होती है, इसलिए उपयुक्त **वित्तीय मॉडल** तैयार करना होगा।
- Existing **exclusion zone regulations**, intended for multiple reactors at one site will need to be modified for **captive single unit reactors**.  
मौजूदा **बहिष्करण क्षेत्र नियम**, जो एक स्थान पर कई रिएक्टरों के लिए बनाए गए हैं, उन्हें **एकल कैप्टिव रिएक्टरों** के लिए संशोधित करना होगा।
- Conceptually, the **SHANTI Act** attempts a division between **strategic and defence-related nuclear activities** and the **civilian power generation**.  
सैद्धांतिक रूप से, **SHANTI अधिनियम** रणनीतिक और रक्षा संबंधित परमाणु गतिविधियों और **नागरिक बिजली उत्पादन** के बीच विभाजन का प्रयास करता है।
- now, the rules and regulations to be issued must make this clear.  
अब जारी किए जाने वाले नियमों और विनियमों को इसे स्पष्ट करना होगा।
- Issues of **nuclear power tariffs, fuel ownership, waste management, insurance and liability, dispute settlement mechanism, and autonomous regulator** will need to be dealt with in a transparent manner.  
**परमाणु ऊर्जा दरें, ईंधन स्वामित्व, अपशिष्ट प्रबंधन, बीमा और दायित्व, विवाद निपटान तंत्र, और स्वायत्त नियामक** जैसे मुद्दों को पारदर्शी तरीके से संबोधित करना होगा।



- Only then will the **SHANTI Act** deliver on its promise.  
तभी **SHANTI अधिनियम** अपने वादों को पूरा कर पाएगा।

# The axios hack: how one compromised account put millions of developers at risk

The axios supply chain attack opens a new chapter in modern cybercrime and raises a warning that the open-source software ecosystem may be far more fragile than anyone wants to admit

CS III S&T

John Xavier

If you have ever built a website, run a startup, or shipped software of any kind in the last decade, there's a good chance that you have used axios. It is one of those software tools that powers enormous chunks of the internet. It is a JavaScript library that handles the basic but essential task of fetching data from servers. Millions of developers and automated systems download it every single week.

Last week, hackers tried to burn it down in one of the most operationally sophisticated supply chain attacks ever executed against an npm package. Axios is an npm package – an npm (Node Package Manager) is like an App Store for code, and developers use it to download pre-built software tools.

According to a report by cybersecurity startup StepSecurity, a threat actor managed to compromise axios and, through it, potentially create a backdoor into the machines of any developer unlucky enough to run a routine package install at the wrong moment.

## A stolen password

The attack began with a stolen password. The attacker hijacked the npm account credentials of a lead axios maintainer – someone who pushes updates to the software – and then quickly changed the account's associated email to an anonymous ProtonMail address. This effectively locked the real owner out

before they could respond.

With those keys in hand, the attacker did not rush. In fact 18 hours before publishing anything, the hacker quietly uploaded a malicious package to npm called 'plain-crypto-js' and left it sitting there. This pre-staging phase is what separates an opportunistic hack from a calculated operation – the attacker had already built separate payloads for macOS, Windows, and Linux, ensuring no developer on any platform would be spared.

Then came the execution. Two poisoned versions of axios were published – 'axios@1.14.1' and 'axios@0.30.4' – hitting both major release branches that developers actively use. Both were live within 39 minutes of each other, StepSecurity's report observed.

If a developer or an automated system had downloaded either version and opened the code, they would have found nothing obviously wrong. The axios code itself was clean. There was no malware hiding in its functions, no suspicious scripts buried in the library. A developer doing a quick spot-check would have walked away satisfied.

## A level deeper

The real hack was one level deeper as the attackers quietly listed 'plain-crypto-js' – that package staged 18 hours earlier – as a dependency. When npm installs a package, it automatically installs all of its dependencies too.

So while developers thought they were just updating a trusted tool, they were also silently pulling down a Remote Access Trojan (RAT) – a malware that opens a persistent backdoor into the infected machine and hands a remote attacker full access to its contents.

To make things worse, the malware was built to self-destruct after execution, deleting traces of itself, and thereby making it difficult to carry out forensic analysis.

And the attack bypassed the normal release process entirely – there is no 1.14.1 tag anywhere on the axios GitHub repository, per the cybersecurity firm's report. It was published directly to npm, skipping the automated testing pipelines and code review processes that are supposed to catch exactly this kind of thing.

## End user impact

End users of websites and apps do not install npm packages, but they use software built by developers who do. If a developer's machine is compromised through an attack like this, anything that developer can access becomes a potential target, which includes production databases and user data. The blast radius of a single compromised developer account at the right company could be enormous. Users cannot patch this themselves, so companies who use such software must implement better safeguards around package publishing.

What makes this attack so unsettling is

that all the hackers had to do was just steal the password of one of the axios maintainers. That gave them access to install two malware that were downloaded as trusted packages by millions of unsuspecting developers.

The open-source ecosystem runs on trust and convenience, and those two have turned into the system's greatest weakness.

As long as a single compromised account can silently publish to a package downloaded more than a billion times a month, we are all, in some sense, one phishing email away from catastrophe.

## What you need to do right now

If you installed either 'axios@1.14.1' or 'axios@0.30.4', the recommended next step is to assume the worst and treat your machines as fully compromised. That means immediately rotating every secret that machine has ever touched – API keys, SSH keys, database passwords, environment variables, OAuth tokens, all of it. Credentials that have been exposed need to be traced across every system they grant access to.

Developers should roll back to 'axios@1.14.0' or 'axios@0.30.3', – both of which are clean, per StepSecurity report. Checking network logs for suspicious outbound connections – particularly anything reaching unfamiliar external servers – is also essential, since a RAT communicates back to an attacker's command-and-control server over the network.

## 06A. The axios hack: how one compromised account put millions of developers at risk

**Axios हैक: कैसे एक समझौता किया गया अकाउंट लाखों डेवलपर्स को जोखिम में डाल गया**

### Axios Supply Chain Attack Axios सप्लाई चेन हमला

- If you have ever built a website, run a startup, or shipped software of any kind in the last decade, there's a good chance that you have used **axios**.

यदि आपने पिछले दशक में वेबसाइट बनाई है, स्टार्टअप चलाया है या कोई सॉफ्टवेयर बनाया है, तो संभव है कि आपने **axios** का उपयोग किया हो।

- It is one of those software tools that powers enormous chunks of the internet.

यह इंटरनेट के बड़े हिस्से को चलाने वाले सॉफ्टवेयर टूल्स में से एक है।

- It is a **JavaScript library** that handles the basic but essential task of fetching data from servers.

यह एक **JavaScript लाइब्रेरी** है जो सर्वर से डेटा प्राप्त करने का कार्य करती है।

- Millions of developers and automated systems download it every single week. लाखों डेवलपर्स और सिस्टम इसे हर सप्ताह डाउनलोड करते हैं।

- Last week, hackers tried to burn it down in one of the most operationally sophisticated supply chain attacks ever executed against an npm package.





