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PCS Special:	08 March
08Mar	**Navy may escort Persian Gulf ships** नौसेना Persian Gulf के जहाज़ों को एस्कॉर्ट कर सकती है

Navy may escort Persian Gulf ships

M. Kalyanaraman
Saptaparno Ghosh

The Indian government is considering deploying Indian Navy ships to escort ships stranded in the Persian Gulf, said a senior government official. Decision will be taken in two days, the source said.

Shipping industry sources estimate that some 10% of the oil tankers and gas carriers stranded in the Persian Gulf are Indian flagged. State-owned Shipping Corporation of India is among the major global ship owners whose ships amounting to more than 8 lakh tonne of cargo carrying capacity are among the stranded, as per data from Lloyds List Intelligence.

This would be equivalent to almost six million barrels of oil.

Stranded seafarers

The International Maritime Organization estimates almost 20,000 seafarers are onboard stranded ships. Given India is a major source of seafarers to global shipping, these seafarers would amount to several thousands.

The Indian Navy has conducted extensive operations defending merchant ships including those with Indian seafarers against Houthi attacks as well as Somalian pirates. Operation Sankalp, which was launched to ensure maritime security in the Gulf region, included action against Houthi rebels.

Meanwhile, Iran's promise to not attack neighbours in the Persian Gulf may give confidence for

A decision on deploying the Navy will be taken in 2 days.

ships stuck there to move across the Strait of Hormuz and sail away, another highly placed source and decision maker in the government said.

"This [the Iranian affirmation] is definitely a positive," they stated, adding, "It provides increasing confidence [that] cargoes that may have been stuck on one side of the Strait of Hormuz will start moving. [This] would help the overall fuel dynamics as well."

Iranian President Masoud Pezeshkian said Iran will not target neighbouring countries unless they initiate an attack.

Further, according to the source, at present India has arranged for alternative supplies. Effectively, 70% of India's crude oil supplies are now being sourced in such a way they don't need to cross the Strait of Hormuz, the source said, adding there will be no rise in retail prices of petrol and diesel.

On Friday, Iranian Deputy Foreign Affairs Minister Saeed Khatibzadeh told *The Hindu* Iran was not stopping Indian ships in the strait.

08Mar. Navy may escort Persian Gulf ships
नौसेना Persian Gulf के जहाज़ों को एस्कॉर्ट कर सकती है

- The **Indian government** is considering deploying **Indian Navy ships** to escort ships stranded in the **Persian Gulf**.
 भारतीय सरकार Persian Gulf में फँसे जहाज़ों को एस्कॉर्ट करने के लिए **Indian Navy के जहाज़ तैनात करने** पर विचार कर रही है।
- This was stated by a **senior government official**.
 यह जानकारी एक **वरिष्ठ सरकारी अधिकारी** ने दी।
- A **decision will be taken in two days**, the source said.
 स्रोत के अनुसार **दो दिनों में निर्णय लिया जाएगा**।
- **Shipping industry sources** estimate that some **10% of the oil tankers and gas carriers** stranded in the **Persian Gulf** are **Indian flagged**.
 Shipping industry sources के अनुसार **Persian Gulf** में फँसे **oil tankers और gas carriers** में से लगभग **10% भारतीय ध्वज वाले** हैं।
- **State-owned Shipping Corporation of India** is among the **major global ship owners** whose ships are stranded.
 सरकारी स्वामित्व वाली Shipping Corporation of India उन **बड़े वैश्विक जहाज़ मालिकों** में शामिल है जिनके जहाज़ फँसे हुए हैं।
- These ships amount to more than **8 lakh tonne of cargo carrying capacity**.
 इन जहाज़ों की कुल **8 लाख टन से अधिक cargo carrying capacity** है।
- This information is based on data from **Lloyds List Intelligence**.
 यह जानकारी **Lloyds List Intelligence** के डेटा पर आधारित है।
- This would be equivalent to almost **six million barrels of oil**.
 यह लगभग **छह मिलियन बैरल तेल** के बराबर है।

Stranded seafarers
फँसे हुए नाविक

- The **International Maritime Organization** estimates almost **20,000 seafarers** are onboard stranded ships.
 International Maritime Organization के अनुसार लगभग **20,000 seafarers** फँसे हुए जहाज़ों पर सवार हैं।
- Given **India is a major source of seafarers to global shipping**, these seafarers would amount to **several thousands**.
 क्योंकि **भारत वैश्विक shipping के लिए seafarers का प्रमुख स्रोत है**, इसलिए इनमें **कई हजार भारतीय** हो सकते हैं।
- The **Indian Navy** has conducted extensive operations defending **merchant ships**.
 Indian Navy ने **merchant ships** की रक्षा के लिए व्यापक अभियान चलाए हैं।

- This includes ships with **Indian seafarers**.
  इसमें **भारतीय नाविकों वाले जहाज़** भी शामिल हैं।
- These operations were against **Houthi attacks** as well as **Somalian pirates**.
  ये अभियान **Houthi हमलों** और **Somalian pirates** के ख़िलाफ थे।
- **Operation Sankalp** was launched to ensure **maritime security in the Gulf region**.
  Operation Sankalp को **Gulf क्षेत्र में maritime security सुनिश्चित करने** के लिए शुरू किया गया था।
- This operation included action against **Houthi rebels**.
  इस अभियान में **Houthi rebels** के खिलाफ कार्रवाई भी शामिल थी।
- Meanwhile, **Iran's promise to not attack neighbours in the Persian Gulf** may give confidence to ships stranded there.
  इस बीच **Persian Gulf में पड़ोसी देशों पर हमला न करने का Iran का वादा** वहाँ फँसे जहाज़ों को विश्वास दे सकता है।
- This may allow ships to move across the **Strait of Hormuz** and sail away.
  इससे जहाज़ **Strait of Hormuz** पार कर आगे बढ़ सकते हैं।
- This was stated by another **highly placed source and decision maker in the government**.
  यह जानकारी सरकार के एक **उच्च पदस्थ स्रोत और निर्णयकर्ता** ने दी।
- "This **Iranian affirmation** is definitely a **positive**," they stated.
  उन्होंने कहा कि यह **Iranian affirmation** निश्चित रूप से एक **सकारात्मक संकेत** है।
- They added that it provides **increasing confidence**.
  उन्होंने कहा कि इससे **विश्वास बढ़ रहा है**।
- Cargoes stuck on one side of the **Strait of Hormuz** may start moving.
  Strait of Hormuz के एक ओर फँसा हुआ **cargo** अब आगे बढ़ना शुरू कर सकता है।
- This would help the **overall fuel dynamics** as well.
  इससे **समग्र ईंधन आपूर्ति प्रणाली** को भी मदद मिलेगी।
- **Iranian President Masoud Pezeshkian** said Iran will not target neighbouring countries unless they initiate an attack.
  Iran के राष्ट्रपति Masoud Pezeshkian ने कहा कि **Iran पड़ोसी देशों को निशाना नहीं बनाएगा जब तक वे पहले हमला न करें**।
- Further, according to the source, **India has arranged for alternative supplies**.
  स्रोत के अनुसार **भारत ने वैकल्पिक आपूर्ति की व्यवस्था कर ली है**।
- Effectively, **70% of India's crude oil supplies** are now sourced in ways that **do not require crossing the Strait of Hormuz**.
  व्यवहारिक रूप से **भारत के 70% crude oil supplies** अब ऐसे स्रोतों से आ रहे हैं जिन्हें **Strait of Hormuz पार करने की आवश्यकता नहीं है**।
- The source added that there will be **no rise in retail prices of petrol and diesel**.
  स्रोत ने कहा कि **petrol और diesel की खुदरा कीमतों में कोई वृद्धि नहीं होगी**।
- On **Friday**, **Iranian Deputy Foreign Affairs Minister Saeed Khatibzadeh** told **The Hindu** something important.
  शुक्रवार को **Iran के Deputy Foreign Affairs Minister Saeed Khatibzadeh** ने **The Hindu** को एक महत्वपूर्ण बात बताई।
- He said **Iran was not stopping Indian ships in the strait**.
  उन्होंने कहा कि **Iran Strait में भारतीय जहाज़ों को नहीं रोक रहा है**।

GS Paper 1: Society	
TOPICS COVERED	**08 March 2026**
08Mar	**U.P. accounts for most cases of denial of access to public spaces to persons from SC communities** सार्वजनिक स्थानों तक पहुँच से वंचित करने के अधिकांश मामले SC समुदायों के लिए उत्तर प्रदेश में

U.P. accounts for most cases of denial of access to public spaces to persons from SC communities

GS I: Society   **PCS: GS V**

Abhinay Lakshman
NEW DELHI

Reported cases of denial of access to public spaces to persons from the Scheduled Caste communities – a crime category that was introduced by the National Crime Records Bureau in 2017 – have been rising across India since authorities started recording them, with Uttar Pradesh holding a large share.

As per the NCRB's 2023 Crime in India report, there were 180 reported cases of SCs being denied access to public spaces under the SC/ST (Prevention of Atrocities) Act across the country. Of these, 173 were reported in U.P. alone, The remaining incidents were reported from Haryana, Himachal Pradesh, Jharkhand, Madhya Pradesh, and Rajasthan.

The NCRB's data for the year before, showed that the country reported 305 of such cases out of which 300 were from U.P. In 2018, the State accounted for 68% of such cases all over India, which rose to 80% in 2019.

For better classification

Ish Kumar, former Director-General of the NCRB, told *The Hindu* that in 2017, the organisation introduced new columns to "better classify" crimes across India. As a result, new crime heads and classifications were added in the Crime in India reports. The category of crimes under the SC/ST Act – 'Prevent or deny or obstruct usage of public place/passage' – was among the new crime-heads that were added to the series as part of this reform.

In the first year that this crime category was introduced, it noted just 12 cases across the country, spread across States like Himachal Pradesh, Punjab, Karnataka, Kerala, and Maharashtra, while U.P. reported zero. However, U.P. did record 57 cases that year under another newly added category: SC persons being forced to leave their residence or facing social boycott.

Interestingly, a review of this crime category data showed that the number of such cases reported was relatively lower for people belonging to Scheduled Tribe communities.

Crime chart

Reported cases of denial of access to public spaces to persons from SC communities

Year	Total cases (India)	Cases in U.P.	U.P. share (%)
2017	12	0	0%
2018	16	11	68%
2019	26	21	80%
2022	305	300	98.3%
2023	180	173	96.1%

08Mar. U.P. accounts for most cases of denial of access to public spaces to persons from SC communities

सार्वजनिक स्थानों तक पहुँच से वंचित करने के अधिकांश मामले SC समुदायों के लिए उत्तर प्रदेश में

- Reported cases of **denial of access to public spaces** to persons from the **Scheduled Caste communities** — a **crime category** that was introduced by the **National Crime Records Bureau (NCRB)** in **2017** — have been **rising across India** since authorities started recording them, with **Uttar Pradesh** holding a **large share**.

  सार्वजनिक स्थानों तक पहुँच से वंचित करने के **अनुसूचित जाति समुदायों** से जुड़े मामलों — जो **राष्ट्रीय अपराध रिकॉर्ड ब्यूरो (NCRB)** द्वारा **2017** में शुरू की गई एक **अपराध श्रेणी** है — की रिपोर्ट किए गए मामलों में **भारत भर में वृद्धि** हो रही है, जिसमें **उत्तर प्रदेश** का बड़ा हिस्सा है।

- As per the **NCRB's 2023 Crime in India report**, there were **180 reported cases** of **SCs** being denied **access to public spaces** under the **SC/ST (Prevention of Atrocities) Act** across the **country**.

  NCRB की 2023 की क्राइम इन इंडिया रिपोर्ट के अनुसार, पूरे **देश** में **SC/ST (अत्याचार निवारण) अधिनियम** के तहत **अनुसूचित जातियों** को **सार्वजनिक स्थानों तक पहुँच से वंचित** किए जाने के **180 मामले** दर्ज किए गए।

- Of these, **173** were reported in **U.P. alone**.

  इनमें से **173 मामले** केवल **उत्तर प्रदेश** में दर्ज किए गए।

- The remaining **incidents** were reported from **Haryana, Himachal Pradesh, Jharkhand, Madhya Pradesh, and Rajasthan**.

  शेष **घटनाएँ हरियाणा, हिमाचल प्रदेश, झारखंड, मध्य प्रदेश और राजस्थान** से रिपोर्ट की गईं।

- The **NCRB's data** for the **year before** showed that the **country** reported **305 cases**, out of which **300 were from U.P.**

  NCRB के पिछले वर्ष के आंकड़ों से पता चला कि **देश** में **305 मामले** दर्ज किए गए, जिनमें से **300 उत्तर प्रदेश** से थे।

- In **2018**, the **State** accounted for **68%** of such **cases** all over **India**, which rose to **80% in 2019**.

  2018 में **राज्य** ने पूरे **भारत** में ऐसे **मामलों** का **68%** हिस्सा दर्ज किया, जो **2019 में बढ़कर 80%** हो गया।

For better classification

बेहतर वर्गीकरण के लिए

- **Ish Kumar**, former **Director-General of the NCRB**, told **The Hindu** that in **2017**, the **organisation** introduced **new columns** to **"better classify" crimes** across **India**.
  NCRB के पूर्व महानिदेशक ईश कुमार ने द हिंदू को बताया कि 2017 में संगठन ने पूरे भारत में अपराधों को **"बेहतर वर्गीकृत"** करने के लिए **नई श्रेणियाँ** शुरू कीं।

- As a result, new **crime heads** and **classifications** were added in the **Crime in India reports**.
  इसके परिणामस्वरूप क्राइम इन इंडिया रिपोर्ट में नई **अपराध श्रेणियाँ** और **वर्गीकरण** जोड़े गए।

- The category of crimes under the **SC/ST Act** — **'Prevent or deny or obstruct usage of public place/passage'** — was among the **new crime-heads** that were added to the **series** as part of this **reform**.
  SC/ST अधिनियम के तहत अपराधों की श्रेणी — **'सार्वजनिक स्थान/मार्ग के उपयोग को रोकना या बाधित करना'** — इस **सुधार** के तहत जोड़ी गई **नई अपराध श्रेणियों** में से एक थी।

- In the **first year** that this **crime category** was introduced, it noted just **12 cases** across the **country**, spread across **States** like **Himachal Pradesh, Punjab, Karnataka, Kerala, and Maharashtra**, while **U.P. reported zero**.
  इस **अपराध श्रेणी** के शुरू होने के **पहले वर्ष** में पूरे **देश** में केवल **12 मामले** दर्ज किए गए, जो **हिमाचल प्रदेश, पंजाब, कर्नाटक, केरल और महाराष्ट्र** जैसे राज्यों में फैले थे, जबकि **उत्तर प्रदेश में कोई मामला दर्ज नहीं हुआ**।

- However, **U.P.** did record **57 cases** that year under another **newly added category**: SC persons being forced to leave their residence or facing social boycott.
  हालाँकि, उसी वर्ष **उत्तर प्रदेश** में एक अन्य **नई श्रेणी** के तहत **57 मामले** दर्ज किए गए: अनुसूचित जाति के लोगों को अपने घर छोड़ने के लिए मजबूर करना या सामाजिक बहिष्कार का सामना करना।

- Interestingly, a **review** of this **crime category data** showed that the **number of such cases** reported was **relatively lower** for people belonging to **Scheduled Tribe** communities.
  दिलचस्प बात यह है कि इस **अपराध श्रेणी के आंकड़ों** की समीक्षा से पता चला कि ऐसे **मामलों की संख्या** अनुसूचित जनजाति समुदायों से संबंधित लोगों के लिए **तुलनात्मक रूप से कम** दर्ज की गई।

GS Paper 1: Geography	
TOPICS COVERED	08 March 2026
08Mar	On backlash, Govt. pulls back revised earthquake zoning
	विरोध के बाद सरकार ने संशोधित भूकंप ज़ोनिंग को वापस लिया

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On backlash, Govt. pulls back revised earthquake zoning

Government departments, Metro Rail corporations and infrastructure authorities apprehended a surge in construction costs of marquee projects nationwide on implementation of the new norm

GS I: Geography

Kunal Shankar
CHENNAI

Less than four months after issuing a revision to India's earthquake zoning framework, the Centre has withdrawn its own notification following a major backlash from several government departments, Metro Rail corporations and infrastructure authorities that apprehended a surge in construction costs of marquee projects nationwide *The Hindu* has learnt.

The Bureau of Indian Standards (BIS) had issued a Gazette notification on November 6, 2025, introducing revised earthquake hazard zoning under the updated IS 1893 (Part 1): 2025 code, which governs the earthquake-resistant design of structures. The revised standard was meant to replace the existing IS 1893 (Part 1): 2016 framework that currently guides structural design norms across the country.

However, the revised notification has now been withdrawn through a fresh Gazette notification issued on March 3, 2026, restoring the earlier code with immediate effect.

The reversal follows strong objections from multiple government agencies, including the Ministry of Housing and Urban Affairs (MoHUA), several Metro Rail corporations across northern India, the National Dam Safety Authority (NDSA) and other infrastructure bodies that flagged the potential impact of the revised probabilistic seismic hazard assessment (PSHA) framework on construction costs.

The development also has major implications for India's buildings and construction sector, which had begun expressing concern over a potential spike in project costs. Developers had warned that the revised zoning framework could disrupt financing for ongoing projects, with some suggesting that several under-construction high-rise developments could risk turning into 'stranded assets' if costs escalated sharply.

The BIS notification issued in November last year significantly revised India's seismic risk framework by incorporating updated PSHA-based modelling and new hazard parameters. Under the proposed classification, more than 60% of India's landmass would fall under moderate to high earthquake risk zones, representing a major shift in the country's seismic hazard mapping.

A notable change in the revised framework was the introduction of a new highest-risk Zone VI, bringing parts of Kashmir, the North-East and the Kutch region of Gujarat under the most stringent seismic design standards. Several other regions across the Himalayan belt were categorised under Zone V, indicating very high seismic vulnerability.

Such changes would have required significant revisions in structural design standards for buildings and infrastructure projects, including stronger foundationss.

One of the strongest objections to the revised zoning framework came from MoHUA. In a February 2026 communication to the Cabinet Secretariat, the MoHUA flagged "certain technical and financial concerns" arising from the revision of IS 1893.

Huge financial impact

The MoHUA letter accessed by T*he Hindu* said the proposed revision could have "materially significant financial implications for infrastructure and construction projects", particularly for large public works such as Metro Rail systems and urban infrastructure.

The NDSA also raised scientific objections to the revised hazard values when the draft was circulated in mid 2025.

"We reviewed the draft and felt the values were quite high," a senior NDSA official said. "The hazard value being suggested was much higher than what we were reading from our site investigations." Officials added higher hazard values would automatically translate into higher costs for infrastructure projects.

Technical discussions within government agencies also raised questions about the methodology used in the revised probabilistic seismic hazard assessment.