पिछले सप्ताह हैकर्स ने इसे सबसे जटिल **सप्लाई चेन अटैक** में निशाना बनाया जो किसी **npm पैकेज** पर किया गया।

- **Axios is an npm package — an npm (Node Package Manager) is like an App Store for code, and developers use it to download pre-built software tools.**

Axios एक npm पैकेज है — npm (Node Package Manager) कोड के लिए ऐप स्टोर जैसा है।

- According to a report by cybersecurity startup **StepSecurity**, a threat actor managed to compromise axios and potentially create a backdoor into developer machines. **StepSecurity** की रिपोर्ट के अनुसार, हमलावर ने axios को प्रभावित कर डेवलपर मशीनों में बैकडोर बनाने की कोशिश की।

### A stolen password चोरी किया गया पासवर्ड

- The attack began with a **stolen password**.  
हमला एक **चोरी किए गए पासवर्ड** से शुरू हुआ।
- The attacker hijacked the npm account credentials of a lead axios maintainer and changed the email to an anonymous **ProtonMail** address.  
हमलावर ने axios maintainer का अकाउंट हैक कर ईमेल को **ProtonMail** में बदल दिया।
- This effectively locked the real owner out before they could respond.  
इससे असली मालिक अकाउंट से बाहर हो गया।
- With those keys in hand, the attacker did not rush and waited **18 hours** before publishing anything.  
हमलावर ने जल्दीबाजी नहीं की और **18 घंटे** इंतजार किया।
- This pre-staging phase showed a calculated operation with payloads for **macOS, Windows, and Linux**.  
यह पूर्व-तैयारी चरण था जिसमें **macOS, Windows, Linux** के लिए payload बनाए गए।
- Then two poisoned versions of axios were published — **axios@1.14.1** and **axios@0.30.4**.  
फिर axios के दो संक्रमित संस्करण जारी किए गए — **axios@1.14.1** और **axios@0.30.4**।
- Both versions were released within **39 minutes** of each other.  
दोनों संस्करण **39 मिनट** के भीतर जारी हुए।
- If downloaded, the code appeared clean with no visible malware.  
डाउनलोड करने पर कोड सामान्य दिखता था।
- There were no suspicious scripts or obvious malicious functions in the library.  
लाइब्रेरी में कोई संदिग्ध स्क्रिप्ट नहीं थी।
- A developer doing a quick check would have found nothing wrong.  
साधारण जांच में कोई समस्या नहीं दिखती।

### A level deeper एक स्तर गहराई में

- The real hack was one level deeper where the attackers listed '**plain-crypto-js**' as a dependency.  
असली हमला एक स्तर नीचे था जहाँ '**plain-crypto-js**' को dependency बनाया गया।
- When npm installs a package, it automatically installs all its dependencies too.  
जब npm पैकेज इंस्टॉल होता है, तो उसकी सभी dependencies भी स्वतः इंस्टॉल हो जाती हैं।
- So while developers thought they were just updating a trusted tool, they were also silently pulling down a **Remote Access Trojan (RAT)** — a malware that opens a persistent backdoor into the infected machine and hands a remote attacker full access to its contents.  
जब डेवलपर्स को लगा कि वे एक भरोसेमंद टूल अपडेट कर रहे हैं, तब वे अनजाने में **Remote Access Trojan (RAT)** डाउनलोड कर रहे थे, जो सिस्टम में बैकडोर खोल देता है।
- To make things worse, the malware was built to **self-destruct after execution**, deleting traces of itself, making forensic analysis difficult.  
और भी खराब यह कि मालवेयर **खुद को मिटा देता था**, जिससे जांच मुश्किल हो जाती थी।



- And the attack bypassed the normal release process entirely — there is no **1.14.1 tag** on the axios GitHub repository.  
हमले ने सामान्य रिलीज प्रक्रिया को बायपास किया — GitHub पर **1.14.1 टैग** मौजूद नहीं है।
- It was published directly to **npm**, skipping automated testing and code review processes.  
इसे सीधे **npm** पर प्रकाशित किया गया, जिससे परीक्षण और समीक्षा प्रक्रिया छूट गई।

### End user impact

#### अंतिम उपयोगकर्ता पर प्रभाव

- End users do not install npm packages, but they use software built by developers who do.  
अंतिम उपयोगकर्ता npm पैकेज इंस्टॉल नहीं करते, लेकिन डेवलपर्स द्वारा बनाए गए सॉफ्टवेयर का उपयोग करते हैं।
- If a developer's machine is compromised, everything they access becomes a target, including **production databases and user data**.  
यदि डेवलपर का सिस्टम प्रभावित होता है, तो **डेटाबेस और यूजर डेटा** भी खतरे में आते हैं।
- The blast radius of a single compromised developer account could be enormous.  
एक ही डेवलपर अकाउंट से बड़ा नुकसान हो सकता है।
- Users cannot fix this themselves, so companies must implement better safeguards.  
उपयोगकर्ता इसे ठीक नहीं कर सकते, इसलिए कंपनियों को सुरक्षा बढ़ानी होगी।
- What makes this attack unsettling is that hackers only needed to steal **one password** of an axios maintainer.  
इस हमले में सिर्फ **एक पासवर्ड चोरी** करना ही काफी था।
- This allowed malware to be downloaded as trusted packages by millions of developers.  
इससे लाखों डेवलपर्स ने मालवेयर को भरोसेमंद पैकेज समझकर डाउनलोड किया।
- The **open-source ecosystem** runs on trust and convenience, which have become its biggest weakness.  
**ओपन-सोर्स सिस्टम** भरोसे पर चलता है, जो अब उसकी कमजोरी बन गया है।
- As long as one compromised account can publish packages downloaded billions of times, we remain vulnerable.  
जब तक एक अकाउंट से अरबों बार डाउनलोड होने वाले पैकेज प्रकाशित हो सकते हैं, खतरा बना रहेगा।

### What you need to do right now

#### आपको अभी क्या करना चाहिए

- If you installed '**axios@1.14.1**' or '**axios@0.30.4**,' assume your system is fully compromised.  
यदि आपने **axios@1.14.1** या **axios@0.30.4** इंस्टॉल किया है, तो सिस्टम को प्रभावित मानें।
- Immediately rotate all **API keys, SSH keys, database passwords, environment variables, OAuth tokens**.  
तुरंत सभी **API keys, SSH keys, पासवर्ड, टोकन** बदलें।
- Trace exposed credentials across all systems they access.  
सभी सिस्टम में उपयोग किए गए क्रेडेंशियल्स की जांच करें।
- Developers should roll back to '**axios@1.14.0**' or '**axios@0.30.3**,' which are clean.  
डेवलपर्स को **axios@1.14.0** या **axios@0.30.3** पर वापस जाना चाहिए।
- Check network logs for suspicious outbound connections, especially unknown servers.  
नेटवर्क लॉग में संदिग्ध कनेक्शन की जांच करें।
- Since a **RAT** communicates with a command-and-control server, monitoring network activity is essential.  
क्योंकि **RAT** सर्वर से जुड़ता है, इसलिए नेटवर्क मॉनिटरिंग जरूरी है।



## Suspected measles outbreak kills about 100 children: Bangladesh



**GS III: S&T**  
Bangladesh said it suspected measles killed at least 98 children in the past three weeks, official data showed on Sunday, with Dhaka ramping up vaccination efforts in the worst-affected areas. Health Ministry data showed children aged between six months and five years old with suspected measles symptoms soared to 6,476. AFP

की संख्या बढ़कर 6,476 हो गई।

## 06A. Suspected measles outbreak kills about 100 children: Bangladesh संदिग्ध खसरा प्रकोप से लगभग 100 बच्चों की मौत: बांग्लादेश

Bangladesh said it suspected measles killed at least 98 children in the past three weeks, official data showed on Sunday, with Dhaka ramping up vaccination efforts in the worst-affected areas.