On the edge: Several under-construction developments could risk turning into 'stranded assets' if costs escalated. AP

08Mar. On backlash, Govt. pulls back revised earthquake zoning
विरोध के बाद सरकार ने संशोधित भूकंप ज़ोनिंग को वापस लिया

- **Government departments, Metro Rail corporations and infrastructure authorities apprehended a surge in construction costs of marquee projects nationwide on implementation of the new norm**
  सरकारी विभागों, **Metro Rail** निगमों और अवसंरचना प्राधिकरणों को नए मानदंड लागू होने पर देशभर में प्रमुख परियोजनाओं की निर्माण लागत बढ़ने की आशंका थी

- Less than **four months** after issuing a revision to **India's earthquake zoning framework**, the **Centre** has withdrawn its own notification following a **major backlash**.
  भारत के भूकंप ज़ोनिंग ढांचे में संशोधन जारी करने के **चार महीने से भी कम समय** बाद **केंद्र सरकार** ने **बड़े विरोध** के बाद अपनी ही अधिसूचना वापस ले ली।

- This backlash came from several **government departments, Metro Rail corporations and infrastructure authorities**.
  यह विरोध कई **सरकारी विभागों, Metro Rail निगमों और अवसंरचना प्राधिकरणों** की ओर से आया।
- They apprehended a **surge in construction costs of marquee projects nationwide**.
  उन्हें आशंका थी कि इससे **देशभर की प्रमुख परियोजनाओं की निर्माण लागत में वृद्धि** होगी।
- **The Hindu** has learnt this development.
  यह जानकारी **The Hindu** को प्राप्त हुई है।
- The **Bureau of Indian Standards (BIS)** had issued a **Gazette notification** on **November 6, 2025**.
  Bureau of Indian Standards (BIS) ने **6 नवंबर 2025** को एक **Gazette notification** जारी किया था।
- This introduced **revised earthquake hazard zoning** under the updated **IS 1893 (Part 1): 2025 code**.
  इसमें अद्यतन **IS 1893 (Part 1): 2025 code** के तहत **संशोधित भूकंप जोखिम ज़ोनिंग** पेश की गई थी।
- The code governs the **earthquake-resistant design of structures**.
  यह कोड **भूकंप-रोधी संरचनाओं के डिजाइन** को नियंत्रित करता है।
- The revised standard was meant to replace the existing **IS 1893 (Part 1): 2016 framework**.
  यह संशोधित मानक मौजूदा **IS 1893 (Part 1): 2016 framework** को प्रतिस्थापित करने के लिए था।
- This framework currently guides **structural design norms across the country**.
  यह ढांचा वर्तमान में पूरे देश में **संरचनात्मक डिजाइन मानकों** का मार्गदर्शन करता है।
- However, the revised notification has now been **withdrawn** through a fresh **Gazette notification issued on March 3, 2026**.
  हालाँकि अब इस संशोधित अधिसूचना को **3 मार्च 2026 को जारी नई Gazette notification** के माध्यम से **वापस ले लिया गया है।**
- This restores the **earlier code with immediate effect**.
  इससे **पुराना कोड तत्काल प्रभाव से बहाल** हो गया है।
- The reversal follows **strong objections from multiple government agencies**.
  यह निर्णय **कई सरकारी एजेंसियों के कड़े विरोध** के बाद लिया गया।
- These include the **Ministry of Housing and Urban Affairs (MoHUA)**.
  इनमें **Ministry of Housing and Urban Affairs (MoHUA)** शामिल है।
- It also includes several **Metro Rail corporations across northern India**.
  इसके साथ **उत्तरी भारत के कई Metro Rail निगम** भी शामिल हैं।
- The **National Dam Safety Authority (NDSA)** and other **infrastructure bodies** also objected.
  National Dam Safety Authority (NDSA) और अन्य **अवसंरचना निकायों** ने भी आपत्ति जताई।
- They flagged the potential impact of the revised **probabilistic seismic hazard assessment (PSHA)** framework.
  उन्होंने संशोधित **probabilistic seismic hazard assessment (PSHA)** ढांचे के संभावित प्रभावों को चिन्हित किया।
- They warned about its effect on **construction costs**.
  उन्होंने इसके **निर्माण लागत पर प्रभाव** को लेकर चेतावनी दी।
- The development also has major implications for **India's buildings and construction sector**.
  इस घटनाक्रम का **भारत के भवन और निर्माण क्षेत्र** पर भी बड़ा प्रभाव पड़ता है।
- This sector had begun expressing concern over a **potential spike in project costs**.
  इस क्षेत्र ने **परियोजना लागत में संभावित वृद्धि** को लेकर चिंता व्यक्त करनी शुरू कर दी थी।
- **Developers** had warned that the revised **zoning framework** could disrupt **financing for ongoing projects**.
  डेवलपर्स ने चेतावनी दी थी कि संशोधित **zoning framework** से **चल रही परियोजनाओं के वित्तपोषण** में बाधा आ सकती है।
- Some suggested that several **under-construction high-rise developments** could risk turning into **'stranded assets'**.
  कुछ का मानना था कि कई **निर्माणाधीन ऊँची इमारत परियोजनाएँ** 'stranded assets' बन सकती हैं।
- This could happen if **costs escalated sharply**.
  ऐसा तब हो सकता है जब **लागत तेजी से बढ़ जाए।**

- The **BIS notification issued in November last year** significantly revised **India's seismic risk framework**.
  पिछले वर्ष नवंबर में जारी BIS अधिसूचना ने भारत के भूकंपीय जोखिम ढांचे में महत्वपूर्ण संशोधन किया था।
- It incorporated updated **PSHA-based modelling** and **new hazard parameters**.
  इसमें अद्यतन **PSHA आधारित मॉडलिंग** और **नए जोखिम मानक** शामिल किए गए थे।
- Under the proposed classification, more than **60% of India's landmass** would fall under **moderate to high earthquake risk zones**.
  प्रस्तावित वर्गीकरण के तहत **भारत की 60% से अधिक भूमि मध्यम से उच्च भूकंप जोखिम क्षेत्रों** में आती।
- This represented a **major shift in the country's seismic hazard mapping**.
  यह **देश की भूकंपीय जोखिम मैपिंग में बड़ा बदलाव** दर्शाता था।
- A notable change in the revised framework was the introduction of a new **highest-risk Zone VI**.
  संशोधित ढांचे में एक महत्वपूर्ण बदलाव नया **सबसे उच्च जोखिम वाला Zone VI** शुरू करना था।
- This brought parts of **Kashmir**, the **North-East**, and the **Kutch region of Gujarat** under the **most stringent seismic design standards**.
  इससे **कश्मीर**, **उत्तर-पूर्व**, और **गुजरात के कच्छ क्षेत्र** के कुछ हिस्से **सबसे कठोर भूकंपीय डिजाइन मानकों** के अंतर्गत आ जाते।
- Several other regions across the **Himalayan belt** were categorised under **Zone V**.
  हिमालयी क्षेत्र के कई अन्य हिस्सों को **Zone V** में वर्गीकृत किया गया।
- This indicates **very high seismic vulnerability**.
  यह **बहुत उच्च भूकंपीय संवेदनशीलता** को दर्शाता है।
- Such changes would have required **significant revisions in structural design standards**.
  ऐसे बदलावों के लिए **संरचनात्मक डिजाइन मानकों में बड़े संशोधन** की आवश्यकता होती।
- This applied to **buildings and infrastructure projects**.
  यह **भवनों और अवसंरचना परियोजनाओं** पर लागू होता।
- It would also require **stronger foundations**.
  इसके लिए **और मजबूत नींव** की आवश्यकता होती।
- One of the strongest objections to the revised zoning framework came from **MoHUA**.
  संशोधित ज़ोनिंग ढांचे के खिलाफ सबसे मजबूत आपत्तियों में से एक **MoHUA** की ओर से आई।
- In a **February 2026 communication to the Cabinet Secretariat**, the ministry flagged concerns.
  फरवरी 2026 में Cabinet Secretariat को भेजे गए पत्र में मंत्रालय ने चिंताएँ व्यक्त कीं।
- It flagged **certain technical and financial concerns** arising from the revision of **IS 1893**.
  इसमें **IS 1893 के संशोधन से उत्पन्न कुछ तकनीकी और वित्तीय चिंताओं** को रेखांकित किया गया।

Huge financial impact
बड़ा वित्तीय प्रभाव

- The **MoHUA letter accessed by The Hindu** said the proposed revision could have **materially significant financial implications**.
  The Hindu द्वारा प्राप्त MoHUA के पत्र में कहा गया कि प्रस्तावित संशोधन के **महत्वपूर्ण वित्तीय प्रभाव** हो सकते हैं।
- This would affect **infrastructure and construction projects**.
  यह **अवसंरचना और निर्माण परियोजनाओं** को प्रभावित करेगा।
- It would particularly impact **large public works such as Metro Rail systems and urban infrastructure**.
  यह विशेष रूप से **Metro Rail systems और शहरी अवसंरचना जैसी बड़ी सार्वजनिक परियोजनाओं** को प्रभावित करेगा।
- The **NDSA** also raised **scientific objections** to the revised **hazard values**.
  NDSA ने भी संशोधित **hazard values** पर **वैज्ञानिक आपत्तियाँ** उठाईं।
- This happened when the draft was circulated in **mid 2025**.
  यह तब हुआ जब मसौदा **2025 के मध्य** में प्रसारित किया गया।
- A senior **NDSA official** said they reviewed the draft.
  एक वरिष्ठ **NDSA अधिकारी** ने कहा कि उन्होंने मसौदे की समीक्षा की।

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- They felt the **values were quite high**.
  उन्हें लगा कि **मान बहुत अधिक थे**।
- The **hazard value being suggested** was much higher than what they observed in **site investigations**.
  प्रस्तावित **hazard value** उनके **site investigations** में पाए गए मानों से कहीं अधिक था।
- Officials added that **higher hazard values** would automatically translate into **higher costs for infrastructure projects**.
  अधिकारियों ने कहा कि **उच्च hazard values** अपने आप **अवसंरचना परियोजनाओं की लागत बढ़ा देंगे**।
- Technical discussions within **government agencies** also raised questions about the **methodology used in the revised PSHA**.
  सरकारी एजेंसियों के भीतर तकनीकी चर्चाओं में संशोधित **PSHA में उपयोग की गई पद्धति** पर भी प्रश्न उठाए गए।

GS Paper II: International Relations	
TOPICS COVERED	**08 March 2026**
08Mar	**Why does the Strait of Hormuz's closure matter?** **Strait of Hormuz का बंद होना क्यों महत्वपूर्ण है?**
08Mar	**The philosopher who seeks vengeance** **प्रतिशोध की तलाश करने वाला दार्शनिक**
08Mar	**The bell strikes** **घंटी बजती है**
08Mar	**Hit to kill** **हिट टू किल**

Why does the Strait of Hormuz's closure matter?

Where is the Strait of Hormuz and what is its significance? Why have tensions in West Asia affected this passage? What does Iran have to do with the near-complete closure of the strait? How does the situation affect India and what is the government doing about it?

GS II: IR

M. Kalyanaraman

The story so far:

The Strait of Hormuz, one of the world's most strategically important chokepoints, has been experiencing a near-total collapse in commercial traffic following rising tensions in West Asia. More than 20% of the world's total oil and gas shipments, and nearly 40% of India's, pass through the strait.

What is the significance of the strait?
The Strait of Hormuz, only 33 kilometres wide at its narrowest, lies between Iran, Oman, and the UAE. It is a vital route for oil and gas from Saudi Arabia, Qatar, Kuwait, Iraq, and Iran leaving the Persian Gulf to various destinations.

Other important shipping chokepoints in the world include the natural Malacca Strait off Singapore through which almost the entire west-bound Chinese maritime trade takes place; the Bab-al-Mandab at the mouth of the Red Sea, which has come under Houthi influence; the artificial Suez Canal connecting Europe and Africa-Asia; the artificial Panama Canal linking the Pacific and Atlantic Oceans; and the straits of Bosphorus and Dardanelles connecting the Mediterranean and Black Sea via the Sea of Marmara, which are crucial not just for nations such as Romania but also for Russia.

While Egypt and Panama hold sovereignty over the Suez and Panama canals, respectively, Turkey has exclusive sovereign rights over the Bosphorus and Dardanelles straits. Nations such as Malaysia and Singapore, and Iran and Oman play a major role in securing the natural straits (Malacca and Hormuz) while not holding sovereignty over them. India has been building naval presence in the Andaman and Nicobar Islands with the strategic aim of gaining leverage over Chinese trade across the Malacca Strait.

Some 40% of India's oil flows through the strait

What is the current situation?
Since February 28, when the U.S. and Israel attacked Iran, and Iran retaliated, ship traffic across the strait has reduced by some 95%. Nine ships have faced attacks in or near the strait. Shipping is a high-risk business and even small damages can prove costly to repair. Lloyds List Intelligence, a maritime information provider, estimates that some 600 ships are now stranded in the region. Some 250 are bulk carriers carrying loose cargo such as coal, ores, and grain. Others include some 200 oil tankers and 50 gas carriers.

Can countries just halt shipping lanes?
International law generally treats the seas as commons. Though territorial waters and exclusive economic zones are recognised, in general, laws and practices tend to be favourable towards free usage of all of the seas by merchant ships, and by naval ships for "innocent" passage.

In the past, Egypt has shut down the Suez Canal. Panama has not shut down its canal. No country can order the shutdown of the Straits of Hormuz and Malacca as its sovereign right. However, lack of security, emanating from threats and attacks, can make shippers wary of making the passage due to fears of loss of life and property.

As a result, insurance costs can balloon. In the current situation, insurance premiums have climbed 10-15 times on a case-by-case basis depending, among other factors, on whether a ship is affiliated with any of the belligerent parties. A rough estimate suggests that purchasing insurance for just one week of a ship transiting the strait would cost nearly as much as what the owner would normally pay for a year.

Are there alternatives to this strait?
Saudi Arabia can transport fuels to its western ports on the Red Sea, such as Yanbu, through pipelines. However, ship traffic in the Red Sea plummeted when Houthi attacks started in 2023-24. In October 2023, for instance, there were around 2,300 ship transits across Bab-el-Mandab, the strait at the mouth of the Red Sea. By January, the number had dwindled to less than half of that. Since then, ship transits have only marginally gone up. Any attempt to leverage Red Sea ports may invite attacks from the Houthis, who are aligned to Iran.

How does closing the strait help Iran?
Iran has spoken in multiple voices over allowing ship passage. Currently, about one in five ships passing through the strait are Iranian. While those speaking for the Iranian government have said they would not like ship traffic to halt, agencies such as the Iranian Revolutionary Guards have threatened attacks. Iran hopes that closing the strait will force world opinion to bear upon Israel and the U.S. to end the conflict.

The strait is a leverage that Iran has historically exercised, such as during the Iran-Iraq war in the 1980s. At the time, the U.S. allowed merchant ships registered in other nations to fly its flag. This provided legal sanction for the U.S. to deploy its Navy to escort merchant ship convoys across the strait.

India's response was unique then. Leveraging its neutrality and positive relationships in the region, the Shipping Corporation of India (SCI) had its ships painted 'INDIA' in big, bold white letters against the black hull so that the ships would be visible and stand out as belonging to India. Although there were attacks on SCI ships, the move did succeed to a large extent.

This time too, the U.S. President has vowed to keep ship traffic flowing through the strait. He has talked about escorting ships to provide direct security and also help defray insurance costs. India has been in touch with U.S. authorities for securing maritime insurance cover from the International Development Finance Corporation. The proposal had come from the U.S. government, officials have said.

How does the situation affect India's economy and oil prices?
Some 40% of India's oil flows through the strait. Qatar supplies half of India's liquefied natural gas (LNG) imports, which in turn provide half of the country's natural gas needs. Qatar shut down its LNG production when the conflict began. While LNG is regasified to supply city gas uses such as for cooking, power plants and other industrial uses, about 30% of India's natural gas is directed towards fertilizer production. Though this is the off season for fertilizers, the situation may not recover fast enough when ammonia fertilizer demand picks up later this year. The government is actively pursuing other LNG sources, such as the U.S., Russia, and Australia.

Some 60% of India's Liquified Petroleum Gas (LPG), which is mostly a mixture of propane and butane, comes from imports largely upstream of the strait. A shortage of LPG, the dominant cooking gas in India, is far more worrying. The government has come up with a series of measures, such as tweaking the oil refining process to produce more of propane-butane and prioritising cooking gas use of propane-butane.

The U.S. has given the green light for India's purchase of Russian crude for 30 days, which is a relief. India has built supply networks with Russia and these will come in handy. Overall, Brent crude price has been hovering below $90 (it shot past $125 when Russia attacked Ukraine). In a reflection of the turn towards Russian oil, high sulphur Urals oil (from Russia) is now costlier than Brent oil in India. Increase in global crude prices may force the Indian government to increase administered price hikes in petrol and other fuels for transport and other uses, leading to a spiralling effect on the economy.

At sea: Tankers are seen off the coast of Fujairah, as Iran vows to fire on ships transiting the Strait of Hormuz, in the UAE. REUTERS

08Mar. Why does the Strait of Hormuz's closure matter?
Strait of Hormuz का बंद होना क्यों महत्वपूर्ण है?

- **Where is the Strait of Hormuz and what is its significance?**
  Strait of Hormuz कहाँ स्थित है और इसका क्या महत्व है?
- **Why have tensions in West Asia affected this passage?**
  West Asia में तनाव ने इस मार्ग को क्यों प्रभावित किया है?
- **What does Iran have to do with the near-complete closure of the strait?**
  इस जलडमरूमध्य के लगभग पूर्ण बंद होने में Iran की क्या भूमिका है?
- **How does the situation affect India and what is the government doing about it?**
  यह स्थिति India को कैसे प्रभावित करती है और सरकार क्या कर रही है?
- The **Strait of Hormuz**, one of the world's most **strategically important chokepoints**, has been experiencing a **near-total collapse in commercial traffic** following rising tensions in **West Asia**.
  Strait of Hormuz, जो दुनिया के सबसे **strategically important chokepoints** में से एक है, **West Asia** में बढ़ते तनाव के बाद **commercial traffic में लगभग पूर्ण गिरावट** का सामना कर रहा है।
- More than **20% of the world's total oil and gas shipments**, and nearly **40% of India's**, pass through the **strait**.
  दुनिया के कुल **oil and gas shipments का 20% से अधिक** और **भारत का लगभग 40%** इसी **strait** से होकर गुजरता है।

What is the significance of the strait?
इस जलडमरूमध्य का महत्व क्या है?

- The **Strait of Hormuz**, only **33 kilometres wide at its narrowest**, lies between **Iran, Oman, and the UAE**.
  Strait of Hormuz, जो अपने सबसे संकरे हिस्से में केवल **33 किलोमीटर चौड़ा** है, **Iran, Oman और UAE** के बीच स्थित है।
- It is a **vital route for oil and gas** from **Saudi Arabia, Qatar, Kuwait, Iraq, and Iran** leaving the **Persian Gulf** to various destinations.
  यह **Persian Gulf** से निकलकर **Saudi Arabia, Qatar, Kuwait, Iraq और Iran** से **oil और gas** को विभिन्न स्थानों तक पहुँचाने का एक **महत्वपूर्ण मार्ग** है।
- Other important **shipping chokepoints** in the world include the natural **Malacca Strait** off **Singapore**.
  दुनिया के अन्य महत्वपूर्ण **shipping chokepoints** में **Singapore** के पास स्थित प्राकृतिक **Malacca Strait** शामिल है।
- Almost the entire **west-bound Chinese maritime trade** takes place through this strait.
  लगभग पूरा **पश्चिम की ओर जाने वाला चीनी समुद्री व्यापार** इसी जलडमरूमध्य से होकर गुजरता है।
- Another is the **Bab-al-Mandab** at the mouth of the **Red Sea**, which has come under **Houthi influence**.
  एक अन्य महत्वपूर्ण मार्ग **Red Sea** के मुहाने पर स्थित **Bab-al-Mandab** है, जो **Houthi influence** में आ गया है।
- There is also the **artificial Suez Canal** connecting **Europe and Africa-Asia**.
  इसके अलावा **Europe** और **Africa-Asia** को जोड़ने वाली **artificial Suez Canal** भी है।
- Another is the **artificial Panama Canal** linking the **Pacific and Atlantic Oceans**.
  एक अन्य मार्ग **Pacific और Atlantic Oceans** को जोड़ने वाली **artificial Panama Canal** है।
- There are also the **straits of Bosphorus and Dardanelles** connecting the **Mediterranean and Black Sea** via the **Sea of Marmara**.
  इसके अलावा **Bosphorus और Dardanelles straits** भी हैं जो **Sea of Marmara** के माध्यम से **Mediterranean और Black Sea** को जोड़ते हैं।
- These are crucial not just for nations such as **Romania** but also for **Russia**.
  ये केवल **Romania** ही नहीं बल्कि **Russia** के लिए भी अत्यंत महत्वपूर्ण हैं।
- While **Egypt** and **Panama** hold sovereignty over the **Suez and Panama canals**, respectively.
  जहाँ **Egypt** के पास **Suez Canal** और **Panama** के पास **Panama Canal** की संप्रभुता है।

- **Turkey** has exclusive sovereign rights over the **Bosphorus and Dardanelles straits**.
  Turkey के पास **Bosphorus और Dardanelles straits** पर विशेष संप्रभु अधिकार हैं।
- Nations such as **Malaysia and Singapore**, and **Iran and Oman** play a major role in securing the natural straits (**Malacca and Hormuz**) while not holding sovereignty over them.
  Malaysia और Singapore, तथा **Iran और Oman** जैसे देश प्राकृतिक जलडमरूमध्यों (**Malacca और Hormuz**) की सुरक्षा में बड़ी भूमिका निभाते हैं, हालांकि उनके पास इन पर संप्रभुता नहीं है।
- **India** has been building **naval presence in the Andaman and Nicobar Islands**.
  भारत Andaman और Nicobar Islands में अपनी **naval presence** बढ़ा रहा है।
- The strategic aim is gaining **leverage over Chinese trade across the Malacca Strait**.
  इसका रणनीतिक उद्देश्य **Malacca Strait के पार चीनी व्यापार पर leverage प्राप्त करना** है।

What is the current situation?
वर्तमान स्थिति क्या है?