बांग्लादेश ने कहा कि उसे संदेह है कि पिछले तीन हफ्तों में खसरे से कम से कम 98 बच्चों की मौत हुई है, रविवार को आधिकारिक आंकड़ों से यह सामने आया, जबकि ढाका सबसे अधिक प्रभावित क्षेत्रों में टीकाकरण प्रयास बढ़ा रहा है।

Health Ministry data showed children aged between six months and five years old with suspected measles symptoms soared to 6,476. स्वास्थ्य मंत्रालय के आंकड़ों से पता चला कि छह महीने से पांच साल की उम्र के बच्चों में संदिग्ध खसरे के लक्षण वाले मामलों

- Measles is a **highly contagious viral disease** that primarily affects children but can occur at any age.
- It is caused by the **Measles virus**, belonging to the **Paramyxoviridae family** and genus **Morbillivirus**.
- It spreads through **airborne droplets** when an infected person coughs or sneezes.
- Before vaccination, measles was one of the **leading causes of child mortality worldwide**.

### Causative Agent and Structure

- The causative organism is the **Measles virus**, an **RNA virus**.
- It is an **enveloped virus** with a **single-stranded, negative-sense RNA genome**.
- The virus has **surface proteins (Hemagglutinin and Fusion proteins)** that help it:
- Attach to host cells
- Enter and infect cells
- It primarily infects the **respiratory epithelium** and then spreads systemically.

### Mode of Transmission

- Spread occurs through:
- **Respiratory droplets**
- **Airborne transmission** (virus can remain in air for up to **2 hours**)

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### TOPICS COVERED

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**06A** How energy efficiency drives seasonal mountain bird migration  
कैसे ऊर्जा दक्षता मौसमी पर्वतीय पक्षी प्रवासन को संचालित करती है

**06A** Elastic rules  
लचीले नियम



# How energy efficiency drives seasonal mountain bird migration

Birds move up and down mountains primarily for food, to escape competition from other species and not to track temperature as previously thought, according to a new study; patterns of this migration can guide habitat and species management, and help to understand the impact of agricultural or land-use change on birds

**ISSUE COMMENTARY**  
Nikhil Sreekandan

**M**igration is the movement of birds across long distances, from temperate to tropical regions during winters, and vice versa. The birds move to areas with more or increasing resources and to stay within the climate niche to which they are adapted.

They also migrate short distances up and down mountains around the world. And a long-standing hypothesis as to why they do this was that they were moving away from warmer areas to cooler ones.

However, a new paper in *Science Advances* has now challenged this predominant theory to paint a more complex picture.

## Against the gradient

In the study, researchers from the U.K., the U.S., and Taiwan analysed citizen science data across 34 mountain regions worldwide and found that elevational migration in birds is widespread even in the equatorial tropics, where the temperature on mountains changes very little across seasons. The data reportedly showed that 36.5% of all migrant mountain bird populations would be in the temperature sweet spot if they stayed put instead of moving around.

"A lot of birds actually move upslope during winter, which means they go against the temperature gradient," Marius Somveille, lead author of the paper and ecology and conservation lecturer at the University of East Anglia in the U.K., said.

Instead, the researchers have argued that the seasonal movement of birds in mountains is driven by a need to optimise their energy budgets.

"Using citizen science data, we were able to show that birds in mountains across the world move for ease of access to food, to escape competition with other species, and to minimise thermoregulation costs – each contributing towards optimising their energy budget," Dr. Somveille said.

The energy budget is the finite amount of energy a bird has to spend on various activities, including staying warm, finding food, protecting itself, rearing its young, etc.

The researchers examined seasonal bird distribution data of 10,998 populations belonging to 2,684 species in the 34 mountain regions. Then they compared real-world distribution patterns recorded in the eBird database with a simulation that related the energy available to the birds in their environment to their energy demands.

The simulation was run on the 'Seasonally Explicit Distributions Simulator' (SEDS) model – which scientists had originally developed to project the seasonal distribution of birds.



A yellow-billed chough in North Sikkim. Resources affect the way birds are distributed in mountains much more than temperature. DIBYENDU ASH (CC BY-SA)

"Here, we adapted it to the case of elevational gradients in mountains," Dr. Somveille said. "Essentially, it simulates how birds should be distributed if they were optimising for energy efficiency."

The simulation assumed that the energy available on a mountain is proportional to how green the plants nearby were.

"The idea is that the greener the environment, the more productive it is and therefore the more energy is flowing across its food webs," Dr. Somveille explained.

## 'Revealed a global pattern'

"We begin with a mountain empty of birds, and then we start simulating bird populations one by one. Initially, they position themselves in an area with the most resources and favourable temperature," he added. "But once more bird populations are added, leading to competition for food, populations start dispersing and positioning themselves differently, and then at one point, they start to migrate because that's the best strategy."

The simulation stopped once all the resources in the mountain had been depleted. When the team compared the seasonal distribution from the simulation with the real world, 28 of 34 mountain slopes matched.

"The model creating distribution patterns similar to the real world gives us some confidence that it is capturing something that potentially explains what the birds are doing," Dr. Somveille said.



Be it human activity or climate change, a better understanding of what affects resource distribution is key to making predictions for how it will impact birds

**MARIUS SOMVEILLE**  
Lecturer at the University of East Anglia

Tarun Menon, who recently completed his Ph.D. on seasonal elevational migration in the Himalaya at the Indian Institute of Science, Bengaluru, commended the unique SEDS model: "There has been previous research from tropical mountains where birds are tracking fruit availability, which need not be correlated with temperature. But this study looks at mountain ranges worldwide and has revealed a global pattern in terms of energy efficiency."

## 'A better understanding'

When the simulations ran with the worst-case climate scenarios by 2100, it found that the pattern of bird distribution along mountain ranges was largely similar.

"The direct effect on birds will be small, but through affecting energy efficiency, it would still be enough to generate some movement towards higher elevation," Dr. Somveille said. "The model predicted an average upslope shift of around 129 m in this time for mountain birds."

## THE GIST

Birds migrate to areas with more or increasing resources and to stay within the climate niche to which they are adapted. They also migrate short distances up and down mountains around the world

In a new study, researchers from the U.K., the U.S., and Taiwan analysed citizen science data across 34 mountain regions worldwide and found that elevational migration in birds is widespread even in the equatorial tropics

The authors of the study argued that the seasonal movement of birds in mountains is driven by a need to optimise their energy budgets

While the study highlighted broad patterns that could guide habitat and species management, Dr. Somveille expressed hope to adapt the model to study specific species guilds: "Now, with the availability of numerous remote sensing products, can we maybe estimate the density of fruits or insects across a whole mountain? Then we could see which group of bird species could be more affected by, say, agricultural change or land use change," he said.

"We found that in the winter, there are relatively more terrestrial and flying insects at lower elevations, while in the summer, they are relatively more abundant at higher elevations," Dr. Menon said, referring to his Ph.D. work on insectivorous birds. "The study found a corresponding pattern in the abundances of the birds that feed on these groups as well," he said.

Dr. Menon's field-based findings from the Himalaya are consistent with the energy efficiency hypothesis and conclude that seasonal fluctuations in food availability may be a more important predictor of elevational movement in mountain bird species.

Dr. Somveille also stressed that resources affect the way birds are distributed in mountains much more than temperature: "Be it human activity or climate change, a better understanding of what affects resource distribution is key to making predictions for how it will impact birds."

(Nikhil Sreekandan is an independent journalist. nsreekandan@gmail.com)

## 06A. How energy efficiency drives seasonal mountain bird migration

कैसे ऊर्जा दक्षता मौसमी पर्वतीय पक्षी प्रवासन को संचालित करती है

- **Migration** is the movement of birds across long distances, from **temperate** to **tropical regions** during winters, and vice versa. प्रवास पक्षियों का लंबी दूरी तक स्थानांतरण है, जो सर्दियों में **समशीतोष्ण क्षेत्रों** से **उष्णकटिबंधीय क्षेत्रों** की ओर और इसके विपरीत होता है।
- The birds move to areas with more or increasing **resources** and to stay within the **climate niche** to which they are adapted. पक्षी उन क्षेत्रों की ओर जाते हैं जहाँ अधिक या बढ़ते हुए **संसाधन** होते हैं और जहाँ वे अपने अनुकूल **जलवायु क्षेत्र** में रह सकें।
- They also migrate short distances up and down **mountains** around the world. वे दुनिया भर में **पहाड़ों** पर ऊपर और नीचे छोटी दूरी तक भी प्रवास करते हैं।
- And a long-standing **hypothesis** as to why they do this was that they were moving away from **warmer areas** to **cooler ones**.



और यह एक लंबे समय से चला आ रहा **परिकल्पना** था कि वे ऐसा इसलिए करते हैं क्योंकि वे **गर्म क्षेत्रों** से **ठंडे क्षेत्रों** की ओर जाते हैं।

- However, a new paper in **Science Advances** has now challenged this predominant **theory** to paint a more **complex picture**.

हालांकि, **Science Advances** में प्रकाशित एक नए शोध पत्र ने इस प्रमुख **सिद्धांत** को चुनौती दी है और एक अधिक **जटिल चित्र** प्रस्तुत किया है।

### Against the gradient ढाल के विरुद्ध

- In the study, researchers from the **U.K., the U.S., and Taiwan** analysed **citizen science data** across **34 mountain regions** worldwide and found that **elevational migration** in birds is widespread even in the **equatorial tropics**, where the temperature on mountains changes very little across seasons.

इस अध्ययन में **U.K., U.S., और Taiwan** के शोधकर्ताओं ने दुनिया भर के **34 पर्वतीय क्षेत्रों** में नागरिक विज्ञान के आंकड़ों का विश्लेषण किया और पाया कि पक्षियों में **ऊँचाई आधारित प्रवास भूमध्यरेखीय उष्णकटिबंधीय क्षेत्रों** में भी व्यापक है, जहाँ पर्वतों पर तापमान में मौसमी परिवर्तन बहुत कम होता है।

- The data reportedly showed that **36.5%** of all migrant mountain bird populations would be in the temperature **sweet spot** if they stayed put instead of moving around. आंकड़ों से पता चला कि यदि वे स्थान नहीं बदलते तो सभी प्रवासी पर्वतीय पक्षी आबादी का **36.5%** तापमान के **अनुकूल क्षेत्र** में होता।

- “A lot of birds actually move **upslope during winter**, which means they go against the **temperature gradient**,” **Marius Somveille**, lead author of the paper and ecology and conservation lecturer at the **University of East Anglia** in the **U.K.**, said.

“कई पक्षी वास्तव में **सर्दियों के दौरान ऊपर की ओर** जाते हैं, जिसका अर्थ है कि वे **तापमान ढाल** के विपरीत जाते हैं,” इस शोध पत्र के प्रमुख लेखक **Marius Somveille** और **University of East Anglia (U.K.)** में पारिस्थितिकी और संरक्षण के व्याख्याता ने कहा।

- Instead, the researchers have argued that the **seasonal movement** of birds in mountains is driven by a need to optimise their **energy budgets**.

इसके बजाय, शोधकर्ताओं ने तर्क दिया है कि पर्वतों में पक्षियों का **मौसमी स्थानांतरण** उनके **ऊर्जा बजट** को अनुकूलित करने की आवश्यकता से प्रेरित होता है।

- “Using **citizen science data**, we were able to show that birds in mountains across the world move for ease of access to **food**, to escape **competition** with other species, and to minimise **thermoregulation costs** — each contributing towards optimising their **energy budget**,” Dr. Somveille said.

“**नागरिक विज्ञान के आंकड़ों** का उपयोग करते हुए, हम यह दिखाने में सक्षम हुए कि दुनिया भर के पर्वतीय क्षेत्रों में पक्षी **भोजन** तक आसान पहुंच, अन्य प्रजातियों के साथ **प्रतिस्पर्धा** से बचने, और **ताप नियंत्रण लागत** को कम करने के लिए स्थान बदलते हैं — ये सभी उनके **ऊर्जा बजट** को अनुकूलित करने में योगदान करते हैं,” डॉ. Somveille ने कहा।

- The **energy budget** is the finite amount of energy a bird has to spend on various activities, including staying **warm**, finding **food**, protecting itself, rearing its **young**, etc.

**ऊर्जा बजट** वह सीमित ऊर्जा मात्रा है जिसे एक पक्षी को विभिन्न गतिविधियों पर खर्च करना होता है, जैसे **गर्म रहना, भोजन खोजना, स्वयं की रक्षा करना, अपने बच्चों का पालन-पोषण करना** आदि।

- The researchers examined seasonal bird distribution data of **10,998 populations** belonging to **2,684 species** in the **34 mountain regions**.

शोधकर्ताओं ने **34 पर्वतीय क्षेत्रों** में **2,684 प्रजातियों** से संबंधित **10,998 आबादियों** के मौसमी वितरण के आंकड़ों का अध्ययन किया।

- Then they compared real-world distribution patterns recorded in the **eBird database** with a simulation that related the energy available to the birds in their environment to their **energy demands**.

इसके बाद उन्होंने **eBird database** में दर्ज वास्तविक वितरण पैटर्न की तुलना एक ऐसे सिमुलेशन से की जो पक्षियों के पर्यावरण में उपलब्ध ऊर्जा को उनकी **ऊर्जा आवश्यकताओं** से जोड़ता है।

- The simulation was run on the ‘**Seasonally Explicit Distributions Simulator**’ (**SEDS**) model — which scientists had originally developed to project the seasonal distribution of birds.