- Since **February 28**, when the **U.S. and Israel attacked Iran**, and **Iran retaliated**, ship traffic across the **strait** has reduced by some **95%**.
  28 फरवरी से, जब **U.S. और Israel ने Iran पर हमला किया** और **Iran ने जवाबी कार्रवाई की**, तब से **strait** में जहाजों का आवागमन लगभग **95% घट गया है**।
- **Nine ships** have faced attacks in or near the **strait**.
  नौ जहाजों पर **strait** में या उसके आसपास हमले हुए हैं।
- **Shipping** is a **high-risk business**.
  Shipping एक **उच्च जोखिम वाला व्यवसाय** है।
- Even **small damages** can prove **costly to repair**.
  यहाँ तक कि **छोटी क्षति** भी **मरम्मत में बहुत महंगी** साबित हो सकती है।
- **Lloyds List Intelligence**, a **maritime information provider**, estimates that some **600 ships are now stranded** in the region.
  Lloyds List Intelligence, जो एक **maritime information provider** है, का अनुमान है कि लगभग **600 जहाज इस क्षेत्र में फँसे हुए हैं**।
- Some **250 are bulk carriers** carrying loose cargo such as **coal, ores, and grain**.
  इनमें लगभग **250 bulk carriers** हैं जो **coal, ores और grain** जैसे ढीले माल ले जा रहे हैं।
- Others include some **200 oil tankers and 50 gas carriers**.
  अन्य जहाजों में लगभग **200 oil tankers** और **50 gas carriers** शामिल हैं।

Can countries just halt shipping lanes?
क्या देश सीधे shipping lanes बंद कर सकते हैं?

- **International law** generally treats the **seas as commons**.
  International law आम तौर पर **समुद्रों को साझा संसाधन** मानता है।
- Though **territorial waters** and **exclusive economic zones** are recognised.
  हालाँकि **territorial waters** और **exclusive economic zones** को मान्यता प्राप्त है।
- In general, laws and practices tend to be favourable towards **free usage of seas by merchant ships**.
  सामान्यतः कानून और प्रथाएँ **merchant ships द्वारा समुद्रों के मुक्त उपयोग** के पक्ष में होती हैं।
- And by **naval ships for innocent passage**.
  और **naval ships** के लिए **innocent passage** की अनुमति भी होती है।
- In the past, **Egypt** has shut down the **Suez Canal**.
  अतीत में **Egypt** ने **Suez Canal** को बंद किया है।
- **Panama** has not shut down its **canal**.
  लेकिन **Panama** ने अपने **canal** को बंद नहीं किया है।
- No country can order the shutdown of the **Straits of Hormuz and Malacca** as its **sovereign right**.
  कोई भी देश **Straits of Hormuz और Malacca** को अपने **sovereign right** के रूप में बंद करने का आदेश नहीं दे सकता।
- However, lack of **security**, emanating from **threats and attacks**, can make shippers wary.
  हालाँकि **threats और attacks** से उत्पन्न **security की कमी** जहाज मालिकों को सतर्क बना सकती है।

- They may avoid passage due to fears of **loss of life and property**.
  वे **जीवन और संपत्ति के नुकसान के डर** से इस मार्ग से बच सकते हैं।
- As a result, **insurance costs can balloon**.
  इसके परिणामस्वरूप **insurance costs बहुत बढ़ सकते हैं**।
- In the current situation, **insurance premiums have climbed 10-15 times**.
  वर्तमान स्थिति में **insurance premiums 10-15 गुना तक बढ़ गए हैं**।
- A rough estimate suggests that purchasing insurance for **one week of transit** would cost nearly as much as **a normal yearly insurance**.
  अनुमान है कि **एक सप्ताह के transit** के लिए बीमा लेना लगभग उतना ही महंगा है जितना सामान्यतः **एक वर्ष के बीमे** का खर्च होता है।

Are there alternatives to this strait?
क्या इस जलडमरूमध्य के विकल्प हैं?

- **Saudi Arabia** can transport fuels to its **western ports on the Red Sea**, such as **Yanbu**, through **pipelines**.
  Saudi Arabia अपने ईंधन को **Red Sea** के पश्चिमी बंदरगाहों जैसे **Yanbu** तक **pipelines** के माध्यम से भेज सकता है।
- However, ship traffic in the **Red Sea** plummeted when **Houthi attacks** started in **2023-24**.
  हालाँकि **2023-24** में **Houthi attacks** शुरू होने के बाद **Red Sea** में जहाजों का आवागमन बहुत घट गया।
- In **October 2023**, there were around **2,300 ship transits** across **Bab-el-Mandab**.
  अक्टूबर 2023 में **Bab-el-Mandab** से लगभग **2,300 जहाजों का आवागमन** हुआ था।
- By **January**, the number had dwindled to **less than half**.
  लेकिन **जनवरी** तक यह संख्या **आधे से भी कम** रह गई।
- Any attempt to leverage **Red Sea ports** may invite attacks from the **Houthis**, who are **aligned to Iran**.
  Red Sea ports का उपयोग बढ़ाने का प्रयास **Houthis** के हमलों को आमंत्रित कर सकता है, जो **Iran से जुड़े हुए हैं**।

How does closing the strait help Iran?
इस जलडमरूमध्य के बंद होने से Iran को कैसे लाभ मिलता है?

- **Iran** has spoken in **multiple voices** over allowing ship passage.
  Iran ने जहाजों के आवागमन की अनुमति को लेकर **विभिन्न मत व्यक्त किए हैं**।
- Currently, about **one in five ships** passing through the **strait** are **Iranian**.
  वर्तमान में **strait से गुजरने वाले हर पाँच जहाजों में से एक Iranian** होता है।
- While those speaking for the **Iranian government** say they do not want shipping to halt.
  Iranian government के प्रतिनिधियों ने कहा है कि वे shipping को रोकना नहीं चाहते।
- Agencies such as the **Iranian Revolutionary Guards** have **threatened attacks**.
  लेकिन **Iranian Revolutionary Guards** जैसी एजेंसियों ने **हमलों की धमकी** दी है।
- Iran hopes that closing the strait will force **world opinion** to pressure **Israel and the U.S.** to end the **conflict**.
  Iran को उम्मीद है कि जलडमरूमध्य बंद होने से **विश्व जनमत Israel और U.S.** पर **संघर्ष समाप्त करने का दबाव** डालेगा।
- **How does the situation affect India's economy and oil prices?**
  यह स्थिति **India** की अर्थव्यवस्था और तेल कीमतों को कैसे प्रभावित करती है?
- Some **40% of India's oil** flows through the **strait**.
  भारत के लगभग 40% तेल की आपूर्ति इसी **strait** से होकर आती है।
- **Qatar** supplies **half of India's LNG imports**.
  Qatar भारत के **LNG imports का लगभग आधा** प्रदान करता है।
- This in turn provides **half of the country's natural gas needs**.
  यह देश की **natural gas जरूरतों का लगभग आधा** पूरा करता है।
- **Qatar shut down its LNG production** when the **conflict began**.
  संघर्ष शुरू होने पर **Qatar** ने **LNG production** बंद कर दिया।

- About **30% of India's natural gas** is directed towards **fertilizer production**.
  भारत की लगभग **30% natural gas** का उपयोग **fertilizer production** में होता है।
- The government is actively pursuing other **LNG sources such as the U.S., Russia, and Australia**.
  सरकार अन्य **LNG sources जैसे U.S., Russia और Australia** की ओर सक्रिय रूप से प्रयास कर रही है।
- Some **60% of India's LPG** comes from **imports largely upstream of the strait**.
  भारत के लगभग **60% LPG** का आयात **strait के ऊपर के क्षेत्रों** से होता है।
- A shortage of **LPG**, the dominant **cooking gas in India**, is **far more worrying**.
  LPG, जो भारत में प्रमुख **cooking gas** है, की कमी **काफी चिंताजनक** है।
- The **U.S. has given the green light** for India's purchase of **Russian crude for 30 days**.
  U.S. ने भारत को **30 दिनों के लिए Russian crude खरीदने की अनुमति** दी है।
- Overall, **Brent crude price** has been hovering **below $90**.
  कुल मिलाकर **Brent crude price** लगभग **$90 से नीचे** बना हुआ है।
- An increase in **global crude prices** may force the **Indian government** to increase **petrol and fuel prices**.
  global crude prices में वृद्धि से **Indian government** को **petrol और अन्य ईंधनों की कीमतें बढ़ानी पड़ सकती हैं**।
- This may lead to a **spiralling effect on the economy**.
  इससे **अर्थव्यवस्था पर व्यापक नकारात्मक प्रभाव** पड़ सकता है।

The philosopher who seeks vengeance

Ali Larijani

The Secretary of Iran's Security Council, who has emerged as a voice of the country's defiance in the time of war, says Tehran will not talk to the U.S. and will deliver 'an unforgettable lesson to international oppressors'

GS II: IR

Stanly Johny

On March 1, a day after the U.S. and Israel started bombing Iran, Donald Trump said in an interview that the Iranian leaders wanted to resume negotiations. "I have agreed to talk," he said. A response came swiftly from Ali Larijani, Secretary of Iran's Supreme National Security Council. "We will not negotiate with the Americans," he wrote in a social media post.

"You have set ablaze the hearts of the Iranian people," he said in an interview, referring to the assassination of Ayatollah Ali Khamenei, the Supreme Leader. "We will burn the hearts of our enemies."

In the days that followed, the U.S. and Israel pounded Iran. Mr. Trump asked the Iranians to take over state institutions. It did not happen. Iran retaliated by launching missiles at American bases in the Persian Gulf, and Israel. On March 6, both President Masoud Pezeshkian and Foreign Minister Abbas Araghchi said Iran was not immediately seeking a ceasefire. Mr. Trump then demanded "an unconditional surrender".

As the war unfolds with regional implications, Mr. Larijani has emerged as a defiant face and voice of the Islamic Republic. The Security Council he leads is one of the most important institutions of the state, especially during wartime. Founded in 1989 under the revised Constitution, the Council's main responsibility is to define defence and national security policies. The secretary of the Security Council is roughly the equivalent of the National Security Adviser of India.

Mr. Larijani came of age during the tremulous years of pre-revolutionary Iran. His father, Grand Ayatollah Hashem Amoli, a renowned Shia cleric, fled to Iraq in the 1930s to avoid persecution under the Shah. As Ali Larijani was born in Najaf, the central Iraqi city that hosts the tomb of Imam Ali, in 1958. The Larijanis moved back to Iran in 1960. Ali Larijani studied in a religious seminary in Qom and got a Bachelor of Science degree in computer science from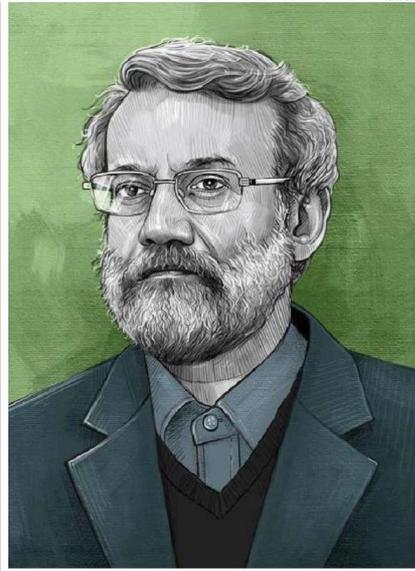 Aryamehr University of Technology, Tehran. For his Master's and Ph.D., he switched to Western philosophy. According to a profile of Mr. Larijani on the University of Tehran website, he has published three books on Immanuel Kant (all in Farsi) – *The Mathematical Method in Kant's Philosophy*, *Metaphysics and the Exact Sciences in Kant's Philosophy*, and *Intuition and Synthetic A Priori Judgments in Kant's Philosophy*. He has written a book on Descartes's *Discourse on the Method*. He has additionally written about Saul Kripke – the American philosopher of language and modal logic – and David Lewis, the analytical metaphysician.

A member of the elite

But in Iran, the philosopher found refuge in revolution. Like many of his peers who were inspired by the 1979 revolution, Mr. Larijani joined the Islamic Revolutionary Guard Corps (IRGC), the paramilitary organisation founded by Ayatollah Khomeini soon after the Shah was toppled.

For Mr. Larijani, the years with the IRGC became the foundation of a long career in Iran's security and political establishment. During the administration of President Hashemi Rafsanjani (1989-97), he was appointed Minister of Culture and Islamic Guidance. In 1994, he became the Director-General of the Islamic Republic of Iran Broadcasting (IRIB), an arm of the Office of the Supreme Leader. This role brought him closer to the Leader (*Rahbar*), Ayatollah Khamenei. That was the beginning of a long relationship between the Imam and the philosopher. By the turn of the century, Mr. Larijani had become one of the key figures of the elite of the Republic.

Mahmoud Ahmadinejad, the conservative politician who became President in 2005, appointed Mr. Larijani head of the Security Council and chief nuclear negotiator. As a nuclear negotiator, he sent mixed signals. He once likened European incentives to abandon Iran's nuclear programme to "exchanging a pearl for a candy bar". But the same Mr. Larijani quit the Security Council in 2007 amid disagreements with Mr. Ahmadinejad, whose hardline policies had deepened Iran's global isolation. It was a rare public rupture in the conservative camp. After falling out with Mr. Ahmadinejad, Mr. Larijani moved to parliamentary politics. In 2008, he got elected to the Majles and became Speaker, a position he would hold till 2020. When Hassan Rouhani pursued nuclear talks with the U.S. and signed a deal in 2015, Mr. Larijani, as Speaker, provided the much-needed legislative support for the President. When the Joint Comprehensive Plan of Action (JCPOA), the nuclear deal, was put to debate in the Majles, Mr. Larijani gave just 20 minutes to discuss it for Parliament's 290 members, before pushing it through.

In domestic politics, he has been associated with the principalist (hardline) camp. He was supported by the Islamic Society of Engineers, a principalist political organisation. In 2005, when he stood for the presidential elections for the first time, his bid was supported by the Council for Coordination of the Forces of the Revolution, an umbrella group of conservative organisations. He finished sixth, winning only 5.94% of the votes, but became the Security Council Secretary. In 2021 and 2024, he registered for the presidential election, but his nomination was rejected by the powerful Guardian Council. But Masoud Pezeshkian, who won the 2024 presidential election, brought Mr. Larijani back as the Security Council Secretary.

Security czar

For years, Iran had built a sprawling network of allies in West Asia both as a deterrent and as an offensive strategy. The champion of this forward defence was Qassem Soleimani, the Quds Force General who was assassinated by the U.S. in January 2020. That was a big blow to Iran. When Gen. Soleimani was killed, Mr. Larijani warned that the killing would alter the political balance of the region. "The response to Haj Qassem Soleimani's blood should be measures to make American forces flee from the region," he said, according to *Tehran Times*.

In April 2025, amid rising tensions between Israel and Iran, Mr. Larijani said if attacked, Iran would have "no choice" but to get nuclear weapons. "We are not moving towards nuclear weapons, but if you do something wrong in the Iranian nuclear issue, you will force Iran to move towards that because it has to defend itself," he said. Two months later, Israel started bombing Iran, triggering the 12-day war. The U.S. joined Israel on June 22 in bombing Iran's nuclear facilities.

In June, Mr. Trump declared victory, but the crisis was far from over. Mr. Larijani endorsed the nuclear talks that opened in January 2026 following protests in Iran. The U.S. and Iran held three rounds of talks. On February 27, Oman's Foreign Minister who was mediating the talks, said a deal was within reach. Within hours the U.S. and Israel launched the war.

Amid war and a political vacuum, a furious Iran responded with its drones and ballistic missiles. "The brave soldiers and the great nation of Iran will deliver an unforgettable lesson to the hellish international oppressors," Mr. Larijani said. Eight days into the war, Iran has been hit hard by the U.S. and Israel. Tehran has retaliated by escalating its attacks across the region. The IRGC, the revolutionary force where Mr. Larijani cut his teeth, has warned of a "prolonged war".

R. RAJESH

THE GIST

During the administration of President Hashemi Rafsanjani (1989-97), Ali Larijani was appointed Minister of Culture and Islamic Guidance

He contested the 2005 presidential election and finished sixth. But post-poll he was appointed secretary of the Security Council

He registered for presidential elections in 2021 and 2024, was rejected by the Guardian Council. After the 2024 election, he was brought back to the Security Council

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08Mar. The philosopher who seeks vengeance
प्रतिशोध की तलाश करने वाला दार्शनिक

- **Ali Larijani**
  अली लारिजानी
- The **Secretary of Iran's Security Council**, who has emerged as a voice of the country's **defiance** in the time of **war**, says **Tehran** will not talk to the **U.S.** and will deliver **'an unforgettable lesson to international oppressors'**
  ईरान की सुरक्षा परिषद के सचिव, जो **युद्ध** के समय देश की **अवज्ञा** की आवाज़ के रूप में उभरे हैं, कहते हैं कि **तेहरान अमेरिका (U.S.)** से बात नहीं करेगा और **'अंतरराष्ट्रीय उत्पीड़कों को एक अविस्मरणीय सबक'** देगा।

Ali Larijani and the Iran–U.S.–Israel Conflict
अली लारिजानी और ईरान–अमेरिका–इज़राइल संघर्ष

- On **March 1**, a day after the **U.S. and Israel started bombing Iran**, **Donald Trump** said in an interview that the **Iranian leaders wanted to resume negotiations**.
  1 मार्च को, जब **अमेरिका और इज़राइल ने ईरान पर बमबारी शुरू की** उसके एक दिन बाद, **डोनाल्ड ट्रम्प** ने एक साक्षात्कार में कहा कि **ईरानी नेता वार्ता फिर से शुरू करना चाहते हैं**।
- "I have agreed to talk," he said.
  उन्होंने कहा, **"मैं बातचीत के लिए सहमत हो गया हूँ।"**
- A response came swiftly from **Ali Larijani**, Secretary of **Iran's Supreme National Security Council**.
  इस पर तुरंत प्रतिक्रिया **ईरान की सर्वोच्च राष्ट्रीय सुरक्षा परिषद के सचिव अली लारिजानी** की ओर से आई।

- "We will not negotiate with the **Americans**," he wrote in a **social media post**.
  उन्होंने **सोशल मीडिया पोस्ट** में लिखा, **"हम अमेरिकियों के साथ बातचीत नहीं करेंगे।"**

- "You have set ablaze the hearts of the **Iranian people**," he said in an interview, referring to the **assassination of Ayatollah Ali Khamenei**, the **Supreme Leader**.
  उन्होंने एक साक्षात्कार में कहा, **"आपने ईरानी लोगों के दिलों में आग लगा दी है,"** यह कहते हुए उन्होंने **सुप्रीम लीडर अयातुल्लाह अली खामेनेई की हत्या** का उल्लेख किया।

- "We will burn the hearts of our **enemies**."
  उन्होंने कहा, **"हम अपने दुश्मनों के दिल जला देंगे।"**

- In the days that followed, the **U.S. and Israel pounded Iran**.
  इसके बाद के दिनों में **अमेरिका और इज़राइल ने ईरान पर लगातार हमले किए।**

- **Mr. Trump asked the Iranians to take over state institutions**.
  ट्रम्प ने ईरानियों से राज्य संस्थानों को अपने नियंत्रण में लेने का आह्वान किया।

- It did not happen.
  लेकिन **ऐसा नहीं हुआ।**

- **Iran retaliated** by launching **missiles at American bases in the Persian Gulf, and Israel**.
  ईरान ने जवाबी कार्रवाई करते हुए पर्शियन गल्फ में अमेरिकी ठिकानों और इज़राइल पर मिसाइलें दागीं।

- On **March 6**, both **President Masoud Pezeshkian** and **Foreign Minister Abbas Araghchi** said Iran was **not immediately seeking a ceasefire**.
  6 मार्च को **राष्ट्रपति मसूद पेजेशकियन** और **विदेश मंत्री अब्बास अराघची** ने कहा कि ईरान **तुरंत युद्धविराम नहीं चाहता।**

- **Mr. Trump then demanded "an unconditional surrender."**
  इसके बाद **ट्रम्प** ने **"बिना शर्त आत्मसमर्पण"** की मांग की।

- As the **war unfolds with regional implications**, **Mr. Larijani** has emerged as a **defiant face and voice of the Islamic Republic**.
  जैसे-जैसे **क्षेत्रीय प्रभावों के साथ युद्ध जारी है**, **लारिजानी इस्लामी गणराज्य की एक दृढ़ आवाज़ और चेहरा बनकर उभरे हैं।**

- The **Security Council** he leads is one of the **most important institutions of the state**, especially during **wartime**.
  जिस **सुरक्षा परिषद** का वे नेतृत्व करते हैं, वह **राज्य की सबसे महत्वपूर्ण संस्थाओं में से एक है**, विशेषकर **युद्ध के समय।**

- Founded in **1989 under the revised Constitution**, the Council's main responsibility is to **define defence and national security policies**.
  संशोधित संविधान के तहत 1989 में स्थापित, इस परिषद की मुख्य जिम्मेदारी **रक्षा और राष्ट्रीय सुरक्षा नीतियों को निर्धारित करना** है।

- The **secretary of the Security Council** is roughly the equivalent of the **National Security Adviser of India**.
  सुरक्षा परिषद का सचिव लगभग **भारत के राष्ट्रीय सुरक्षा सलाहकार** के बराबर होता है।

- **Mr. Larijani came of age during the tremulous years of pre-revolutionary Iran**.
  लारिजानी का युवाकाल ईरान की क्रांति से पहले के अशांत वर्षों में बीता।

- His father, **Grand Ayatollah Hashem Amoli**, a renowned **Shia cleric**, fled to **Iraq in the 1930s** to avoid persecution under the **Shah**.
  उनके पिता **ग्रैंड अयातुल्लाह हाशेम अमोली**, एक प्रसिद्ध **शिया धर्मगुरु**, 1930 के दशक में शाह के शासन के उत्पीड़न से बचने के लिए इराक चले गए थे।

- **Ali Larijani was born in Najaf in 1958**, the central Iraqi city that hosts the **tomb of Imam Ali**.
  अली लारिजानी का जन्म 1958 में नजफ में हुआ, जो इराक का एक प्रमुख शहर है जहाँ **इमाम अली की समाधि** स्थित है।

- The **Larijanis moved back to Iran in 1960**.
  लारिजानी परिवार 1960 में वापस ईरान लौट आया।

- **Ali Larijani studied in a religious seminary in Qom**.
  अली लारिजानी ने क़ोम में एक धार्मिक सेमिनरी में अध्ययन किया।

- He got a **Bachelor of Science degree in computer science from Aryamehr University of Technology, Tehran**.
  उन्होंने **तेहरान के आर्यामीहर यूनिवर्सिटी ऑफ टेक्नोलॉजी से कंप्यूटर साइंस में बैचलर ऑफ साइंस की डिग्री** प्राप्त की।

- For his **Master's and Ph.D.**, he switched to **Western philosophy**.
अपने **मास्टर्स और पीएचडी** के लिए उन्होंने **पाश्चात्य दर्शन (Western philosophy)** का चयन किया।
- According to a **profile of Mr. Larijani on the University of Tehran website**, he has published **three books on Immanuel Kant (all in Farsi)**.
तेहरान विश्वविद्यालय की वेबसाइट पर लारिजानी की प्रोफाइल के अनुसार, उन्होंने **इमैनुएल कांट पर तीन पुस्तकें (सभी फ़ारसी में)** प्रकाशित की हैं।
- These books include **The Mathematical Method in Kant's Philosophy**, **Metaphysics and the Exact Sciences in Kant's Philosophy**, and **Intuition and Synthetic A Priori Judgments in Kant's Philosophy**.
इन पुस्तकों में **The Mathematical Method in Kant's Philosophy**, **Metaphysics and the Exact Sciences in Kant's Philosophy**, तथा **Intuition and Synthetic A Priori Judgments in Kant's Philosophy** शामिल हैं।
- He has written a book on **Descartes's Discourse on the Method**.
उन्होंने **Descartes की Discourse on the Method** पर भी एक पुस्तक लिखी है।
- He has additionally written about **Saul Kripke**, the **American philosopher of language and modal logic**.
उन्होंने **सॉल क्रिप्के**, जो **भाषा और मोडल लॉजिक के अमेरिकी दार्शनिक** हैं, पर भी लिखा है।
- He has also written about **David Lewis**, the **analytical metaphysician**.
उन्होंने **डेविड लुईस**, जो **विश्लेषणात्मक तत्त्वमीमांसा (analytical metaphysics)** के दार्शनिक हैं, पर भी लेखन किया है।

A member of the elite
एलीट वर्ग का सदस्य

- But in **Iran**, the **philosopher found refuge in revolution**.
लेकिन **ईरान** में इस **दार्शनिक को क्रांति में आश्रय मिला**।
- Like many of his peers who were inspired by the **1979 revolution**, **Mr. Larijani joined the Islamic Revolutionary Guard Corps (IRGC)**.
अपने कई समकालीनों की तरह जो **1979 की क्रांति** से प्रेरित थे, **लारिजानी इस्लामिक रिवोल्यूशनरी गार्ड कॉर्प्स (IRGC)** में शामिल हो गए।
- The IRGC is a **paramilitary organisation founded by Ayatollah Khomeini** soon after the **Shah was toppled**.
IRGC एक **अर्धसैनिक संगठन** है जिसकी स्थापना **अयातुल्लाह खुमैनी** ने **शाह के सत्ता से हटने के तुरंत बाद** की थी।
- For **Mr. Larijani**, the years with the **IRGC** became the **foundation of a long career in Iran's security and political establishment**.
लारिजानी के लिए **IRGC में बिताए गए वर्ष** ईरान की **सुरक्षा और राजनीतिक व्यवस्था में लंबे करियर की नींव** बन गए।
- During the administration of **President Hashemi Rafsanjani (1989-97)**, he was appointed **Minister of Culture and Islamic Guidance**.
राष्ट्रपति हाशेमी रफसंजानी (1989–97) के शासनकाल में उन्हें **संस्कृति और इस्लामी मार्गदर्शन मंत्री** नियुक्त किया गया।
- In **1994**, he became the **Director-General of the Islamic Republic of Iran Broadcasting (IRIB)**.
1994 में वे **इस्लामिक रिपब्लिक ऑफ ईरान ब्रॉडकास्टिंग (IRIB)** के **महानिदेशक** बने।
- IRIB is an arm of the **Office of the Supreme Leader**.
IRIB सुप्रीम लीडर के **कार्यालय** का एक अंग है।
- This role brought him closer to the **Leader (Rahbar), Ayatollah Khamenei**.
इस भूमिका ने उन्हें **सुप्रीम लीडर (रहबर) अयातुल्लाह खामेनेई** के और करीब ला दिया।
- That was the beginning of a **long relationship between the Imam and the philosopher**.
यहीं से **इमाम और दार्शनिक के बीच लंबे संबंध** की शुरुआत हुई।
- By the **turn of the century**, **Mr. Larijani had become one of the key figures of the elite of the Republic**.
सदी के मोड़ तक, लारिजानी गणराज्य के एलीट वर्ग के प्रमुख नेताओं में से एक बन चुके थे।

- **Mahmoud Ahmadinejad**, the **conservative politician who became President in 2005**, appointed **Mr. Larijani head of the Security Council and chief nuclear negotiator**.
  महमूद अहमदीनेजाद, जो **2005 में राष्ट्रपति बने**, ने लारिजानी को सुरक्षा परिषद का प्रमुख और मुख्य परमाणु वार्ताकार नियुक्त किया।

- As a **nuclear negotiator**, he sent **mixed signals**.
  परमाणु वार्ताकार के रूप में उन्होंने **मिश्रित संकेत** दिए।

- He once likened **European incentives to abandon Iran's nuclear programme** to **"exchanging a pearl for a candy bar."**
  उन्होंने एक बार **ईरान के परमाणु कार्यक्रम को छोड़ने के लिए यूरोपीय प्रोत्साहनों** की तुलना **"मोती के बदले कैंडी बार देने"** से की।

- But the same **Mr. Larijani quit the Security Council in 2007** amid **disagreements with Mr. Ahmadinejad**.
  लेकिन वही **लारिजानी 2007 में अहमदीनेजाद के साथ मतभेदों के कारण सुरक्षा परिषद से इस्तीफा दे बैठे**।

- **Mr. Ahmadinejad's hardline policies** had **deepened Iran's global isolation**.
  अहमदीनेजाद की कठोर नीतियों ने ईरान के वैश्विक अलगाव को और बढ़ा दिया था।

- It was a **rare public rupture in the conservative camp**.
  यह रूढ़िवादी खेमे में सार्वजनिक रूप से बहुत कम देखने को मिलने वाला विभाजन था।

- After falling out with **Mr. Ahmadinejad**, **Mr. Larijani moved to parliamentary politics**.
  अहमदीनेजाद से मतभेद के बाद लारिजानी संसदीय राजनीति में आ गए।

- In **2008**, he got elected to the **Majles** and became **Speaker**.
  2008 में वे मजलिस (ईरानी संसद) के लिए चुने गए और **स्पीकर** बने।

- He held the **Speaker position till 2020**.
  उन्होंने **2020 तक स्पीकर का पद संभाला**।

- When **Hassan Rouhani** pursued **nuclear talks with the U.S.** and signed a **deal in 2015**, **Mr. Larijani provided legislative support as Speaker**.
  जब हसन रूहानी ने अमेरिका के साथ परमाणु वार्ता की और **2015 में समझौता किया**, तब स्पीकर के रूप में लारिजानी ने विधायी समर्थन प्रदान किया।

- When the **Joint Comprehensive Plan of Action (JCPOA)** was put to debate in the **Majles**, **Mr. Larijani gave just 20 minutes to discuss it**.
  जब **Joint Comprehensive Plan of Action (JCPOA)** पर मजलिस में चर्चा हुई, तब **लारिजानी ने चर्चा के लिए केवल 20 मिनट दिए**।

- This was for **Parliament's 290 members**, before **pushing the deal through**.
  यह **संसद के 290 सदस्यों** के लिए था, जिसके बाद उन्होंने **समझौते को पारित करवा दिया**।

- In **domestic politics**, he has been associated with the **principalist (hardline) camp**.
  घरेलू राजनीति में वे प्रिंसिपलिस्ट (कट्टरपंथी) गुट से जुड़े रहे हैं।

- He was supported by the **Islamic Society of Engineers**, a **principalist political organisation**.
  उन्हें **Islamic Society of Engineers**, जो एक **प्रिंसिपलिस्ट राजनीतिक संगठन** है, का समर्थन मिला।

- In **2005**, when he stood for the **presidential elections for the first time**, his bid was supported by the **Council for Coordination of the Forces of the Revolution**.
  2005 में जब उन्होंने पहली बार **राष्ट्रपति चुनाव** लड़ा, तो उन्हें **Council for Coordination of the Forces of the Revolution** का समर्थन मिला।

- This organisation is an **umbrella group of conservative organisations**.
  यह संगठन रूढ़िवादी संगठनों का एक छत्र समूह है।

- He finished **sixth**, winning only **5.94% of the votes**, but became the **Security Council Secretary**.
  वे छठे स्थान पर रहे, उन्हें केवल **5.94% वोट** मिले, लेकिन बाद में वे **सुरक्षा परिषद के सचिव** बने।

- In **2021 and 2024**, he registered for the **presidential election**.
  2021 और 2024 में उन्होंने **राष्ट्रपति चुनाव** के लिए पंजीकरण कराया।

- But his nomination was rejected by the **powerful Guardian Council**.
  लेकिन उनकी उम्मीदवारी **शक्तिशाली गार्डियन काउंसिल** द्वारा खारिज कर दी गई।

- But **Masoud Pezeshkian**, who won the **2024 presidential election**, brought **Mr. Larijani back as the Security Council Secretary**.

लेकिन **2024 के राष्ट्रपति चुनाव जीतने वाले मसूद पेजेशकियन** ने लारिजानी को फिर से सुरक्षा परिषद का सचिव नियुक्त किया।

Security czar
सुरक्षा प्रमुख

- For years, **Iran** had built a **sprawling network of allies in West Asia** both as a **deterrent** and as an **offensive strategy**.
कई वर्षों तक **ईरान** ने **पश्चिम एशिया में सहयोगियों का एक व्यापक नेटवर्क** बनाया, जो **निरोध (deterrent)** और **आक्रामक रणनीति** दोनों के रूप में कार्य करता था।

- The champion of this **forward defence** was **Qassem Soleimani**, the **Quds Force General** who was **assassinated by the U.S. in January 2020**.
इस **फॉरवर्ड डिफेंस रणनीति** के प्रमुख **कासिम सुलेमानी**, **कुद्स फोर्स के जनरल**, थे जिन्हें **जनवरी 2020 में अमेरिका ने मार दिया था**।

- That was a **big blow to Iran**.
यह **ईरान के लिए एक बड़ा झटका** था।

- When **Gen. Soleimani was killed**, **Mr. Larijani warned** that the killing would **alter the political balance of the region**.
जब **जनरल सुलेमानी की हत्या हुई**, तब लारिजानी ने चेतावनी दी कि इससे **क्षेत्र का राजनीतिक संतुलन बदल जाएगा**।

- "The response to **Haj Qassem Soleimani's blood** should be measures to make **American forces flee from the region**," he said, according to **Tehran Times**.
Tehran Times के अनुसार उन्होंने कहा, **"हाज कासिम सुलेमानी के खून का जवाब यह होना चाहिए कि अमेरिकी बलों को इस क्षेत्र से बाहर किया जाए।"**

- In **April 2025**, amid **rising tensions between Israel and Iran**, **Mr. Larijani said** if attacked, Iran would have **"no choice" but to get nuclear weapons**.
अप्रैल 2025 में इज़राइल और ईरान के बीच बढ़ते तनाव के बीच **लारिजानी ने कहा** कि यदि हमला हुआ तो ईरान के पास **परमाणु हथियार हासिल करने के अलावा कोई विकल्प नहीं होगा**।

- "We are **not moving towards nuclear weapons**, but if you do something wrong in the **Iranian nuclear issue**, you will **force Iran to move towards that** because it has to **defend itself**," he said.
उन्होंने कहा, **"हम परमाणु हथियारों की ओर नहीं बढ़ रहे हैं, लेकिन यदि ईरानी परमाणु मुद्दे पर गलत कदम उठाया गया तो आप ईरान को उस दिशा में जाने के लिए मजबूर करेंगे क्योंकि उसे अपनी रक्षा करनी होगी।"**

- Two months later, **Israel started bombing Iran**, triggering the **12-day war**.
दो महीने बाद **इज़राइल ने ईरान पर बमबारी शुरू की**, जिससे **12 दिन का युद्ध** शुरू हुआ।

- The **U.S. joined Israel on June 22** in bombing **Iran's nuclear facilities**.
22 जून को अमेरिका ने भी इज़राइल के साथ मिलकर ईरान के परमाणु ठिकानों पर हमला किया।

- In **June**, **Mr. Trump declared victory**, but the **crisis was far from over**.
जून में ट्रम्प ने विजय की घोषणा की, लेकिन **संकट अभी समाप्त नहीं हुआ था**।

- **Mr. Larijani endorsed the nuclear talks** that opened in **January 2026** following **protests in Iran**.
लारिजानी ने जनवरी 2026 में शुरू हुई परमाणु वार्ता का समर्थन किया, जो ईरान में विरोध प्रदर्शनों के बाद शुरू हुई थी।

- The **U.S. and Iran held three rounds of talks**.
अमेरिका और ईरान के बीच तीन दौर की वार्ता हुई।

- On **February 27**, **Oman's Foreign Minister**, who was **mediating the talks**, said a **deal was within reach**.
27 फरवरी को **ओमान के विदेश मंत्री**, जो **मध्यस्थता कर रहे थे**, ने कहा कि **समझौता करीब है**।

- Within hours the **U.S. and Israel launched the war**.
कुछ ही घंटों के भीतर **अमेरिका और इज़राइल ने युद्ध शुरू कर दिया**।

- Amid **war and a political vacuum**, a **furious Iran responded with its drones and ballistic missiles**.
युद्ध और राजनीतिक शून्य के बीच ईरान ने अपने ड्रोन और बैलिस्टिक मिसाइलों से जवाब दिया।

- "The **brave soldiers and the great nation of Iran** will deliver an **unforgettable lesson to the hellish international oppressors**," **Mr. Larijani said**.
  लारिजानी ने कहा, "ईरान के बहादुर सैनिक और महान राष्ट्र नरकीय अंतरराष्ट्रीय उत्पीड़कों को अविस्मरणीय सबक सिखाएंगे।"

- **Eight days into the war**, Iran has been hit hard by the U.S. and Israel.
  युद्ध के आठ दिन बाद, ईरान को अमेरिका और इज़राइल के हमलों से भारी नुकसान हुआ है।

- **Tehran has retaliated** by **escalating its attacks across the region**.
  तेहरान ने पूरे क्षेत्र में हमलों को बढ़ाकर जवाब दिया है।

- The **IRGC**, the **revolutionary force where Mr. Larijani cut his teeth**, has warned of a **"prolonged war"**.
  IRGC, वह क्रांतिकारी बल जहाँ लारिजानी ने अपने राजनीतिक जीवन की शुरुआत की, ने **"लंबे युद्ध"** की चेतावनी दी है।

The bell strikes

Rastriya Swatantra Party

The party that campaigned on anti-corruption, anti-establishment platforms has emerged as the winner of Nepal's first post-protest election

GS II: IR

Sanjeev Satgainya

Rabi Lamichhane was a television personality until a few years ago, known for his confrontational talk show *Sidha Kura Janata Sang* (Direct talk with the people), in which he frequently criticised politicians and highlighted public grievances.

Buoyed by his popularity, he launched a political experiment. In June 2022, he founded the Rastriya Swatantra Party (RSP). He strategically included "Swatantra", meaning "independent", in the name to signal that the party was distinct from the established parties. The elections were just six months away.

When Nepal went to the polls in November that year, the RSP surprised everyone – it finished fourth. A key challenge for the RSP, however, was that despite being the fourth-largest party and enjoying public support, few saw it as a formidable force capable of challenging established parties. First, it lacked a clear ideology. Second, the party was synonymous with "Rabi" or "Ghanti" – the bell, the party's election symbol.

Many viewed its rise with scepticism, saying it was a fleeting success driven by public frustration with Nepal's old guard –

Nepali Congress, CPN-UML, and CPN (Maoist Centre). Mr. Lamichhane's controversial moves as Minister – the RSP had joined the government twice between 2022 and 2024 – and his brushes with the law dented the party's image. He has been in and out of jail multiple times over charges of embezzling cooperative funds.

As it evolved, the party worked on its ideological clarity and now calls itself a pluralistic democratic party that espouses a liberal economy with social justice – centrist liberal in short. The party's views on the current federal structure remain unclear, with multiple leaders making different public statements about the form of governance. In July 2024, when the two biggest parties – the Nepali Congress and the CPN-UML – joined hands to form a government, the RSP was pushed into a meek opposition.

Last September's Gen Z protests, which the RSP

supported, did further damage. Some influential leaders deserted the party. Mr. Lamichhane faced allegations of escaping jail during the chaos on September 9, the second day of the protests. He, however, turned himself in. The protests, which claimed 77 lives – including 19 in police firing – toppled the K.P. Sharma Oli government, triggering election.

Anti-corruption mood
The RSP, which was almost on the verge of implosion, suddenly became the beneficiary of the protests against corruption and misrule – what the party claims as its own agenda – with public anger directed mostly against the Nepali Congress and the UML. In late December, then Kathmandu Mayor Balendra Shah, known as Balen, joined the RSP as the party's prime ministerial candidate.

In the run-up to the March 5 election, the RSP saw growing public sup-

port – many calling it a 'Balen effect'. The party, once synonymous with 'Rabi', became synonymous with either 'Balen' or 'Ghanti', resonating with a larger electorate, beyond party lines.

The four-year-old party, once criticised for lacking an ideology, has dealt a major blow to the established parties in the March 5 election. The RSP is set to secure a majority of 138 seats, with trends suggesting it could even reach a two-thirds majority of 184 in the 275-member House. As of now, the party has won 57 seats under the first-past-the-post system and is leading in 64 out of 165 constituencies. It is ahead under the proportional representation system, in which 110 members are elected, securing a 53% vote share.

Balen is set to defeat Mr. Oli by a huge margin. Gagan Thapa of the Nepali Congress is set to suffer a loss in Sarlahi-4, a constituency in the Madhesh plains, at the hands of an old Congress member now running on RSP ticket.