यह सिमुलेशन ‘Seasonally Explicit Distributions Simulator’ (SEDS) मॉडल पर चलाया गया — जिसे वैज्ञानिकों ने मूल रूप से पक्षियों के मौसमी वितरण का पूर्वानुमान लगाने के लिए विकसित किया था।

- “Here, we adapted it to the case of **elevational gradients** in mountains,” Dr. Somveille said. “Essentially, it simulates how birds should be distributed if they were optimising for **energy efficiency**.”  
“यहाँ हमने इसे पर्वतों में **ऊँचाई ढाल** के मामले के अनुसार अनुकूलित किया,” डॉ. Somveille ने कहा। “मूल रूप से, यह यह दर्शाता है कि यदि पक्षी **ऊर्जा दक्षता** के लिए अनुकूलन कर रहे हों तो उनका वितरण कैसा होना चाहिए।”
- The simulation assumed that the energy available on a mountain is proportional to how **green** the plants nearby were.  
इस सिमुलेशन ने यह मान लिया कि किसी पर्वत पर उपलब्ध ऊर्जा आसपास के पौधों की **हरियाली** के अनुपात में होती है।
- “The idea is that the **greener** the environment, the more **productive** it is and therefore the more energy is flowing across its **food webs**,” Dr. Somveille explained.  
“विचार यह है कि जितना अधिक **हरित** पर्यावरण होगा, वह उतना ही अधिक **उत्पादक** होगा और इसलिए उसकी **खाद्य श्रृंखलाओं** में अधिक ऊर्जा प्रवाहित होगी,” डॉ. Somveille ने समझाया।

### ‘Revealed a global pattern’

#### ‘वैश्विक पैटर्न का खुलासा’

- “We begin with a mountain empty of birds, and then we start simulating bird populations one by one. Initially, they position themselves in an area with the most resources and favourable temperature,” he added.  
“हम एक ऐसे पर्वत से शुरू करते हैं जहाँ कोई पक्षी नहीं होता, और फिर हम एक-एक करके पक्षी आबादी का सिमुलेशन शुरू करते हैं। प्रारंभ में, वे स्वयं को उस क्षेत्र में स्थापित करते हैं जहाँ सबसे अधिक **संसाधन** और अनुकूल **तापमान** होता है,” उन्होंने कहा।
- “But once more bird populations are added, leading to competition for food, populations start dispersing and positioning themselves differently, and then at one point, they start to migrate because that’s the best strategy.”  
“लेकिन जैसे-जैसे अधिक पक्षी आबादी जुड़ती है, जिससे **भोजन के लिए प्रतिस्पर्धा** होती है, आबादी फैलने लगती है और स्वयं को अलग-अलग स्थानों पर स्थापित करती है, और फिर एक समय पर वे **प्रवास** करना शुरू कर देते हैं क्योंकि वही सबसे अच्छी रणनीति होती है।”
- The simulation stopped once all the resources in the mountain had been depleted.  
सिमुलेशन तब रुक गया जब पर्वत के सभी **संसाधन** समाप्त हो गए।
- When the team compared the seasonal distribution from the simulation with the real world, **28 of 34 mountain slopes** matched.  
जब टीम ने सिमुलेशन से प्राप्त मौसमी वितरण की तुलना वास्तविक दुनिया से की, तो **34 में से 28 पर्वतीय ढालें** मेल खाती पाई गईं।
- “The model creating distribution patterns similar to the real world gives us some confidence that it is capturing something that potentially explains what the birds are doing,” Dr. Somveille said.  
“वास्तविक दुनिया के समान वितरण पैटर्न बनाने वाला यह मॉडल हमें कुछ **विश्वास** देता है कि यह उस चीज़ को पकड़ रहा है जो संभवतः यह समझाती है कि पक्षी क्या कर रहे हैं,” डॉ. Somveille ने कहा।
- Tarun Menon, who recently completed his **Ph.D.** on seasonal elevational migration in the **Himalaya** at the **Indian Institute of Science, Bengaluru**, commended the unique **SEDS model**:  
**Tarun Menon**, जिन्होंने हाल ही में **Indian Institute of Science, Bengaluru** से **हिमालय** में मौसमी ऊँचाई आधारित प्रवास पर अपनी **Ph.D.** पूरी की, ने इस अनूठे **SEDS मॉडल** की सराहना की:
- “There has been previous research from tropical mountains where birds are tracking fruit availability, which need not be correlated with temperature. But this study looks at mountain ranges worldwide and has revealed a global pattern in terms of energy efficiency.”  
“उष्णकटिबंधीय पर्वतों से पहले भी ऐसे शोध हुए हैं जहाँ पक्षी **फलों की उपलब्धता** का अनुसरण करते हैं, जो आवश्यक नहीं कि तापमान से संबंधित हो। लेकिन यह अध्ययन दुनिया भर के पर्वतों को देखता है और **ऊर्जा दक्षता** के संदर्भ में एक **वैश्विक पैटर्न** का खुलासा करता है।”



## ‘A better understanding’

### ‘बेहतर समझ’

- When the simulations ran with the worst-case climate scenarios by **2100**, it found that the pattern of bird distribution along mountain ranges was largely similar.  
जब सिमुलेशन को **2100** तक के सबसे खराब जलवायु परिदृश्यों के साथ चलाया गया, तो पाया गया कि पर्वत श्रृंखलाओं में पक्षियों के वितरण का पैटर्न काफी हद तक समान था।
- “The direct effect on birds will be small, but through affecting energy efficiency, it would still be enough to generate some movement towards higher elevation,” Dr. Somveille said.  
“पक्षियों पर सीधा प्रभाव कम होगा, लेकिन **ऊर्जा दक्षता** को प्रभावित करने के माध्यम से यह उच्च ऊँचाई की ओर कुछ **स्थानांतरण** उत्पन्न करने के लिए पर्याप्त होगा,” डॉ. Somveille ने कहा।
- The model predicted an average **upslope shift of around 129 m** in this time for mountain birds.  
मॉडल ने इस अवधि में पर्वतीय पक्षियों के लिए औसतन लगभग **129 मीटर ऊपर की ओर बदलाव** की भविष्यवाणी की।
- While the study highlighted broad patterns that could guide habitat and species management, Dr. Somveille expressed hope to adapt the model to study specific species guilds:  
जबकि इस अध्ययन ने व्यापक पैटर्न को उजागर किया जो **आवास** और **प्रजाति प्रबंधन** का मार्गदर्शन कर सकते हैं, डॉ. Somveille ने मॉडल को विशिष्ट प्रजाति समूहों के अध्ययन के लिए अनुकूलित करने की आशा व्यक्त की:
- “Now, with the availability of numerous remote sensing products, can we maybe estimate the density of fruits or insects across a whole mountain? Then we could see which group of bird species could be more affected by, say, agricultural change or land use change,” he said.  
“अब, कई **दूरसंवेदी उत्पादों** की उपलब्धता के साथ, क्या हम पूरे पर्वत में **फलों या कीड़ों की घनत्व** का अनुमान लगा सकते हैं? तब हम देख सकते हैं कि कौन-सा पक्षी समूह **कृषि परिवर्तन** या **भूमि उपयोग परिवर्तन** से अधिक प्रभावित हो सकता है,” उन्होंने कहा।
- “We found that in the winter, there are relatively more terrestrial and flying insects at lower elevations, while in the summer, they are relatively more abundant at higher elevations,” Dr. Menon said, referring to his Ph.D. work on insectivorous birds.  
“हमने पाया कि सर्दियों में निचली ऊँचाइयों पर अधिक **स्थलीय और उड़ने वाले कीड़े** होते हैं, जबकि गर्मियों में वे ऊँची ऊँचाइयों पर अधिक पाए जाते हैं,” डॉ. Menon ने कहा, अपने **कीटभक्षी पक्षियों** पर शोध का उल्लेख करते हुए।
- “The study found a corresponding pattern in the abundances of the birds that feed on these groups as well,” he said.  
“अध्ययन में यह भी पाया गया कि इन समूहों पर निर्भर पक्षियों की संख्या में भी समान पैटर्न देखा गया,” उन्होंने कहा।
- Dr. Menon’s field-based findings from the **Himalaya** are consistent with the **energy efficiency hypothesis** and conclude that seasonal fluctuations in food availability may be a more important predictor of elevational movement in mountain bird species.  
डॉ. Menon के **हिमालय** से प्राप्त क्षेत्रीय निष्कर्ष **ऊर्जा दक्षता परिकल्पना** के अनुरूप हैं और यह निष्कर्ष निकालते हैं कि **भोजन उपलब्धता में मौसमी परिवर्तन** पर्वतीय पक्षियों के ऊँचाई आधारित स्थानांतरण का अधिक महत्वपूर्ण निर्धारक हो सकता है।
- Dr. Somveille also stressed that resources affect the way birds are distributed in mountains much more than temperature:  
डॉ. Somveille ने यह भी जोर दिया कि **संसाधन** पर्वतों में पक्षियों के वितरण को **तापमान** की तुलना में कहीं अधिक प्रभावित करते हैं:
- “Be it human activity or climate change, a better understanding of what affects resource distribution is key to making predictions for how it will impact birds.”  
“चाहे वह **मानव गतिविधि** हो या **जलवायु परिवर्तन**, संसाधनों के वितरण को प्रभावित करने वाले कारकों की बेहतर समझ यह अनुमान लगाने के लिए महत्वपूर्ण है कि इसका पक्षियों पर क्या प्रभाव पड़ेगा।”