Chandan Goopta, a data analyst following the polls in Madhesh, says this time the election was about Balen versus the rest. "It's not Gagan vs Amaresh Singh [the RSP candidate], it's Gagan vs Balen," he said. "It's the same for all constituencies [in Madhesh]."

08Mar.The bell strikes
घंटी बजती है

- **Rastriya Swatantra Party**
  राष्ट्रीय स्वतन्त्र पार्टी
- The **party that campaigned on anti-corruption, anti-establishment platforms** has emerged as the **winner of Nepal's first post-protest election**
  वह पार्टी जिसने भ्रष्टाचार-विरोधी और व्यवस्था-विरोधी मंचों पर चुनाव प्रचार किया, वह नेपाल के पहले विरोध-प्रदर्शन के बाद हुए चुनाव में विजेता बनकर उभरी है

Rabi Lamichhane and the Rise of the Rastriya Swatantra Party (RSP)
रवि लामिछाने और राष्ट्रीय स्वतन्त्र पार्टी (RSP) का उदय

- **Rabi Lamichhane** was a **television personality** until a few years ago, known for his **confrontational talk show Sidha Kura Janata Sang (Direct talk with the people)**.
  रवि लामिछाने कुछ वर्ष पहले तक एक **टेलीविजन व्यक्तित्व** थे, जो अपने **टकरावपूर्ण टॉक शो Sidha Kura Janata Sang (जनता संग सीधा कुरा)** के लिए जाने जाते थे।
- In the show, he frequently **criticised politicians and highlighted public grievances**.
  इस कार्यक्रम में वे अक्सर **राजनेताओं की आलोचना करते और जनता की समस्याओं को उजागर करते थे।**
- Buoyed by his **popularity**, he launched a **political experiment**.
  अपनी **लोकप्रियता** से प्रेरित होकर उन्होंने एक **राजनीतिक प्रयोग** शुरू किया।
- In **June 2022**, he founded the **Rastriya Swatantra Party (RSP)**.
  जून 2022 में उन्होंने **राष्ट्रीय स्वतन्त्र पार्टी (RSP)** की स्थापना की।
- He strategically included **"Swatantra" (independent)** in the party's name to signal that the party was **distinct from the established parties**.
  उन्होंने पार्टी के नाम में **"स्वतन्त्र" (independent)** शब्द को रणनीतिक रूप से शामिल किया ताकि यह दिखाया जा सके कि पार्टी **स्थापित दलों से अलग** है।
- The **elections were just six months away**.
  चुनाव केवल छह महीने दूर थे।
- When **Nepal went to the polls in November 2022**, the **RSP surprised everyone — it finished fourth**.
  जब **नवंबर 2022** में **नेपाल में चुनाव हुए**, तो **RSP** ने सभी को चौंका दिया और चौथे स्थान पर रही।
- A key challenge for the **RSP** was that despite being the **fourth-largest party and enjoying public support**, few saw it as a **formidable force capable of challenging established parties**.
  RSP के सामने मुख्य चुनौती यह थी कि **चौथी सबसे बड़ी पार्टी और जनसमर्थन होने के बावजूद** इसे **स्थापित दलों को चुनौती देने वाली मजबूत शक्ति** नहीं माना गया।
- First, it **lacked a clear ideology**.
  पहला कारण यह था कि **पार्टी की स्पष्ट विचारधारा नहीं थी।**
- Second, the party was synonymous with **"Rabi" or "Ghanti" (the bell)** — the **party's election symbol**.
  दूसरा, पार्टी को अक्सर **"रवि" या "घंटी"** (पार्टी का **चुनाव चिन्ह**) के रूप में ही देखा जाता था।
- Many viewed its rise with **scepticism**, saying it was a **fleeting success driven by public frustration with Nepal's old guard — Nepali Congress, CPN-UML, and CPN (Maoist Centre)**.
  कई लोगों ने इसके उदय को **संदेह की दृष्टि से देखा**, यह कहते हुए कि यह **नेपाल की पुरानी राजनीतिक पार्टियों — नेपाली कांग्रेस, CPN-UML और CPN (माओवादी केन्द्र)** से जनता की नाराजगी का **क्षणिक परिणाम** है।
- **Mr. Lamichhane's controversial moves as Minister** — the **RSP had joined the government twice between 2022 and 2024** — and his **brushes with the law** dented the party's image.
  मंत्री के रूप में लामिछाने के विवादास्पद कदम — RSP 2022 से 2024 के बीच दो बार सरकार में शामिल हुई — और **कानूनी मामलों में उलझाव** ने पार्टी की छवि को नुकसान पहुँचाया।

- He has been **in and out of jail multiple times** over charges of **embezzling cooperative funds**.
  उन्हें **सहकारी निधियों के गबन के आरोपों में कई बार जेल जाना पड़ा और रिहा भी होना पड़ा**।
- As it evolved, the party worked on its **ideological clarity**.
  समय के साथ पार्टी ने अपनी **विचारधारात्मक स्पष्टता** पर काम किया।
- It now calls itself a **pluralistic democratic party** that espouses a **liberal economy with social justice — centrist liberal**.
  अब यह स्वयं को **बहुलतावादी लोकतांत्रिक पार्टी** कहती है, जो **सामाजिक न्याय के साथ उदार अर्थव्यवस्था — यानी मध्यपंथी उदारवाद** का समर्थन करती है।
- The party's views on the **current federal structure** remain **unclear**, with **multiple leaders making different public statements** about governance.
  वर्तमान संघीय संरचना पर पार्टी के विचार **अस्पष्ट** हैं, क्योंकि **कई नेताओं ने शासन व्यवस्था पर अलग-अलग सार्वजनिक बयान दिए हैं**।
- In **July 2024**, when the **Nepali Congress and CPN-UML** joined hands to form a government, the **RSP was pushed into a meek opposition**.
  जुलाई 2024 में जब **नेपाली कांग्रेस और CPN-UML** ने मिलकर सरकार बनाई, तो **RSP कमजोर विपक्ष में** चली गई।
- **Last September's Gen Z protests**, which the **RSP supported**, did further **damage**.
  पिछले सितंबर के **Gen Z विरोध प्रदर्शन**, जिनका **RSP ने समर्थन किया**, ने पार्टी को और **नुकसान** पहुँचाया।
- Some **influential leaders deserted the party**.
  कुछ **प्रभावशाली नेताओं ने पार्टी छोड़ दी**।
- **Mr. Lamichhane faced allegations of escaping jail during the chaos on September 9**, the **second day of the protests**.
  9 सितंबर, जो **प्रदर्शनों का दूसरा दिन था**, उस दिन की अफरातफरी में **लामिछाने पर जेल से भागने के आरोप लगे**।
- He, however, **turned himself in**.
  हालाँकि उन्होंने **स्वयं आत्मसमर्पण कर दिया**।
- The **protests claimed 77 lives**, including **19 in police firing**, and **toppled the K.P. Sharma Oli government**, triggering **elections**.
  इन **प्रदर्शनों में 77 लोगों की जान गई**, जिनमें **19 लोग पुलिस फायरिंग में मारे गए**, और इससे **के.पी. शर्मा ओली की सरकार गिर गई**, जिसके बाद **चुनाव की प्रक्रिया शुरू हुई**।

Anti-corruption mood
भ्रष्टाचार विरोधी माहौल

- The **RSP**, which was almost on the **verge of implosion**, suddenly became the **beneficiary of the protests against corruption and misrule** — what the party claims as its **own agenda**.
  RSP, जो लगभग टूटने के कगार पर थी, अचानक **भ्रष्टाचार और कुशासन के खिलाफ हुए प्रदर्शनों की लाभार्थी बन गई**, जिसे पार्टी **अपने एजेंडे** के रूप में प्रस्तुत करती है।
- The **public anger** was directed mostly against the **Nepali Congress and the UML**.
  जनता का गुस्सा मुख्य रूप से **नेपाली कांग्रेस और UML** के खिलाफ केंद्रित था।
- In **late December**, then **Kathmandu Mayor Balendra Shah**, known as **Balen**, joined the **RSP as the party's prime ministerial candidate**.
  दिसंबर के अंत में, काठमांडू के मेयर बलेंद्र शाह (बालेन) ने **RSP में पार्टी के प्रधानमंत्री पद के उम्मीदवार के रूप में शामिल हुए**।
- In the run-up to the **March 5 election**, the **RSP saw growing public support** — many calling it a **'Balen effect'**.
  5 मार्च के चुनाव से पहले, RSP को बढ़ता जनसमर्थन मिला, जिसे कई लोग **'बालेन प्रभाव'** कह रहे थे।
- The party, once synonymous with **'Rabi'**, became synonymous with either **'Balen'** or **'Ghanti'** (the bell).
  जो पार्टी पहले **'रवि'** के नाम से जानी जाती थी, वह अब **'बालेन'** या **'घंटी'** (पार्टी का चुनाव चिन्ह) के रूप में पहचानी जाने लगी।
- This resonated with a **larger electorate, beyond party lines**.
  यह **पार्टी सीमाओं से परे व्यापक मतदाताओं** के बीच प्रभावी साबित हुआ।

- The **four-year-old party**, once criticised for **lacking an ideology**, has dealt a **major blow to the established parties in the March 5 election**.
  चार साल पुरानी पार्टी, जिसे पहले **विचारधारा की कमी** के लिए आलोचना झेलनी पड़ी थी, ने **5 मार्च के चुनाव में स्थापित दलों को बड़ा झटका दिया**।

- The **RSP is set to secure a majority of 138 seats**.
  RSP के 138 सीटों का बहुमत हासिल करने की संभावना है।

- Trends suggest it could even reach a **two-thirds majority of 184 in the 275-member House**.
  रुझान बताते हैं कि यह **275 सदस्यीय सदन में 184 सीटों का दो-तिहाई बहुमत** भी प्राप्त कर सकती है।

- As of now, the party has **won 57 seats under the first-past-the-post system**.
  अब तक पार्टी **फर्स्ट-पास्ट-द-पोस्ट प्रणाली के तहत 57 सीटें जीत चुकी है।**

- It is **leading in 64 out of 165 constituencies**.
  यह **165 में से 64 निर्वाचन क्षेत्रों में बढ़त बनाए हुए है।**

- It is also **ahead under the proportional representation system**, in which **110 members are elected**, securing a **53% vote share**.
  यह **अनुपातिक प्रतिनिधित्व प्रणाली** में भी आगे है, जिसमें **110 सदस्य चुने जाते हैं**, और इसे **53% वोट शेयर** मिला है।

- **Balen is set to defeat K.P. Sharma Oli by a huge margin.**
  बालेन के.पी. शर्मा ओली को बड़े अंतर से हराने वाले हैं।

- **Gagan Thapa of the Nepali Congress** is set to **suffer a loss in Sarlahi-4**, a constituency in the **Madhesh plains**.
  नेपाली कांग्रेस के गगन थापा को मधेश मैदान के निर्वाचन क्षेत्र सरलाही-4 में हार का सामना करना पड़ सकता है।

- He is facing defeat at the hands of an **old Congress member now running on an RSP ticket**.
  उन्हें **एक पुराने कांग्रेस सदस्य से हार का सामना करना पड़ रहा है जो अब RSP के टिकट पर चुनाव लड़ रहा है।**

- **Chandan Goopta**, a **data analyst following the polls in Madhesh**, says this time the **election was about Balen versus the rest**.
  मधेश में चुनावों का विश्लेषण कर रहे डेटा विश्लेषक चंदन गुप्ता के अनुसार इस बार **चुनाव बालेन बनाम बाकी सभी** के बीच था।

- "It's not **Gagan vs Amaresh Singh (the RSP candidate)**, it's **Gagan vs Balen**," he said.
  उन्होंने कहा, **"यह गगन बनाम अमरेश सिंह (RSP उम्मीदवार) नहीं है, बल्कि गगन बनाम बालेन है।"**

- "It's the **same for all constituencies in Madhesh**."
  उन्होंने कहा कि **मधेश के सभी निर्वाचन क्षेत्रों में स्थिति लगभग समान है।**

Hit to kill

THAAD

The Terminal High Altitude Area Defence, one of the most advanced missile defence platforms developed by the U.S., is being tested in the U.S.-Israel war against Iran

GS IIII: S&T

Saurabh Trivedi

The Terminal High Altitude Area Defence (THAAD) system is one of the most advanced missile defence platforms developed by the United States to counter ballistic missile threats.

Designed to intercept missiles during the final stage of their flight, THAAD can destroy incoming threats both inside and outside earth's atmosphere, providing a critical defensive layer against short-medium- and limited intermediate-range ballistic missiles. The U.S. deployed additional THAAD batteries to the West Asian region before it launched the invasion of Iran on February 28, along with other weapons.

Unlike many traditional air defence systems that rely on explosive warheads, THAAD uses "hit-to-kill" technology. This means its interceptor missiles destroy incoming targets by directly colliding with them at extremely high speeds, relying on kinetic energy rather than an explosive blast.

This approach significantly improves precision and reduces the risk of debris from explosive interceptors affecting populated areas. THAAD can engage ballistic missile targets at ranges of roughly 150-200 kilometres, intercepting them at high altitude before they descend toward their intended targets.

Key components

The THAAD weapon system is a major element of the broader Ballistic Missile Defence System (BMDS) architecture and consists of several integrated components: interceptors that destroy incoming missiles through kinetic impact; truck-mounted launchers used to deploy the interceptors; and the powerful AN/TPY-2 radar, which detects and tracks missile threats at a long range; a tactical fire control and communications unit that coordinates targeting and engagement; and additional logistics and support equipment.

A typical THAAD battery includes around 90 personnel, six launchers, and 48 interceptors, with each launcher carrying eight missiles.

THAAD is designed to operate as part of a layered missile defence network. It can integrate with other systems such as the MIM-104 Patriot, including the Patriot Advanced Capability-3 (PAC-3), as well as the Aegis Ballistic Missile Defence system used by naval forces.

In recent tests, THAAD has demonstrated its ability to launch PAC-3 missile segment enhancement (MSE) interceptors, highlighting growing interoperability within the U.S. missile defence architecture.

The THAAD system is highly mobile and rapidly deployable, allowing the U.S. Army to position it in regions facing missile threats. The first operational THAAD battery was deployed to Guam in 2013. Internationally, the UAE became the first foreign buyer in 2011, followed later by Saudi Arabia.

The system has been in the spotlight ever since the latest war on Iran began on February 28. Iran has reportedly destroyed a key radar associated with the THAAD system used by the U.S. to detect and intercept ballistic missiles in West Asia, dealing a major blow to Washington's regional missile defence network as the war on Iran enters its second week, according to media reports.

Satellite imagery cited in the reports suggests that an AN/TPY-2 radar, valued at around $300 million and manufactured by RTX Corp., along with its support equipment, was destroyed at Muwaffaq Salti Air Base in Jordan during the early days of the conflict. The radar plays a critical role in guiding U.S. missile defence batteries deployed across the Persian Gulf.

But despite such setbacks, THAAD remains a critical piece in America's defensive shield. Ballistic missiles travel at extremely high speed and high altitudes, leaving little time for defence once they approach their targets. Systems like THAAD are designed to intercept these threats far from population centres and critical infrastructure, increasing the chances of neutralising them before impact.

As missile technology continues to evolve, THAAD remains a key element of the U.S. strategy to build a multi-layered missile defence shield capable of countering a wide range of ballistic missile threats.

08Mar. Hit to kill
हिट टू किल

- **THAAD**
  THAAD

Terminal High Altitude Area Defence (THAAD) System
टर्मिनल हाई एल्टीट्यूड एरिया डिफेंस (THAAD) प्रणाली

- The **Terminal High Altitude Area Defence (THAAD)** system is one of the **most advanced missile defence platforms developed by the United States** to counter **ballistic missile threats**.

Terminal High Altitude Area Defence (THAAD) प्रणाली **संयुक्त राज्य अमेरिका द्वारा विकसित सबसे उन्नत मिसाइल रक्षा प्लेटफार्मों में से एक** है, जिसे **बैलिस्टिक मिसाइल खतरों का मुकाबला करने** के लिए बनाया गया है।

- Designed to **intercept missiles during the final stage of their flight**, THAAD can destroy incoming threats both **inside and outside earth's atmosphere**.
  यह प्रणाली **मिसाइलों को उनकी उड़ान के अंतिम चरण में रोकने** के लिए बनाई गई है और यह आने वाले खतरों को **पृथ्वी के वायुमंडल के भीतर और बाहर दोनों जगह** नष्ट कर सकती है।
- It provides a **critical defensive layer** against **short-, medium-, and limited intermediate-range ballistic missiles**.
  यह **कम दूरी, मध्यम दूरी और सीमित मध्यवर्ती दूरी की बैलिस्टिक मिसाइलों** के खिलाफ एक **महत्वपूर्ण रक्षा परत** प्रदान करती है।
- The **U.S. deployed additional THAAD batteries to the West Asian region** before it launched the **invasion of Iran on February 28**, along with other weapons.
  28 फरवरी को **ईरान पर आक्रमण** शुरू करने से पहले **अमेरिका ने पश्चिम एशिया क्षेत्र में अतिरिक्त THAAD बैटरियाँ तैनात कीं**, अन्य हथियारों के साथ।
- Unlike many **traditional air defence systems** that rely on **explosive warheads**, THAAD uses **"hit-to-kill" technology**.
  कई **पारंपरिक वायु रक्षा प्रणालियों** के विपरीत, जो **विस्फोटक वारहेड** पर निर्भर होती हैं, **THAAD "हिट-टू-किल" तकनीक** का उपयोग करती है।
- This means its **interceptor missiles destroy incoming targets by directly colliding with them at extremely high speeds**.
  इसका अर्थ है कि इसके **इंटरसेप्टर मिसाइल अत्यधिक उच्च गति से सीधे टकराकर लक्ष्य को नष्ट करते हैं**।
- It relies on **kinetic energy rather than an explosive blast**.
  यह **विस्फोटक धमाके के बजाय गतिज ऊर्जा (kinetic energy)** पर निर्भर करता है।
- This approach **significantly improves precision** and **reduces the risk of debris** from explosive interceptors affecting **populated areas**.
  यह तरीका **सटीकता को काफी बढ़ाता है** और विस्फोटक इंटरसेप्टर से उत्पन्न मलबे के आबादी वाले क्षेत्रों को प्रभावित करने के जोखिम को कम करता है।
- THAAD can engage **ballistic missile targets at ranges of roughly 150–200 kilometres**.
  THAAD लगभग **150–200 किलोमीटर की दूरी** पर बैलिस्टिक मिसाइल लक्ष्यों को रोक सकता है।
- It intercepts them at **high altitude before they descend toward their intended targets**.
  यह **उच्च ऊँचाई पर ही मिसाइलों को रोक देता है**, इससे पहले कि वे **अपने लक्ष्य की ओर नीचे उतरें**।

Key components
मुख्य घटक

- The **THAAD weapon system** is a major element of the **Ballistic Missile Defence System (BMDS)** architecture.
  THAAD हथियार प्रणाली Ballistic Missile Defence System (BMDS) संरचना का एक महत्वपूर्ण हिस्सा है।
- It consists of **several integrated components**.
  यह **कई एकीकृत घटकों** से मिलकर बनी है।
- These include **interceptors that destroy incoming missiles through kinetic impact**.
  इनमें **इंटरसेप्टर मिसाइलें** शामिल हैं जो **गतिज टक्कर (kinetic impact)** के माध्यम से आने वाली मिसाइलों को नष्ट करती हैं।
- It also includes **truck-mounted launchers used to deploy the interceptors**.
  इसमें **ट्रक-माउंटेड लॉन्चर** भी होते हैं जिनका उपयोग **इंटरसेप्टर तैनात करने** के लिए किया जाता है।
- Another key component is the **AN/TPY-2 radar**, which **detects and tracks missile threats at long range**.
  एक अन्य महत्वपूर्ण घटक **AN/TPY-2 रडार** है, जो **लंबी दूरी पर मिसाइल खतरों का पता लगाता और उन्हें ट्रैक करता है**।
- It also has a **tactical fire control and communications unit** that **coordinates targeting and engagement**.
  इसमें **टैक्टिकल फायर कंट्रोल और कम्युनिकेशन यूनिट** भी होती है जो **लक्ष्य निर्धारण और कार्रवाई का समन्वय करती है**।