GS III: Environment

## Elastic rules

### India needs proper reckoning of plastic collection and reuse targets

The latest iterations of India's plastic waste management rules, announced on March 31, suggest that the government has hit a wall in its attempts to curb plastic waste collection and recycling. The Plastic Waste Management Rules, first introduced in 2016, have been amended periodically, reflecting a policy framework in constant evolution. The intent is to make companies that produce and use plastics invest in recycling plastic so that, ultimately, less plastic is wasted and dumped in landfills, rivers, oceans, and public spaces. The paradox is that the same qualities that have made plastic ubiquitous — adaptable to a near infinite range of consumer goods, easy to produce, accessible to the richest and the poorest, and flexible in a way that metal can never be — also make it near impossible to incentivise collection and reuse. This is why the Rules were necessary.

Since 2022, when the Extended Producer Responsibility (EPR) regime came into force, producers, importers and brand owners — makers and users of plastic packaging and raw materials — were required to collect and process plastic waste equivalent to 35% of the plastic they introduced into the market in 2021-22, increasing to 70% in 2022-23 and 100% by 2024-25. The amendments of 2026 bring in new mandates. This time, companies must ensure that recycled content makes up a minimum (and increasing) percentage of their plastic packaging annually. For instance, producers, importers and brand owners must ensure that rigid plastic packaging (Category I) contains at least 30% recycled material, rising to 60% by 2028-29. There are also similar 'reuse' obligations. But, strangely, companies that fail to meet their targets in 2025-26, the gazette notification says, may carry forward the shortfall for up to three years, provided they make up at least a third of the deficit annually. In effect this means that the 2025-26 target can be met in 2028-29. Also, at present, there is no evidence or even a claim by the government that all companies are collecting 100% of their obligations. By the government's own responses to Parliament it hovers from 50%-60%, and yet there are no targets set for 2025 and beyond. This seems to suggest that the government has given up on pushing companies to collect or recycle plastic, or has shifted focus to having them use recycled plastic irrespective of how it is sourced. There are provisions on using 'trading certificates' that suggest the logic is to let market economics decide on what is an environmental problem. Without a proper reckoning of collection and recycling targets, the new targets on reuse, which are already elastic, risk being ignored, thus undermining the intent of the EPR regime.

**Responsibility (EPR)** regime came into force, producers, importers and brand owners — makers and users of plastic packaging and raw materials — were required to collect and process plastic waste equivalent to 35% of the plastic they introduced into the market in 2021-22, increasing to 70% in 2022-23 and 100% by 2024-25.

2022 से, जब **Extended Producer Responsibility (EPR)** व्यवस्था लागू हुई, तब उत्पादकों, आयातकों और ब्रांड मालिकों — जो प्लास्टिक पैकेजिंग और कच्चे माल के निर्माता और उपयोगकर्ता हैं — को 2021-22 में बाजार में डाले गए प्लास्टिक का 35% एकत्र और संसाधित करना आवश्यक था, जो 2022-23 में 70% और 2024-25 तक 100% हो गया।

## 06A. Elastic rules लचीले नियम

- India needs proper reckoning of plastic collection and reuse target  
भारत को प्लास्टिक संग्रहण और पुनः उपयोग लक्ष्य का सही आकलन करने की आवश्यकता है

### Plastic Waste Management Rules प्लास्टिक अपशिष्ट प्रबंधन नियम

- The latest iterations of India's **plastic waste management rules**, announced on **March 31**, suggest that the government has hit a wall in its attempts to curb **plastic waste collection and recycling**.  
भारत के **प्लास्टिक अपशिष्ट प्रबंधन नियमों** के नवीनतम संस्करण, जो **31 मार्च** को घोषित किए गए, यह संकेत देते हैं कि सरकार **प्लास्टिक अपशिष्ट संग्रह और पुनर्चक्रण** को नियंत्रित करने के अपने प्रयासों में एक सीमा तक पहुँच गई है।

- The **Plastic Waste Management Rules**, first introduced in **2016**, have been amended periodically, reflecting a policy framework in constant evolution.  
**प्लास्टिक अपशिष्ट प्रबंधन नियम**, जिन्हें पहली बार **2016** में लागू किया गया था, समय-समय पर संशोधित किए गए हैं, जो निरंतर विकसित हो रहे नीतिगत ढाँचे को दर्शाते हैं।

- The intent is to make companies that produce and use plastics invest in recycling plastic so that, ultimately, less plastic is wasted and dumped in **landfills, rivers, oceans, and public spaces**.

इसका उद्देश्य यह है कि प्लास्टिक का उत्पादन और उपयोग करने वाली कंपनियाँ पुनर्चक्रण में निवेश करें ताकि अंततः कम प्लास्टिक **लैंडफिल, नदियों, महासागरों और सार्वजनिक स्थानों** में फेंका जाए।

- The paradox is that the same qualities that have made plastic **ubiquitous** — adaptable to a near infinite range of consumer goods, easy to produce, accessible to the richest and the poorest, and flexible in a way that metal can never be — also make it near impossible to incentivise **collection and reuse**.

विडंबना यह है कि वही गुण जिन्होंने प्लास्टिक को **सर्वव्यापी** बना दिया — उपभोक्ता वस्तुओं की लगभग अनंत श्रेणी के लिए अनुकूल, उत्पादन में आसान, अमीर और गरीब दोनों के लिए सुलभ, और धातु की तुलना में अधिक लचीला — वही गुण **संग्रह और पुनः उपयोग** को प्रोत्साहित करना लगभग असंभव बना देते हैं।

- This is why the Rules were necessary.  
इसी कारण ये नियम आवश्यक थे।

- Since **2022**, when the **Extended Producer**



- The amendments of **2026** bring in new mandates.  
**2026** के संशोधन नए प्रावधान लेकर आए हैं।
- This time, companies must ensure that **recycled content** makes up a minimum (and increasing) percentage of their plastic packaging annually.  
इस बार, कंपनियों को यह सुनिश्चित करना होगा कि उनकी प्लास्टिक पैकेजिंग में हर वर्ष न्यूनतम (और बढ़ती हुई) मात्रा में **पुनर्चक्रित सामग्री** शामिल हो।
- For instance, producers, importers and brand owners must ensure that **rigid plastic packaging (Category I)** contains at least **30%** recycled material, rising to **60%** by **2028-29**.  
उदाहरण के लिए, उत्पादकों, आयातकों और ब्रांड मालिकों को यह सुनिश्चित करना होगा कि **कठोर प्लास्टिक पैकेजिंग (श्रेणी I)** में कम से कम **30%** पुनर्चक्रित सामग्री हो, जो **2028-29** तक बढ़कर **60%** हो जाएगी।
- There are also similar **'reuse' obligations**.  
इसी प्रकार की **'पुनः उपयोग' संबंधी बाध्यताएँ** भी हैं।
- But, strangely, companies that fail to meet their targets in **2025-26**, the gazette notification says, may carry forward the shortfall for up to **three years**, provided they make up at least a third of the deficit annually.  
लेकिन आश्चर्यजनक रूप से, जो कंपनियाँ **2025-26** में अपने लक्ष्य पूरे नहीं कर पातीं, वे इस कमी को अधिकतम **तीन वर्षों** तक आगे बढ़ा सकती हैं, बशर्ते वे हर वर्ष कम से कम एक-तिहाई कमी पूरी करें।
- In effect this means that the **2025-26 target** can be met in **2028-29**.  
व्यवहार में इसका अर्थ है कि **2025-26 का लक्ष्य 2028-29** में पूरा किया जा सकता है।
- Also, at present, there is no evidence or even a claim by the government that all companies are collecting **100%** of their obligations.  
इसके अलावा, वर्तमान में कोई प्रमाण या दावा नहीं है कि सभी कंपनियाँ अपने दायित्वों का **100%** संग्रह कर रही हैं।
- By the government's own responses to Parliament it hovers from **50%-60%**, and yet there are no targets set for **2025 and beyond**.  
सरकार के संसद में दिए गए उत्तरों के अनुसार यह स्तर **50%-60%** के बीच है, और फिर भी **2025 और आगे** के लिए कोई लक्ष्य निर्धारित नहीं है।
- This seems to suggest that the government has given up on pushing companies to collect or recycle plastic, or has shifted focus to having them use recycled plastic irrespective of how it is sourced.  
यह संकेत देता है कि सरकार ने कंपनियों को प्लास्टिक संग्रह या पुनर्चक्रण के लिए प्रेरित करना छोड़ दिया है या अपना ध्यान इस पर केंद्रित कर लिया है कि वे पुनर्चक्रित प्लास्टिक का उपयोग करें, चाहे वह किसी भी स्रोत से आया हो।
- There are provisions on using **'trading certificates'** that suggest the logic is to let **market economics** decide on what is an environmental problem.  
**'ट्रेडिंग सर्टिफिकेट'** के उपयोग से संबंधित प्रावधान यह दर्शाते हैं कि **बाजार अर्थशास्त्र** को यह तय करने दिया जा रहा है कि पर्यावरणीय समस्या क्या है।
- Without a proper reckoning of **collection and recycling targets**, the new targets on reuse, which are already elastic, risk being ignored, thus undermining the intent of the **EPR regime**.  
**संग्रह और पुनर्चक्रण लक्ष्यों** का उचित मूल्यांकन किए बिना, पुनः उपयोग के नए लक्ष्य, जो पहले से ही लचीले हैं, अनदेखे रह सकते हैं, जिससे **EPR व्यवस्था** का उद्देश्य कमजोर हो सकता है।

## GS Paper III: IS

TOPICS COVERED

06 April 2026

06A **Swim or sink: reptile 'patrols' likely on Bangladesh border**  
**तैरना या डूबना: बांग्लादेश सीमा पर 'सरीसृप गश्त' की संभावना**



## Swim or sink: reptile 'patrols' likely on Bangladesh border

**GS III: Internal Security**  
**Vijaita Singh**  
NEW DELHI

The field units of the Border Security Force have been directed to explore the feasibility of using reptiles such as snakes and crocodiles in riverine stretches along the Bangladesh border to prevent infiltration and criminal activities, according to an internal BSF communication.

The "use of reptiles is in line with Home Minister Amit Shah's directions", said the signal dated March 26 sent from the BSF headquarters to all field units along the Bangladesh border.

"The feasibility of deploying reptiles (such as snakes or crocodiles) in vulnerable riverine gaps is

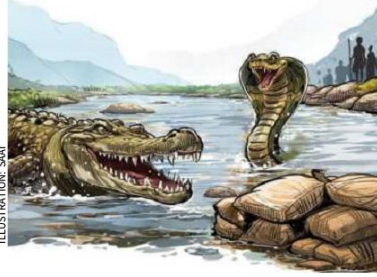


ILLUSTRATION: SWAN

to be explored and examined from an operational perspective," it said.

The Hindu has seen a copy of the communication.

**Several challenges**  
There was no response from the BSF. A BSF official

said, "Till now the directions on reptiles have not been implemented. The directions have come to explore the possibility of it. There are several challenges... how does one procure the reptiles and what impact it may have on the local population who live

along the riverine stretches?"

The communication followed a February 9 meeting at the Border Security Force headquarters in Delhi.

The BSF is the primary border-guarding force along the Bangladesh and Pakistan borders.

Large parts of the eastern border with Bangladesh are prone to floods, and the topography makes it difficult to erect physical fences.

Since these areas are densely populated, the "use of reptiles" may pose considerable risk to villagers on either side of the border, especially during floods.

According to a March 17 report by the Parliamentary Standing Committee

on Home Affairs, of the total 4,096.7 km border with Bangladesh, the government had approved the fencing of 3,326.14 km.

Of this, 2,954.56 km has been fenced so far. Around 371 km of the total sanctioned border length is yet to be fenced.

### Tough terrain

According to the 2024-25 annual report of the Union Home Ministry, the India-Bangladesh border passes through difficult terrain such as hills, rivers and valleys.

"In order to prevent illegal migration and illegal activities, including anti-national activities from across the border, the Government of India has sanctioned phase-wise construction of border

fencing illuminated by floodlights... The non-physical barrier will be in the form of technological solutions. Some problem areas such as riverine/low-lying areas, habitations close to the border, pending land acquisition cases and protests by the border population, have slowed down the installation of fencing in certain stretches on this border," the report said.