- The system also includes **additional logistics and support equipment**.
  इस प्रणाली में **अतिरिक्त लॉजिस्टिक और सहायक उपकरण** भी शामिल होते हैं।
- A typical **THAAD battery includes around 90 personnel, six launchers, and 48 interceptors**.
  एक सामान्य **THAAD बैटरी** में लगभग **90 कर्मी, छह लॉन्चर और 48 इंटरसेप्टर** होते हैं।
- Each **launcher carries eight missiles**.
  प्रत्येक **लॉन्चर में आठ मिसाइलें** होती हैं।
- THAAD is designed to operate as part of a **layered missile defence network**.
  THAAD को **बहु-स्तरीय मिसाइल रक्षा नेटवर्क** के हिस्से के रूप में काम करने के लिए बनाया गया है।
- It can integrate with other systems such as the **MIM-104 Patriot**, including the **Patriot Advanced Capability-3 (PAC-3)**.
  यह **MIM-104 Patriot** प्रणाली, जिसमें **Patriot Advanced Capability-3 (PAC-3)** शामिल है, के साथ भी एकीकृत हो सकता है।
- It can also integrate with the **Aegis Ballistic Missile Defence system** used by **naval forces**.
  यह **नौसैनिक बलों द्वारा उपयोग किए जाने वाले Aegis Ballistic Missile Defence सिस्टम** के साथ भी समन्वय कर सकता है।

Recent Developments and Operational Role of THAAD
THAAD के हालिया विकास और परिचालन भूमिका

- THAAD has demonstrated its ability to launch **PAC-3 missile segment enhancement (MSE) interceptors** in **recent tests**.
  हालिया परीक्षणों में **THAAD** ने **PAC-3 missile segment enhancement (MSE) इंटरसेप्टर** लॉन्च करने की अपनी क्षमता प्रदर्शित की है।
- This highlights the **growing interoperability within the U.S. missile defence architecture**.
  यह **अमेरिकी मिसाइल रक्षा संरचना के भीतर बढ़ती इंटरऑपरेबिलिटी** को दर्शाता है।
- The **THAAD system is highly mobile and rapidly deployable**, allowing the **U.S. Army** to position it in **regions facing missile threats**.
  THAAD प्रणाली अत्यधिक मोबाइल और तेजी से तैनात की जा सकने वाली है, जिससे **अमेरिकी सेना** इसे **मिसाइल खतरों वाले क्षेत्रों** में तैनात कर सकती है।
- The **first operational THAAD battery** was deployed to **Guam in 2013**.
  पहली **संचालनात्मक THAAD बैटरी** को **2013 में गुआम** में तैनात किया गया था।
- Internationally, the **UAE became the first foreign buyer in 2011**, followed later by **Saudi Arabia**.
  अंतरराष्ट्रीय स्तर पर **UAE 2011 में पहला विदेशी खरीदार बना**, इसके बाद **सऊदी अरब** ने भी इसे खरीदा।
- The system has been in the **spotlight since the latest war on Iran began on February 28**.
  यह प्रणाली **28 फरवरी को ईरान के खिलाफ शुरू हुए नवीनतम युद्ध** के बाद से **काफी चर्चा में** है।
- Iran has reportedly **destroyed a key radar associated with the THAAD system** used by the **U.S. to detect and intercept ballistic missiles in West Asia**.
  रिपोर्टों के अनुसार **ईरान ने THAAD प्रणाली से जुड़े एक महत्वपूर्ण रडार को नष्ट कर दिया**, जिसका उपयोग **अमेरिका पश्चिम एशिया में बैलिस्टिक मिसाइलों का पता लगाने और उन्हें रोकने के लिए करता था**।
- This dealt a **major blow to Washington's regional missile defence network** as the **war on Iran entered its second week**.
  इससे **वॉशिंगटन के क्षेत्रीय मिसाइल रक्षा नेटवर्क को बड़ा झटका लगा**, जब **ईरान पर युद्ध दूसरे सप्ताह में प्रवेश कर गया**।
- **Satellite imagery** cited in the reports suggests that an **AN/TPY-2 radar valued at around $300 million** was destroyed.
  रिपोर्टों में उद्धृत **सैटेलाइट इमेजरी** से संकेत मिलता है कि लगभग **$300 मिलियन मूल्य का AN/TPY-2 रडार** नष्ट कर दिया गया।
- The radar was **manufactured by RTX Corp.**
  यह रडार **RTX Corp.** द्वारा निर्मित था।
- It was destroyed along with its **support equipment** at **Muwaffaq Salti Air Base in Jordan** during the **early days of the conflict**.

संघर्ष के **प्रारंभिक दिनों में** जॉर्डन के **Muwaffaq Salti Air Base** पर इसे **सहायक उपकरणों सहित नष्ट कर दिया गया।**

- The **AN/TPY-2 radar** plays a **critical role in guiding U.S. missile defence batteries** deployed across the **Persian Gulf**.
  AN/TPY-2 रडार फारस की खाड़ी में तैनात अमेरिकी मिसाइल रक्षा बैटरियों का मार्गदर्शन करने में महत्वपूर्ण भूमिका निभाता है।

- Despite such **setbacks**, THAAD remains a critical piece in America's defensive shield.
  इन **झटकों के बावजूद**, THAAD अमेरिका की रक्षा प्रणाली का एक महत्वपूर्ण हिस्सा बना हुआ है।

- **Ballistic missiles travel at extremely high speed and high altitudes**, leaving **very little time for defence** once they approach their targets.
  बैलिस्टिक मिसाइलें अत्यधिक उच्च गति और ऊँचाई पर यात्रा करती हैं, जिससे लक्ष्य के पास पहुँचने के बाद **रक्षा के लिए बहुत कम समय बचता है।**

- Systems like **THAAD** are designed to **intercept these threats far from population centres and critical infrastructure**.
  THAAD जैसी प्रणालियाँ इन खतरों को **जनसंख्या केंद्रों और महत्वपूर्ण अवसंरचना से दूर ही रोकने के लिए डिज़ाइन की गई हैं।**

- This **increases the chances of neutralising them before impact**.
  इससे **टकराव से पहले उन्हें निष्क्रिय करने की संभावना बढ़ जाती है।**

- As **missile technology continues to evolve**, THAAD remains a key element of the U.S. strategy.
  जैसे-जैसे **मिसाइल तकनीक विकसित होती जा रही है**, THAAD अमेरिकी रणनीति का एक प्रमुख तत्व बना हुआ है।

- It aims to build a **multi-layered missile defence shield** capable of **countering a wide range of ballistic missile threats**.
  इसका उद्देश्य **बहु-स्तरीय मिसाइल रक्षा ढाल बनाना** है जो विभिन्न प्रकार के बैलिस्टिक मिसाइल खतरों का मुकाबला करने में सक्षम हो।

GS Paper III: Economy,	
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How does Canada's uranium deal help India?

What uranium 'stocks' does India have? Does the latest deal involve the 2010 India-Canada Civil Nuclear Cooperation Agreement? How does India use its uranium? How is the country's nuclear power programme faring?

GS III: Economy   MQB

Vasudevan Mukunth

The story so far:

In its quest for energy security, on March 2, India signed a Canadian $2.6-billion deal with Cameco. The Canadian company is among the world's top three largest uranium producers by volume. The deal ensures a supply of around 10,000 tonnes of uranium between 2027 and 2035 to India.

What uranium 'stocks' does India have?

India has both domestic reserves and imported stockpiles of uranium. The domestic reserves amount to 4.2-4.3 lakh tonnes of ore, spread across the major mines of Jaduguda and Turamdih in Jharkhand and Tummalapalle in Andhra Pradesh. The quantum of extractable uranium metal from the ore is estimated to be 76,000-92,000 tonnes.

The order of magnitude difference between the ore and the metal is because Indian ore is 'low grade' (0.02-0.45% concentration). On the other hand, Canada has high-grade ore (10-100 times richer than Indian ore).

India has increasingly relied on imports, which currently meet nearly three-fourths of the civilian requirement. Aside from the Cameco

Indian ore is low-grade (0.02-0.45%), while Canadian ore is 10 to 100 times richer

deal, India also finalised a supply agreement with Kazatomprom of Kazakhstan in February, and has ongoing contracts with Uzbekistan and Russia (both with low-grade ore). The government is also building a reserve intended to hold five years' supply of fuel to protect against supply chain shocks. While importing uranium ore is cheaper than extracting it, it cannot legally be used in nuclear weapons. This is why India also mines ore domestically.

Does the deal involve the 2010 agreement?

The deal with Cameco comes under the India-Canada Civil Nuclear Cooperation Agreement (NCA). This was signed in 2010, two years after the Nuclear Suppliers Group issued its 'clean' waiver for India, allowing it to engage in civil nuclear trade despite not signing the Nuclear Non-Proliferation Treaty. The waiver, in turn, was made possible by the 123 nuclear agreement between India and the U.S.

Unlike the deal with Kazakhstan (which is less intrusive), the NCA requires India to provide "fissionable material accounts" to Canada, which critics have often called a slight against Indian sovereignty. On the flip side, the NCA has also been criticised for tacitly supporting India's nuclear weapons programme: the more uranium India imports for civilian use, the more domestic uranium it can vouchsafe for military use.

How does India use its uranium?

India currently operates 24 nuclear reactors with a generation capacity of around 9 GW. The 700-MW pressurised heavy water reactors (PHWRs) that currently provide 6-7 GW, or roughly 3%, of India's total electricity use uranium as fuel. The government is committed to increasing nuclear power capacity to 100 GW by 2047. Previous attempts to up this contribution have been set back by issues with land acquisition and local protests, however.

Significant amounts of uranium are also used in research reactors, such as Dhruva in Trombay, to produce medical isotopes such as technetium-99m and iodine-131 and for advanced materials science research.

In the 2025-26 Union Budget, Finance Minister Nirmala Sitharaman allocated ₹20,000 crore to develop a new generation of small modular reactors, which typically use 3-5% enriched uranium.

Domestic uranium is also used for nuclear warheads (currently estimated to number around 170) and the nuclear-powered *INS Arihant* class submarines.

How is India's nuclear power programme faring?

India is currently transitioning from Stage 1 to 2 of the three-stage programme. In Stage 1, PHWRs will use natural uranium-235 to produce electricity and plutonium-239 as a byproduct. In Stage 2, fast breeder reactors will use a mixed oxide fuel of uranium-238 and plutonium-239 to produce electricity, uranium-233, and more plutonium-239. (The reactors are called so because they will produce more fuel than they consume.) The prototype fast breeder reactor (PFBR) in Kalpakkam is currently in an advanced stage of commissioning. Finally, advanced heavy water reactors will use plutonium-239 and thorium-232 as fuel, producing electricity and uranium-233. Homi J. Bhabha envisioned this three-stage programme to take advantage of the fact that India hosts 20-25% of the world's thorium deposits.

However, the programme has been beset by numerous delays and cost overruns. The fast breeder test reactor was built at Kalpakkam in 1977 but the government did not sign off on the PFBR until the early 2000s, thanks in part to sanctions against India over its nuclear tests. The PFBR's cost also nearly doubled from ₹3,492 crore at the time it was designed to more than ₹6,800 crore in 2019.

In March 2013, the Department of Atomic Energy had said in a reply in the Lok Sabha, "The time of large-scale thorium deployment is expected to be 3-4 decades after the commercial operation of fast breeder reactors with short doubling time." Given the PFBR's own timeline, this period could be in the 2060s, if not later.

Former Department of Atomic Energy Chairman Anil Kakodkar has explained that the doubling time – the time taken for one fast breeder reactor to produce enough fuel to start a second – is 15-20 years. To generate 100 GW, then, India has to go through several doubling cycles, which could explain the multiple deals now to secure the supply of uranium.

Striking a deal: Prime Minister Narendra Modi and Canadian Prime Minister Mark Carney at Hyderabad House, in New Delhi. ANI

08Mar. How does Canada's uranium deal help India?
Canada के uranium deal से India को कैसे लाभ मिलता है?

- **What uranium 'stocks' does India have?**
  India के पास कौन-कौन से uranium 'stocks' हैं?
- **Does the latest deal involve the 2010 India-Canada Civil Nuclear Cooperation Agreement?**
  क्या नवीनतम deal में 2010 का India-Canada Civil Nuclear Cooperation Agreement शामिल है?
- **How does India use its uranium?**
  India अपने uranium का उपयोग कैसे करता है?
- **How is the country's nuclear power programme faring?**
  देश का nuclear power programme कैसा चल रहा है?
- In its quest for **energy security**, on **March 2**, **India** signed a **Canadian $2.6-billion deal** with **Cameco**.
  Energy security की खोज में **2 मार्च** को **भारत** ने **Cameco** के साथ **2.6 अरब डॉलर का कनाडाई समझौता** किया।
- The **Canadian company** is among the world's **top three largest uranium producers by volume**.
  यह **Canadian company** दुनिया की **सबसे बड़ी तीन uranium उत्पादक कंपनियों** में से एक है।
- The deal ensures a supply of around **10,000 tonnes of uranium between 2027 and 2035 to India**.

यह समझौता **2027 से 2035 के बीच भारत को लगभग 10,000 टन uranium की आपूर्ति** सुनिश्चित करता है।

What uranium 'stocks' does India have?
भारत के पास कौन-कौन से uranium 'stocks' हैं?

- **India** has both **domestic reserves** and **imported stockpiles of uranium**.
  भारत के पास **घरेलू भंडार** और **आयातित uranium stockpiles** दोनों हैं।
- The **domestic reserves** amount to **4.2-4.3 lakh tonnes of ore**.
  घरेलू भंडार लगभग **4.2-4.3 लाख टन ore** के बराबर है।
- These are spread across the major mines of **Jaduguda** and **Turamdih in Jharkhand** and **Tummalapalle in Andhra Pradesh**.
  ये **झारखंड के Jaduguda और Turamdih** तथा **आंध्र प्रदेश के Tummalapalle** की प्रमुख खानों में फैले हुए हैं।
- The quantum of **extractable uranium metal from the ore** is estimated to be **76,000-92,000 tonnes**.
  इन अयस्कों से निकाले जा सकने वाले **uranium metal** की मात्रा लगभग **76,000-92,000 टन** आंकी गई है।
- The **order of magnitude difference** between the **ore and the metal** is because Indian ore is **'low grade' (0.02-0.45% concentration)**.
  Ore और metal के बीच इतना अंतर इसलिए है क्योंकि भारतीय अयस्क **low grade (0.02-0.45% concentration)** का होता है।
- On the other hand, **Canada** has **high-grade ore (10-100 times richer than Indian ore)**.
  दूसरी ओर **Canada** के पास **high-grade ore** है जो भारतीय अयस्क से **10-100 गुना अधिक समृद्ध** है।
- **India** has increasingly relied on **imports**.
  भारत अब तेजी से **imports** पर निर्भर हो गया है।
- These currently meet nearly **three-fourths of the civilian requirement**.
  ये वर्तमान में **civilian आवश्यकता का लगभग तीन-चौथाई हिस्सा** पूरा करते हैं।
- Aside from the **Cameco deal**, **India** also finalised a supply agreement with **Kazatomprom of Kazakhstan in February**.
  Cameco deal के अलावा **भारत** ने **फरवरी में Kazakhstan की Kazatomprom कंपनी** के साथ भी आपूर्ति समझौता किया।
- India also has **ongoing contracts with Uzbekistan and Russia**.
  भारत के **Uzbekistan और Russia** के साथ भी **चल रहे अनुबंध** हैं।
- Both of these involve **low-grade ore**.
  इन दोनों में **low-grade ore** शामिल है।
- The **government** is also building a **reserve intended to hold five years' supply of fuel**.
  सरकार **पाँच वर्षों की ईंधन आपूर्ति** रखने के उद्देश्य से एक **reserve** भी बना रही है।
- This is meant to protect against **supply chain shocks**.
  इसका उद्देश्य **supply chain shocks** से सुरक्षा प्रदान करना है।
- While **importing uranium ore is cheaper than extracting it**, it **cannot legally be used in nuclear weapons**.
  हालाँकि **uranium ore का आयात करना निकालने से सस्ता है**, लेकिन इसे **कानूनी रूप से nuclear weapons में उपयोग नहीं किया जा सकता**।
- This is why **India** also mines ore domestically.
  इसी कारण **भारत घरेलू स्तर पर भी अयस्क का खनन करता है**।

Does the deal involve the 2010 agreement?
क्या इस deal में 2010 का समझौता शामिल है?

- The deal with **Cameco** comes under the **India-Canada Civil Nuclear Cooperation Agreement (NCA)**.
  Cameco के साथ हुआ समझौता **India-Canada Civil Nuclear Cooperation Agreement (NCA)** के अंतर्गत आता है।
- This was signed in **2010**.
  यह **2010** में हस्ताक्षरित हुआ था।

- It came **two years after the Nuclear Suppliers Group issued its 'clean' waiver for India**.
  यह **Nuclear Suppliers Group द्वारा भारत को 'clean waiver' देने के दो वर्ष बाद** हुआ।
- The waiver allowed **India to engage in civil nuclear trade despite not signing the Nuclear Non-Proliferation Treaty**.
  इस छूट ने **भारत को Nuclear Non-Proliferation Treaty पर हस्ताक्षर न करने के बावजूद civil nuclear trade करने की अनुमति दी**।
- The waiver was made possible by the **123 nuclear agreement between India and the U.S.**
  यह छूट **India-U.S. के बीच 123 nuclear agreement** के कारण संभव हुई।
- Unlike the deal with **Kazakhstan**, the **NCA requires India to provide "fissionable material accounts" to Canada**.
  Kazakhstan deal के विपरीत **NCA** के तहत **भारत को Canada को "fissionable material accounts" देना पड़ता है**।
- Critics have often called this a **slight against Indian sovereignty**.
  आलोचकों ने इसे अक्सर **भारतीय संप्रभुता के खिलाफ हल्का आघात** बताया है।
- On the flip side, the **NCA** has also been criticised for **tacitly supporting India's nuclear weapons programme**.
  दूसरी ओर **NCA** की आलोचना यह कहकर भी हुई है कि यह **भारत के nuclear weapons programme को अप्रत्यक्ष समर्थन देता है**।
- The more **uranium India imports for civilian use**, the more **domestic uranium it can vouchsafe for military use**.
  जितना अधिक **भारत civilian उपयोग के लिए uranium आयात करता है**, उतना ही अधिक **घरेलू uranium सैन्य उपयोग के लिए सुरक्षित रख सकता है**।

How does India use its uranium?
भारत अपने uranium का उपयोग कैसे करता है?

- **India currently operates 24 nuclear reactors**.
  भारत वर्तमान में 24 nuclear reactors संचालित करता है।
- These have a generation capacity of around **9 GW**.
  इनकी कुल उत्पादन क्षमता लगभग **9 GW** है।
- The **700-MW pressurised heavy water reactors (PHWRs)** provide **6-7 GW**.
  700-MW pressurised heavy water reactors (PHWRs) लगभग **6-7 GW** उत्पादन देते हैं।
- This accounts for roughly **3% of India's total electricity**.
  यह **भारत की कुल बिजली का लगभग 3%** है।
- These reactors **use uranium as fuel**.
  ये रिएक्टर **uranium को ईंधन के रूप में उपयोग करते हैं**।
- The **government** is committed to increasing **nuclear power capacity to 100 GW by 2047**.
  सरकार ने **2047 तक nuclear power capacity को 100 GW तक बढ़ाने** का लक्ष्य रखा है।
- Previous attempts have faced **land acquisition issues and local protests**.
  पहले के प्रयासों को **land acquisition समस्याओं और स्थानीय विरोध** का सामना करना पड़ा है।
- Significant amounts of **uranium are used in research reactors**, such as **Dhruva in Trombay.**
  काफी मात्रा में **uranium research reactors** में उपयोग होता है, जैसे **Trombay का Dhruva reactor**।
- These produce **medical isotopes such as technetium-99m and iodine-131**.
  इनसे **technetium-99m और iodine-131 जैसे medical isotopes** तैयार किए जाते हैं।
- They are also used for **advanced materials science research**.
  इनका उपयोग **advanced materials science research** में भी होता है।
- In the **2025-26 Union Budget**, **Finance Minister Nirmala Sitharaman** allocated **₹20,000 crore**.
  2025-26 के Union Budget में **Finance Minister Nirmala Sitharaman** ने **₹20,000 करोड़** आवंटित किए।
- The money is for developing a **new generation of small modular reactors**.
  यह धन **small modular reactors की नई पीढ़ी** विकसित करने के लिए है।
- These typically use **3-5% enriched uranium**.
  इनमें सामान्यतः **3-5% enriched uranium** का उपयोग होता है।

- Domestic **uranium** is also used for **nuclear warheads**.
  घरेलू **uranium** का उपयोग **nuclear warheads** के लिए भी होता है।
- These are currently estimated to number around **170**.
  इनकी संख्या वर्तमान में लगभग **170** मानी जाती है।
- It is also used in **nuclear-powered INS Arihant class submarines**.
  इसे **nuclear-powered INS Arihant class submarines** में भी उपयोग किया जाता है।

How is India's nuclear power programme faring?
भारत का nuclear power programme कैसा चल रहा है?

- **India** is currently transitioning from **Stage 1 to Stage 2** of the **three-stage programme**.
  भारत वर्तमान में **तीन-चरणीय कार्यक्रम** के **Stage 1 से Stage 2** की ओर बढ़ रहा है।
- In **Stage 1**, **PHWRs use natural uranium-235** to produce **electricity and plutonium-239 as a byproduct**.
  Stage 1 में **PHWRs natural uranium-235** का उपयोग करके **electricity और plutonium-239 (उप-उत्पाद)** बनाते हैं।
- In **Stage 2**, **fast breeder reactors** use a **mixed oxide fuel of uranium-238 and plutonium-239**.
  Stage 2 में **fast breeder reactors uranium-238 और plutonium-239 के mixed oxide fuel** का उपयोग करते हैं।
- They produce **electricity, uranium-233, and more plutonium-239**.
  ये **electricity, uranium-233 और अधिक plutonium-239** उत्पन्न करते हैं।
- The **prototype fast breeder reactor (PFBR)** in **Kalpakkam** is in an **advanced stage of commissioning**.
  Kalpakkam में स्थित **prototype fast breeder reactor (PFBR)** अभी **commissioning के उन्नत चरण** में है।
- Finally, **advanced heavy water reactors** will use **plutonium-239 and thorium-232** as fuel.
  अंत में **advanced heavy water reactors** में **plutonium-239 और thorium-232** ईंधन के रूप में उपयोग होंगे।
- This vision was proposed by **Homi J. Bhabha**.
  इस योजना की परिकल्पना **Homi J. Bhabha** ने की थी।
- It takes advantage of the fact that **India hosts 20-25% of the world's thorium deposits**.
  यह इस तथ्य का लाभ उठाती है कि **दुनिया के 20-25% thorium deposits भारत में हैं**।
- However, the programme has faced **numerous delays and cost overruns**.
  हालाँकि इस कार्यक्रम को **कई देरी और लागत वृद्धि** का सामना करना पड़ा है।
- The **fast breeder test reactor** was built at **Kalpakkam in 1977**.
  Fast breeder test reactor का निर्माण **1977 में Kalpakkam** में किया गया था।
- But the government approved the **PFBR only in the early 2000s**.
  लेकिन सरकार ने **PFBR** को **2000 के दशक की शुरुआत में** मंजूरी दी।
- The **PFBR's cost** nearly doubled from **₹3,492 crore** to more than **₹6,800 crore in 2019**.
  PFBR की लागत लगभग दोगुनी होकर **₹3,492 करोड़ से बढ़कर 2019 में ₹6,800 करोड़ से अधिक** हो गई।
- The **Department of Atomic Energy** had said that large-scale **thorium deployment** may take **3-4 decades** after fast breeder reactors become operational.
  Department of Atomic Energy के अनुसार बड़े पैमाने पर **thorium deployment** में fast breeder reactors के चालू होने के बाद **3-4 दशक** लग सकते हैं।
- Former chairman **Anil Kakodkar** explained that the **doubling time** of a fast breeder reactor is **15-20 years**.
  पूर्व अध्यक्ष **Anil Kakodkar** ने बताया कि fast breeder reactor का **doubling time 15-20 वर्ष** होता है।
- To generate **100 GW**, India must go through **several doubling cycles**.
  100 GW उत्पादन के लिए भारत को **कई doubling cycles** से गुजरना होगा।
- This explains the **multiple deals to secure uranium supply**.
  इसी कारण **uranium supply** सुरक्षित करने के लिए कई समझौते किए जा रहे हैं।

Peak power demand to touch 270 GW this summer: Naik

GS III: Economy

The peak power demand is projected to be about 270 GW this summer and there will no effect on regular electricity supply due to West Asia crisis, Minister of State for Power Shripad Yesso Naik. Ministry of Power projected 277 GW peak power demand during last summer (April 2025 onwards). As per government data, the peak power demand met or the highest supply last month rose slightly to 243.15 GW from 238.06 GW recorded in February 2025. PTI

08Mar. Peak power demand to touch 270 GW this summer: Naik

इस गर्मी में चरम बिजली मांग 270 GW तक पहुँच सकती है: नाइक

* The **peak power demand** is projected to be about **270 GW** this summer and there will be no effect on **regular electricity supply** due to the West **Asia crisis**, **Minister of State for Power Shripad Yesso Naik**.

इस गर्मी में **चरम बिजली मांग (Peak Power Demand)** लगभग **270 GW** रहने का अनुमान है और **पश्चिम एशिया संकट** के कारण **नियमित बिजली आपूर्ति** पर कोई प्रभाव नहीं पड़ेगा, ऐसा **विद्युत राज्य मंत्री श्रीपाद येसो नाइक** ने कहा।

* **The Ministry of Power** projected **277 GW peak power demand** during last summer (**April 2025 onwards**).

विद्युत मंत्रालय ने पिछले गर्मियों (**अप्रैल 2025 से आगे**) के दौरान **277 GW चरम बिजली मांग** का अनुमान लगाया था।

* As per **government data**, the **peak power demand met** or the **highest supply** last month rose slightly to **243.15 GW** from **238.06 GW** recorded in **February 2025**.

सरकारी आंकड़ों के अनुसार, पिछले महीने **पूरी की गई चरम बिजली मांग (Peak Power Demand Met)** या **सबसे अधिक आपूर्ति** थोड़ी बढ़कर **243.15 GW** हो गई, जो **फरवरी 2025** में दर्ज **238.06 GW** से अधिक है।

GS Paper III: S&T,	
TOPICS COVERED	**08 March 2026**
08Mar	**Consider abdominal obesity a vital sign in Asian Indians: study** एशियाई भारतीयों में पेट का मोटापा एक महत्वपूर्ण संकेत माना जाए: अध्ययन
08Mar	**Heat during pregnancy results in fewer male babies: study** गर्भावस्था के दौरान गर्मी के कारण कम पुरुष शिशुओं का जन्म: अध्ययन
08Mar	**Turning carrot waste into edible material again** गाजर के अपशिष्ट को फिर से खाद्य सामग्री में बदलना
08Mar	**Supertough bug may also survive colliding worlds**
08Mar	अत्यंत मजबूत सूक्ष्मजीव टकराते हुए ग्रहों में भी जीवित रह सकता है
08Mar	**Simulated reality** सिम्युलेटेड रियलिटी (अनुकरणित वास्तविकता)

Consider abdominal obesity a vital sign in Asian Indians: study

08Mar. Consider abdominal obesity a vital sign in Asian Indians: study
एशियाई भारतीयों में पेट का मोटापा एक महत्वपूर्ण संकेत माना जाए: अध्ययन

GS III: S&T

The Hindu Bureau
CHENNAI

Experts in India are calling for abdominal obesity to be recognised a new vital sign in Asian Indians. An editorial by Amerta Ghosh and Anoop Misra published in the journal *Diabetes and Metabolic Syndrome: Clinical Research and Reviews*, has emphasised the necessity of measuring waist circumference in all patients.

Asian Indians characteristically develop abdominal obesity despite relatively normal BMI.

- **Experts in India** are calling for **abdominal obesity** to be recognised as a new **vital sign** in **Asian Indians**.
  भारत के विशेषज्ञ एशियाई भारतीयों में पेट के मोटापे को एक नए **महत्वपूर्ण संकेत** के रूप में मान्यता देने की मांग कर रहे हैं।
- An **editorial** by **Amerta Ghosh** and **Anoop Misra** published in the journal **Diabetes and Metabolic Syndrome: Clinical Research and Reviews**, has emphasised the necessity of measuring **waist circumference** in **all patients**.
  अमेरता घोष और अनूप मिश्रा द्वारा लिखित एक **संपादकीय**, जो Diabetes and Metabolic Syndrome: Clinical Research and Reviews जर्नल में प्रकाशित हुआ है, ने **सभी मरीजों** में **कमर की परिधि** मापने की आवश्यकता पर जोर दिया है।

Metabolic crisis

The progressive increase in obesity and abdominal obesity in India represents a significant and evolving metabolic crisis contributing to the rising prevalence of conditions such as type 2 diabetes, cardiovascular disease, metabolic dysfunction-associated steatotic liver disease (MASLD) and associated cardiometabolic disorders, the editorial noted.

Asian Indians characteristically develop abdominal obesity despite relatively normal Body Mass Index (BMI), a phenotype associated with higher insulin resistance, ectopic fat deposition, and earlier onset of metabolic diseases.

BMI, therefore, is an inadequate measure of obesity, it states, calling for a shift in focus from generalised obesity to abdominal obesity, from a reliance on BMI to prioritising waist circumference and related indices, including waist circumference-to-height ratio for more accurate cardiometabolic risk stratification in routine clinical practice.

Data from the National Family Health Survey-5 revealed that abdominal obesity affects approximately 40% of women and 12% of men.

Significantly, abdominal obesity is no longer confined to urban or affluent populations, it is rising in rural areas and increasingly affecting lower and middle socioeconomic groups, the editorial highlighted.

Metabolic crisis
मेटाबॉलिक संकट

- The progressive increase in **obesity** and **abdominal obesity** in **India** represents a significant and evolving **metabolic crisis** contributing to the rising prevalence of conditions such as **type 2 diabetes**, **cardiovascular disease**, **metabolic dysfunction-associated steatotic liver disease (MASLD)** and associated **cardiometabolic disorders**, the **editorial** noted.
  भारत में **मोटापा** और **पेट का मोटापा** लगातार बढ़ रहा है, जो एक महत्वपूर्ण और विकसित होता हुआ **मेटाबॉलिक संकट** दर्शाता है और **टाइप 2 मधुमेह**, **हृदय रोग**, **मेटाबॉलिक डिसफंक्शन-एसोसिएटेड स्टियाटोटिक लिवर डिजीज (MASLD)** तथा संबंधित **कार्डियोमेटाबॉलिक विकारों** के बढ़ते प्रसार में योगदान देता है, ऐसा **संपादकीय** में कहा गया है।
- **Asian Indians** characteristically develop **abdominal obesity** despite relatively normal **Body Mass Index (BMI)**, a phenotype associated with higher **insulin resistance**, **ectopic fat deposition**, and earlier onset of **metabolic diseases**.
  एशियाई भारतीयों में अपेक्षाकृत सामान्य **बॉडी मास इंडेक्स (BMI)** होने के बावजूद **पेट का मोटापा** विकसित होने की विशेष प्रवृत्ति होती है, जो अधिक **इंसुलिन प्रतिरोध**, **असामान्य वसा संचय**, और **मेटाबॉलिक रोगों** की जल्दी शुरुआत से जुड़ी होती है।
- **BMI**, therefore, is an **inadequate measure** of **obesity**, it states, calling for a shift in focus from **generalised obesity** to **abdominal obesity**, from a reliance on **BMI** to prioritising **waist circumference** and related indices, including **waist circumference-to-height ratio** for more accurate **cardiometabolic risk stratification** in routine **clinical practice**.
  इसलिए **BMI मोटापे** का **अपर्याप्त मापदंड** है, यह कहते हुए इसमें **सामान्य मोटापे** से ध्यान हटाकर **पेट के मोटापे** पर केंद्रित करने और **BMI** पर निर्भरता छोड़कर **कमर की परिधि** तथा संबंधित सूचकांकों जैसे **कमर-**

से-ऊंचाई अनुपात को प्राथमिकता देने का आह्वान किया गया है, ताकि नियमित **क्लिनिकल प्रैक्टिस** में अधिक सटीक **कार्डियोमेटाबॉलिक जोखिम मूल्यांकन** किया जा सके।

- Data from the **National Family Health Survey-5** revealed that **abdominal obesity** affects approximately **40% of women** and **12% of men**.

  राष्ट्रीय परिवार स्वास्थ्य सर्वेक्षण-5 के आंकड़ों से पता चला है कि **पेट का मोटापा** लगभग **40% महिलाओं** और **12% पुरुषों** को प्रभावित करता है।

- Significantly, **abdominal obesity** is no longer confined to **urban or affluent populations**, it is rising in **rural areas** and increasingly affecting **lower and middle socioeconomic groups**, the **editorial** highlighted.

  महत्वपूर्ण बात यह है कि **पेट का मोटापा** अब केवल **शहरी या समृद्ध आबादी** तक सीमित नहीं है, बल्कि यह **ग्रामीण क्षेत्रों** में भी बढ़ रहा है और तेजी से **निम्न और मध्यम सामाजिक-आर्थिक समूहों** को प्रभावित कर रहा है, ऐसा **संपादकीय** में बताया गया है।

Heat during pregnancy results in fewer male babies: study

Beyond birth ratios, research has linked rising heat to severe maternal health complications; researchers emphasise that many global health research agencies underestimate the impact on vulnerable populations

GS III: S&T

Ramya Kannan

When pregnant women experience higher ambient temperatures during gestation, fewer males are born, a recent analysis of demographic and health surveys in sub-Saharan Africa and India showed.

A paper titled 'Temperature and sex ratios at birth' in the journal *Demography*, by Jasmin Abdel Ghany et al., concludes after a detailed analysis that experiencing higher ambient temperatures during pregnancy is associated with changes in the natural sex ratio at birth across India and sub-Saharan Africa. The paper analyses over five million births drawn from more than 90 Demographic and Health Surveys, containing local temperature data to examine how heat exposure across trimesters shapes sex ratio at birth.

The researchers write: "We find that days with a maximum temperature above 20 °C are negatively associated with male births in both regions. In sub-Saharan Africa, we observe fewer male births after high first-trimester temperature exposure, consistent with increased spontaneous abortions from maternal heat stress... By contrast, in India, we find that second-trimester temperature exposure is associated with fewer male births." These reductions are focused among older mothers in rural areas who have had a number of children, the study highlights.

The daily maximum temperature in the month of birth is 30.0 °C in sub-Saharan Africa and 30.3 °C in India. In India, in the second trimester, the results indicate a negative relationship between temperature exposure and birth sex. The effect of a 25 to 30 °C indicates a lower male birth probability by 0.014 percentage points.

To account for both biophysical health and behavioural mechanisms, researchers chose two regions with vastly different experiences with son preference and sex-selective abortion: India (where several regions have high son preference and sex selective abortions) and sub-Saharan Africa (where there is little evidence of son preference and sex-selective abortions are minimal). The hypothesis is that these heat-induced pregnancy losses are male-biased, in line with Trivers and Willard's "frail male" hypothesis. "According to this evolutionary argument, weak males may have a lower chance of surviving to birth under poor environmental conditions. After birth, males have lower survival probabilities than females and thus require greater maternal investment, the authors write.

Vidhya Venugopal, Country Director (NIHR GHRC NCD-EC), Faculty of Public Health, Sri Ramachandra Institute of Higher Education and Research, Chennai, says the results are not unexpected. They underline the urgency to examine solutions to protect vulnerable groups when temperatures soar.

"When your body temperature rises by one or two degrees above the basal temperature, it is a fever. Pregnant women already have a higher body temperature and if there are rising heat situations, there will certainly be a cascade of negative impacts... In pregnant women, there is a definite increase in adverse events, including hypertension, gestational diabetes, and preterm births; the risk of underweight babies increases," she explains.

While heat is considered 'extremely natural in tropical countries', the impact of heat stress, particularly on people who live in resource-poor settings, is grossly underestimated, Dr. Vidhya says.

Jane Hirst, Chair in Global Women's Health, The George Institute for Global Health, Imperial College London, agrees. "Most of the evidence associating that risk is not from the hottest, or the low and middle income countries, she adds. That is slowly changing," she says. Evidence is now emerging from these nations also, indicating the risks might actually be greater. "For instance, the combined global evidence points to a 25 % increase in pre-term births with heat stress. Our study in Tamil Nadu, however, indicated that it was three times the risk, nearly 300%." There is a huge role for governments to play here, Dr. Vidhya and Prof. Jane agree. Both of them see communicating risk to the vulnerable populations as a key step, as risk perception is very low, and thereby, the capacity to intervene as well. Protecting vanishing traditional knowledge systems that allow for resource-appropriate cooling mechanisms, including the diet, is also important, Dr. Vidhya says.

Structural changes must also be initiated according to Prof. Jane – make sure the antenatal clinic is located inside a well-ventilated building, or safe drinking water is available to help them cool off. "The Indian government has taken the lead in putting together heat action plans, at the regional and sub-regional levels. However, a third of them did not consider pregnant and lactating women and infants as a vulnerable group," she points out. While ensuring that there is sufficient funding and resources for climate engineering, Prof. Jane says it is important to learn from the best practices. The SMART Health Pregnancy trial, currently under way in two Indian States has been looking at providing early warning signals to AASHA workers on weather events: "This has shown acceptability and is also to be expanded across seven other countries."

Surviving the heat

A new study has analysed over 5 million births from more than 90 Demographic and Health Surveys

- High ambient temperatures during pregnancy have been linked to a drop in male births in both India, sub-Saharan Africa
- Heat exposure during the first trimester in Africa and second trimester in India reduced the likelihood of male births
- These findings support the 'frail male' hypothesis, suggesting male foetuses are more vulnerable to maternal heat stress
- Reductions in male births were most prominent among older mothers in rural areas with multiple previous children
- Resource-poor populations lack the tools to cool down, which significantly increases the physiological impact of heat stress
- Experts emphasise the urgent need to protect pregnant women from rising temperatures and the associated health risks

Sex ratios at birth are closely linked to maternal health and gender discrimination. AMIT RANJAN/UNSPLASH

08Mar. Heat during pregnancy results in fewer male babies: study
गर्भावस्था के दौरान गर्मी के कारण कम पुरुष शिशुओं का जन्म: अध्ययन

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Temperature and Sex Ratios at Birth
तापमान और जन्म के समय लिंग अनुपात

- When **pregnant women experience higher ambient temperatures during gestation**, fewer **males are born**, a recent analysis of **demographic and health surveys in sub-Saharan Africa and India** showed.
जब **गर्भावस्था के दौरान गर्भवती महिलाओं को अधिक परिवेशीय तापमान (ambient temperature)** का सामना करना पड़ता है, तो **कम पुरुष शिशुओं का जन्म** होता है, यह **sub-Saharan Africa और India** के **demographic और health surveys** के हालिया विश्लेषण में सामने आया।

- A paper titled **"Temperature and sex ratios at birth"** in the journal **Demography**, by **Jasmin Abdel Ghany et al.**, concludes after a detailed analysis that **higher ambient temperatures during pregnancy** are associated with **changes in the natural sex ratio at birth** across **India and sub-Saharan Africa**.
पत्रिका **Demography** में प्रकाशित **"Temperature and sex ratios at birth"** शीर्षक वाले शोधपत्र में **Jasmin Abdel Ghany et al.** ने विस्तृत विश्लेषण के बाद निष्कर्ष निकाला कि **गर्भावस्था के दौरान अधिक परिवेशीय तापमान** का संबंध **भारत और sub-Saharan Africa में जन्म के प्राकृतिक लिंग अनुपात में बदलाव** से है।

- The paper analyses **over five million births** drawn from **more than 90 Demographic and Health Surveys**.
इस शोधपत्र में **90 से अधिक Demographic and Health Surveys** से लिए गए **पाँच मिलियन से अधिक जन्मों** का विश्लेषण किया गया।

- These surveys contained **local temperature data** to examine how **heat exposure across trimesters** shapes **sex ratio at birth**.
इन सर्वेक्षणों में **स्थानीय तापमान डेटा** शामिल था, जिससे यह समझा गया कि **गर्भावस्था के विभिन्न trimesters में तापीय संपर्क** किस प्रकार **जन्म के समय लिंग अनुपात** को प्रभावित करता है।

- The researchers found that **days with maximum temperature above 20°C** are **negatively associated with male births** in both regions.
शोधकर्ताओं ने पाया कि **20°C से अधिक अधिकतम तापमान वाले दिन** दोनों क्षेत्रों में **पुरुष जन्मों के साथ नकारात्मक रूप से जुड़े** हैं।