The March 26 communication added that border outposts in "dark/no-signal areas" should be identified. "The Eastern Command is to map and identify border outposts (BOPs) located in dark zones lacking mobile network connectivity and furnish detailed inputs for further action," it said.

### 06A. Swim or sink: reptile 'patrols' likely on Bangladesh border तैरना या डूबना: बांग्लादेश सीमा पर 'सरीसृप गश्त' की संभावना

- The field units of the **Border Security Force (BSF)** have been directed to explore the feasibility of using **reptiles such as snakes and crocodiles** in riverine stretches along the **Bangladesh border** to prevent infiltration and criminal activities, according to an internal BSF communication.

**सीमा सुरक्षा बल (BSF)** की फील्ड इकाइयों को निर्देश दिया गया है कि वे **सांप और मगरमच्छ जैसे सरीसृपों** का उपयोग **बांग्लादेश सीमा** के नदीय क्षेत्रों में घुसपैठ और आपराधिक गतिविधियों को रोकने के लिए संभव है या नहीं, इसकी जांच करें, आंतरिक BSF संचार के अनुसार।

- The "use of reptiles is in line with **Home Minister Amit Shah's directions**", said the signal dated March 26 sent from the BSF headquarters to all field units along the Bangladesh border.  
"सरीसृपों का उपयोग **गृह मंत्री अमित शाह के निर्देशों** के अनुरूप है," 26 मार्च को BSF मुख्यालय से बांग्लादेश सीमा पर सभी फील्ड इकाइयों को भेजे गए संदेश में कहा गया।
- "The feasibility of deploying reptiles (such as snakes or crocodiles) in vulnerable riverine gaps is to be explored and examined from an operational perspective," it said.  
"संवेदनशील नदीय क्षेत्रों में सरीसृपों (जैसे सांप या मगरमच्छ) की तैनाती की व्यवहार्यता का परिचालन दृष्टिकोण से परीक्षण किया जाना है," इसमें कहा गया।
- The Hindu has seen a copy of the communication.  
द हिंदू ने इस संचार की एक प्रति देखी है।

### Several challenges कई चुनौतियां

- There was no response from the BSF.  
BSF की ओर से कोई प्रतिक्रिया नहीं आई।
- A BSF official said, "Till now the directions on reptiles have not been implemented.  
एक BSF अधिकारी ने कहा, "अब तक सरीसृपों से संबंधित निर्देश लागू नहीं किए गए हैं।"
- The directions have come to explore the possibility of it.  
ये निर्देश केवल इसकी संभावना की जांच के लिए दिए गए हैं।
- There are several challenges... how does one procure the reptiles and what impact it may have on the local population who live along the riverine stretches?"  
कई चुनौतियां हैं... सरीसृपों की व्यवस्था कैसे की जाएगी और इसका नदी किनारे रहने वाली स्थानीय आबादी पर क्या प्रभाव पड़ेगा?"



- The communication followed a February 9 meeting at the **Border Security Force headquarters in Delhi**.  
यह संचार 9 फरवरी को **दिल्ली स्थित BSF मुख्यालय** में हुई बैठक के बाद आया।
- The BSF is the primary **border-guarding force** along the Bangladesh and Pakistan borders. BSF बांग्लादेश और पाकिस्तान सीमाओं पर प्रमुख **सीमा सुरक्षा बल** है।
- Large parts of the eastern border with Bangladesh are prone to floods, and the topography makes it difficult to erect **physical fences**.  
बांग्लादेश के साथ पूर्वी सीमा के बड़े हिस्से बाढ़ प्रभावित हैं और भौगोलिक स्थिति के कारण **भौतिक बाड़** लगाना कठिन है।
- Since these areas are densely populated, the “use of reptiles” may pose considerable risk to villagers on either side of the border, especially during floods.  
चूंकि ये क्षेत्र घनी आबादी वाले हैं, इसलिए “सरीसृपों का उपयोग” सीमा के दोनों ओर के ग्रामीणों के लिए विशेषकर बाढ़ के दौरान बड़ा खतरा पैदा कर सकता है।
- According to a March 17 report by the **Parliamentary Standing Committee on Home Affairs**, of the total **4,096.7 km border with Bangladesh**, the government had approved the fencing of **3,326.14 km**.  
**गृह मामलों की संसदीय स्थायी समिति** की 17 मार्च की रिपोर्ट के अनुसार, बांग्लादेश के साथ कुल **4,096.7 किमी सीमा** में से सरकार ने **3,326.14 किमी** पर बाड़ लगाने की मंजूरी दी है।
- Of this, **2,954.56 km** has been fenced so far.  
इसमें से अब तक **2,954.56 किमी** पर बाड़ लगाई जा चुकी है।
- Around **371 km** of the total sanctioned border length is yet to be fenced.  
कुल स्वीकृत सीमा में से लगभग **371 किमी** पर अभी बाड़ लगनी बाकी है।

## Tough terrain कठिन भू-भाग

- According to the **2024-25 annual report of the Union Home Ministry**, the India-Bangladesh border passes through difficult terrain such as **hills, rivers and valleys**.  
**गृह मंत्रालय की 2024-25 वार्षिक रिपोर्ट** के अनुसार, भारत-बांग्लादेश सीमा **पहाड़ों, नदियों और घाटियों** जैसे कठिन भू-भाग से होकर गुजरती है।
- “In order to prevent illegal migration and illegal activities, including anti-national activities from across the border, the Government of India has sanctioned phase-wise construction of border fencing illuminated by floodlights...  
“अवैध प्रवासन और सीमा पार से होने वाली अवैध तथा राष्ट्र-विरोधी गतिविधियों को रोकने के लिए भारत सरकार ने चरणबद्ध तरीके से फ्लडलाइट से रोशन सीमा बाड़ निर्माण को मंजूरी दी है...”
- The non-physical barrier will be in the form of technological solutions.  
गैर-भौतिक बाधाएं तकनीकी समाधानों के रूप में होंगी।
- Some problem areas such as **riverine/low-lying areas, habitations close to the border, pending land acquisition cases and protests by the border population**, have slowed down the installation of fencing in certain stretches on this border,” the report said.  
कुछ समस्याग्रस्त क्षेत्र जैसे **नदीय/निचले इलाके, सीमा के पास बस्तियां, लंबित भूमि अधिग्रहण मामले और सीमा के लोगों के विरोध** ने कुछ हिस्सों में बाड़ लगाने की प्रक्रिया को धीमा कर दिया है,” रिपोर्ट में कहा गया।
- The March 26 communication added that border outposts in “**dark/no-signal areas**” should be identified.  
26 मार्च के संचार में यह भी कहा गया कि “**डार्क/नो-सिग्नल क्षेत्रों**” में स्थित सीमा चौकियों की पहचान की जानी चाहिए।
- “The **Eastern Command** is to map and identify border outposts (BOPs) located in dark zones lacking mobile network connectivity and furnish detailed inputs for further action,” it said.  
“**ईस्टर्न कमांड** को ऐसे सीमा चौकियों (BOPs) का मानचित्रण और पहचान करनी है जो मोबाइल नेटवर्क से वंचित डार्क जोन में स्थित हैं और आगे की कार्रवाई के लिए विस्तृत जानकारी देनी है,” इसमें कहा गया।