- In **sub-Saharan Africa**, fewer male births were observed after **high first-trimester temperature exposure**.
sub-Saharan Africa में **पहले trimester में अधिक तापमान संपर्क** के बाद **कम पुरुष जन्म** देखे गए।

- This is consistent with **increased spontaneous abortions caused by maternal heat stress**.
यह **मातृ गर्मी तनाव (maternal heat stress)** के कारण **स्वतः गर्भपात (spontaneous abortions)** में वृद्धि के अनुरूप है।

- By contrast, in **India**, **second-trimester temperature exposure** is associated with **fewer male births**.
इसके विपरीत **भारत में दूसरे trimester में तापमान संपर्क** का संबंध **कम पुरुष जन्मों** से पाया गया।

- These reductions are concentrated among **older mothers in rural areas** who have **already had several children**.
ये कमी विशेष रूप से **ग्रामीण क्षेत्रों की अधिक आयु वाली माताओं** में देखी गई, जिनके **पहले से कई बच्चे** हैं।

- The **daily maximum temperature in the month of birth** is **30.0°C in sub-Saharan Africa** and **30.3°C in India**.
जन्म के महीने में **दैनिक अधिकतम तापमान sub-Saharan Africa में 30.0°C** और **भारत में 30.3°C** है।

- In **India**, during the **second trimester**, results show a **negative relationship between temperature exposure and birth sex**.
भारत में दूसरे trimester के दौरान, परिणाम **तापमान संपर्क और जन्म के लिंग के बीच नकारात्मक संबंध** दिखाते हैं।

- Exposure to **25–30°C temperatures** lowers the **probability of male birth by about 0.014 percentage points**.
25–30°C तापमान संपर्क से पुरुष जन्म की संभावना लगभग **0.014 प्रतिशत अंक कम** हो जाती है।

- To account for both **biophysical health and behavioural mechanisms**, researchers selected **India and sub-Saharan Africa** for comparison.
जैव-भौतिक स्वास्थ्य और व्यवहारिक तंत्र दोनों को समझने के लिए शोधकर्ताओं ने तुलना हेतु **भारत और sub-Saharan Africa** को चुना।

- These regions have **vastly different experiences with son preference and sex-selective abortion**.
  इन क्षेत्रों में **पुत्र वरीयता और लिंग-चयनात्मक गर्भपात** के अनुभव **काफी अलग-अलग** हैं।
- In **India**, several regions show **high son preference and sex-selective abortions**.
  भारत के कई क्षेत्रों में **पुत्र वरीयता और लिंग-चयनात्मक गर्भपात** अधिक पाए जाते हैं।
- In **sub-Saharan Africa**, there is **little evidence of son preference and minimal sex-selective abortions**.
  sub-Saharan Africa में पुत्र वरीयता के कम प्रमाण हैं और **लिंग-चयनात्मक गर्भपात** बहुत कम हैं।
- The study hypothesises that **heat-induced pregnancy losses are male-biased**.
  अध्ययन का अनुमान है कि **गर्मी से प्रेरित गर्भ हानि (pregnancy losses)** अधिकतर **पुरुष भ्रूणों में होती है**।
- This aligns with **Trivers and Willard's "frail male" hypothesis**.
  यह **Trivers और Willard** के **"frail male" hypothesis** के अनुरूप है।
- According to this **evolutionary argument**, **weak males are less likely to survive to birth under poor environmental conditions**.
  इस **विकासवादी तर्क** के अनुसार **कमजोर पुरुष भ्रूण खराब पर्यावरणीय परिस्थितियों में जन्म तक जीवित रहने की कम संभावना रखते हैं**।
- After birth, **males have lower survival probabilities than females** and therefore require **greater maternal investment**.
  जन्म के बाद **पुरुषों की जीवित रहने की संभावना महिलाओं की तुलना में कम होती है**, इसलिए उन्हें **अधिक मातृ निवेश (maternal investment)** की आवश्यकता होती है।

Expert Views on Heat Stress and Pregnancy Risks
हीट स्ट्रेस और गर्भावस्था के जोखिमों पर विशेषज्ञों के विचार

- Vidhya Venugopal, **Country Director (NIHR GHRC NCD-EC)**, **Faculty of Public Health**, **Sri Ramachandra Institute of Higher Education and Research, Chennai**, says the results are **not unexpected**.
  Vidhya Venugopal, **Country Director (NIHR GHRC NCD-EC)**, **Faculty of Public Health**, **Sri Ramachandra Institute of Higher Education and Research, Chennai** कहती हैं कि ये परिणाम **अप्रत्याशित नहीं हैं**।
- They underline the **urgency to examine solutions to protect vulnerable groups when temperatures soar**.
  ये परिणाम **तापमान बढ़ने पर संवेदनशील समूहों की सुरक्षा के लिए समाधान खोजने की आवश्यकता की तात्कालिकता** को रेखांकित करते हैं।
- "When your **body temperature rises by one or two degrees above the basal temperature**, it is a **fever**."
  "जब आपका **शरीर का तापमान बेसल तापमान से एक या दो डिग्री अधिक बढ़ जाता है**, तो इसे **बुखार** कहा जाता है।"
- **Pregnant women already have a higher body temperature**, and if there are **rising heat situations**, there will be a **cascade of negative impacts**.
  गर्भवती महिलाओं का शरीर का तापमान पहले से अधिक होता है, और यदि **गर्मी की स्थिति बढ़ती है**, तो **नकारात्मक प्रभावों की श्रृंखला** उत्पन्न होगी।
- In **pregnant women**, there is a **definite increase in adverse events**.
  गर्भवती महिलाओं में **नकारात्मक स्वास्थ्य घटनाओं में स्पष्ट वृद्धि** होती है।
- These include **hypertension, gestational diabetes, and preterm births**.
  इनमें **हाइपरटेंशन, गर्भावधि मधुमेह (gestational diabetes) और समय से पहले जन्म (preterm births)** शामिल हैं।
- The **risk of underweight babies increases**.
  कम वजन वाले शिशुओं का जोखिम बढ़ जाता है।
- While **heat is considered extremely natural in tropical countries**, the **impact of heat stress** is **grossly underestimated**.
  हालाँकि **उष्णकटिबंधीय देशों में गर्मी को अत्यंत प्राकृतिक माना जाता है**, लेकिन **हीट स्ट्रेस के प्रभाव** को गंभीर रूप से कम आंका जाता है।

- This is particularly true for **people living in resource-poor settings**.
  यह विशेष रूप से **संसाधन-विहीन क्षेत्रों में रहने वाले लोगों** के लिए सत्य है।
- **Jane Hirst**, **Chair in Global Women's Health**, **The George Institute for Global Health, Imperial College London**, agrees with this view.
  Jane Hirst, **Chair in Global Women's Health**, **The George Institute for Global Health, Imperial College London**, इस विचार से सहमत हैं।
- She says that **most evidence associating the risk does not come from the hottest or low and middle income countries**.
  वह कहती हैं कि **जोखिम से संबंधित अधिकांश साक्ष्य सबसे गर्म या निम्न एवं मध्यम आय वाले देशों से नहीं आए हैं।**
- However, **this situation is slowly changing**.
  हालाँकि **यह स्थिति धीरे-धीरे बदल रही है।**
- Evidence is now emerging from **these nations**, indicating that the **risks may actually be greater**.
  अब **इन देशों से भी प्रमाण सामने आ रहे हैं**, जो दर्शाते हैं कि **जोखिम वास्तव में अधिक हो सकते हैं।**
- For instance, **global evidence indicates a 25% increase in pre-term births with heat stress**.
  उदाहरण के लिए, **वैश्विक साक्ष्य बताते हैं कि हीट स्ट्रेस के साथ समय से पहले जन्मों में 25% वृद्धि होती है।**
- However, a **study in Tamil Nadu** indicated **three times the risk, nearly 300%**.
  लेकिन **तमिलनाडु में किए गए अध्ययन में तीन गुना जोखिम, लगभग 300%** पाया गया।
- Both experts agree that **governments have a huge role to play**.
  दोनों विशेषज्ञ सहमत हैं कि **सरकारों की इसमें बहुत बड़ी भूमिका है।**
- They emphasise **communicating risks to vulnerable populations as a key step**.
  वे **संवेदनशील आबादी तक जोखिम की जानकारी पहुँचाने को एक महत्वपूर्ण कदम** मानते हैं।
- This is because **risk perception is very low**, reducing the **capacity to intervene**.
  ऐसा इसलिए है क्योंकि **जोखिम की समझ बहुत कम है**, जिससे **हस्तक्षेप करने की क्षमता भी कम हो जाती है।**
- Dr. Vidhya stresses the importance of **protecting vanishing traditional knowledge systems**.
  डॉ. विध्या **लुप्त होती पारंपरिक ज्ञान प्रणालियों के संरक्षण** के महत्व पर जोर देती हैं।
- These include **resource-appropriate cooling mechanisms and diet practices**.
  इनमें **संसाधन-अनुकूल शीतलन तंत्र और आहार पद्धतियाँ** शामिल हैं।
- According to **Prof. Jane**, **structural changes must also be initiated**.
  प्रोफेसर जेन के अनुसार **संरचनात्मक परिवर्तन भी शुरू किए जाने चाहिए।**
- For example, **antenatal clinics should be located in well-ventilated buildings**.
  उदाहरण के लिए **प्रसवपूर्व क्लीनिक अच्छी तरह हवादार भवनों में होने चाहिए।**
- **Safe drinking water should be available** so pregnant women can **cool themselves**.
  सुरक्षित पेयजल उपलब्ध होना चाहिए, ताकि गर्भवती महिलाएँ **अपने शरीर को ठंडा रख सकें।**
- The **Indian government has taken the lead in developing Heat Action Plans** at **regional and sub-regional levels**.
  भारतीय सरकार ने क्षेत्रीय और उप-क्षेत्रीय स्तरों पर Heat Action Plans विकसित करने में अग्रणी भूमिका निभाई है।
- However, **one-third of these plans did not consider pregnant and lactating women and infants as vulnerable groups**.
  हालाँकि **इन योजनाओं में से एक-तिहाई ने गर्भवती और स्तनपान कराने वाली महिलाओं तथा शिशुओं को संवेदनशील समूह के रूप में शामिल नहीं किया।**
- Prof. Jane emphasises the need for **adequate funding and resources for climate engineering**.
  प्रोफेसर जेन **climate engineering के लिए पर्याप्त वित्त और संसाधनों की आवश्यकता** पर जोर देती हैं।
- She also highlights the importance of **learning from best practices**.
  वह **सर्वोत्तम प्रथाओं से सीखने के महत्व** को भी रेखांकित करती हैं।
- The **SMART Health Pregnancy trial**, currently underway in **two Indian States**, is exploring **early warning signals for AASHA workers on weather events**.
  SMART Health Pregnancy trial, जो वर्तमान में **भारत के दो राज्यों में चल रहा है**, **AASHA**

कार्यकर्ताओं को मौसम संबंधी घटनाओं के लिए प्रारंभिक चेतावनी संकेत प्रदान करने पर कार्य कर रहा है।

- The trial has shown **good acceptability**.
  इस परीक्षण ने **अच्छी स्वीकार्यता** दिखाई है।
- It is planned to **expand across seven other countries**.
  इसे **सात अन्य देशों तक विस्तारित करने** की योजना है।

Turning carrot waste into edible material again

GS III: S&T

SPEAKING OF SCIENCE
D. Balasubramanian

As the global population increases, the need for more sustainable and nutritious food sources becomes greater. In this context, the book *Biomass Conversion and Sustainable Biorefinery*, edited by Lubis et al. in 2024, highlights recent advances in using wasted biomass from conversion and biorefinery concepts and discusses how biomass waste and by-products can be minimised by systematic reuse. The World Health Organization has pointed out that as populations grow, it is important to find ways to convert the wasted biomass into edible products.

We use a variety of vegetables, eggs, and meat in our meals and discard the inedible parts as waste. One such vegetable we use is carrots, and while doing so, we discard its skin and bits of its head and bottom (i.e., the crown and the root tip). We also use parts of carrots to prepare sweets, where again we waste small portions as leftovers or for being inedible. An article by Gagan J. Kaur et al., titled 'Assessment of Carrot Rejects and Wastes for Food Product and as a Biofuel' and published in the aforementioned book, discusses this issue in detail.

It is in the same context that a paper published in December 2025 in the *Journal of Agricultural and Food Chemistry* (doi:10.1021/acs.jafc.5c11223), by an international group of authors, led by Martin Gand of the Institute of Food Chemistry at Giessen University in Germany, proposes the use of fungi to utilise carrot waste.

Fungi (the plural of fungus) are a diverse kingdom of life, distinct from plants and animals, primarily due to their unique strategies for acquiring nutrients.

Specifically, unlike plants, fungi do not perform photosynthesis. They also do not have roots with which they can grow. Instead they obtain food from external sources, but unlike animals, fungi do not ingest their food before digesting it. Instead, they release powerful enzymes into their environment to break down organic matter and then absorb the resulting nutrients from their surroundings using mycelia, a root-like structure of fungi that forms a thread-like network.

Their specialised method of eating allows them to thrive in various environments and underpins their ecological roles. They also have the remarkable ability to break down almost every organic material, including food wastes that are not digested by us.

A common example of a fungus is a mushroom, which is used to make soups, curry, pasta, and pizzas. And it is totally vegetarian and rich in vitamins and antioxidants. Mushrooms are fungi that grow using the available external material, which includes food waste. We also use mushrooms frequently in our diets, particularly when advised by nutritionists. The December 2025 study group tested more than 100 types of mushrooms from various countries and found them remarkably efficient at clearing off indigestible wastes. The researchers focused on waste that is discarded from carrots, and how fungi digest them and produce edible material. For instance, the team subsequently turned the mycelia of pink oyster mushrooms that had grown on carrot waste into "vegan patties" that could replace soy in some recipes.

While many of us use carrots in our diets (including in curries, salads, as crunchy snacks, and in sweets), chefs and dieticians advise that we need to use more mushrooms in these preparations for their health benefits. Our future food security may well depend on the transformation of food waste into high-quality proteins and vitamins by fungi.

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As human populations grow, it is important to find ways to convert wasted biomass into edible products. NICK FEWINGS/UNSPLASH

08Mar. Turning carrot waste into edible material again
### गाजर के अपशिष्ट को फिर से खाद्य सामग्री में बदलना

- As the **global population increases**, the need for more **sustainable and nutritious food sources** becomes greater.
  जैसे-जैसे **वैश्विक जनसंख्या बढ़ रही है**, वैसे-वैसे अधिक **टिकाऊ और पोषणयुक्त खाद्य स्रोतों** की आवश्यकता बढ़ती जा रही है।
- In this context, the book **"Biomass Conversion and Sustainable Biorefinery" (2024)** edited by **Lubis et al.** highlights recent advances in using **wasted biomass from conversion and biorefinery concepts**.
  इस संदर्भ में **Lubis et al. द्वारा संपादित पुस्तक "Biomass Conversion and Sustainable Biorefinery" (2024)** में बायोमास अपशिष्ट के उपयोग और बायोरिफाइनरी अवधारणाओं में हालिया प्रगति को उजागर किया गया है।
- The book discusses how **biomass waste and by-products can be minimised by systematic reuse**.
  इस पुस्तक में बताया गया है कि **बायोमास अपशिष्ट और उप-उत्पादों को व्यवस्थित पुनःउपयोग (systematic reuse) द्वारा कम किया जा सकता है**।
- The **World Health Organization (WHO)** has pointed out that as populations grow, it is important to **convert wasted biomass into edible products**.
  विश्व स्वास्थ्य संगठन (WHO) ने बताया है कि जनसंख्या बढ़ने के साथ **अपशिष्ट बायोमास को खाद्य उत्पादों में बदलना महत्वपूर्ण है**।
- We use a variety of **vegetables, eggs, and meat** in our meals and **discard the inedible parts as waste**.
  हम अपने भोजन में **सब्जियाँ, अंडे और मांस** का उपयोग करते हैं और **अखाद्य हिस्सों को कचरे के रूप में फेंक देते हैं**।

- One such vegetable is **carrot**, whose **skin, crown, and root tip** are usually discarded.
  ऐसी ही एक सब्जी **गाजर (carrot)** है, जिसके **छिलके, सिरा (crown) और जड़ का निचला हिस्सा (root tip)** अक्सर फेंक दिए जाते हैं।
- Carrots are also used to prepare **sweets**, where again **small portions are wasted as leftovers or inedible parts**.
  गाजर का उपयोग **मिठाइयाँ बनाने में भी होता है**, जहाँ **छोटे हिस्से बचा हुआ या अखाद्य होने के कारण व्यर्थ चले जाते हैं**।
- An article titled **"Assessment of Carrot Rejects and Wastes for Food Product and as a Biofuel"** by **Gagan J. Kaur et al.** discusses this issue.
  Gagan J. Kaur et al. द्वारा लिखित लेख **"Assessment of Carrot Rejects and Wastes for Food Product and as a Biofuel"** में इस समस्या पर विस्तार से चर्चा की गई है।
- It was published in the book **Biomass Conversion and Sustainable Biorefinery (2024)**.
  यह लेख **Biomass Conversion and Sustainable Biorefinery (2024)** पुस्तक में प्रकाशित हुआ है।
- A **December 2025 study** in the **Journal of Agricultural and Food Chemistry** proposes using **fungi to utilise carrot waste**.
  December 2025 में **Journal of Agricultural and Food Chemistry** में प्रकाशित अध्ययन ने **गाजर के अपशिष्ट के उपयोग के लिए फंगी (fungi) के प्रयोग** का प्रस्ताव दिया है।
- The research was led by **Martin Gand of the Institute of Food Chemistry, Giessen University, Germany**.
  इस शोध का नेतृत्व **Martin Gand (Institute of Food Chemistry, Giessen University, Germany)** ने किया।
- **Fungi** are a **diverse kingdom of life**, distinct from **plants and animals**.
  फंगी (fungi) जीवन का एक **विविध साम्राज्य (kingdom)** है, जो **पौधों और जानवरों से अलग** है।
- This distinction arises mainly because of their **unique strategies for acquiring nutrients**.
  यह भिन्नता मुख्य रूप से **पोषक तत्व प्राप्त करने की उनकी विशिष्ट रणनीतियों** के कारण है।
- Unlike **plants**, fungi **do not perform photosynthesis**.
  पौधों के विपरीत, फंगी **प्रकाश संश्लेषण (photosynthesis)** नहीं करते।
- They also **do not have roots to grow like plants**.
  इनके पास **पौधों की तरह जड़ें भी नहीं होतीं**।
- Instead, fungi **obtain food from external sources**.
  इसके बजाय फंगी **बाहरी स्रोतों से भोजन प्राप्त करते हैं**।
- Unlike **animals**, fungi **do not ingest food before digestion**.
  जानवरों के विपरीत, फंगी **पाचन से पहले भोजन को निगलते नहीं हैं**।
- Instead, they release **powerful enzymes into their environment** to **break down organic matter**.
  इसके बजाय वे **अपने वातावरण में शक्तिशाली एंजाइम छोड़ते हैं**, जो **कार्बनिक पदार्थ को तोड़ते हैं**।
- They then **absorb nutrients using mycelia**, a **root-like thread network**.
  इसके बाद वे **mycelia नामक जड़-जैसी तंतु संरचना** के माध्यम से **पोषक तत्वों को अवशोषित करते हैं**।
- This **specialised feeding method** allows fungi to **thrive in various environments**.
  यह **विशिष्ट भोजन प्राप्त करने की प्रक्रिया** फंगी को **विभिन्न पर्यावरणों में जीवित रहने में सक्षम बनाती है**।
- It also supports their **important ecological roles**.
  यह उनकी **महत्वपूर्ण पारिस्थितिक भूमिकाओं** का आधार भी है।
- Fungi can **break down almost every organic material**, including **food waste**.
  फंगी लगभग **हर प्रकार के कार्बनिक पदार्थ**, यहाँ तक कि **खाद्य अपशिष्ट** को भी **विघटित कर सकते हैं**।
- A common example of fungi is the **mushroom**.
  फंगी का एक सामान्य उदाहरण **मशरूम (mushroom)** है।
- Mushrooms are used to prepare **soups, curry, pasta, and pizzas**.
  मशरूम का उपयोग **सूप, करी, पास्ता और पिज़्ज़ा** बनाने में किया जाता है।
- They are **vegetarian and rich in vitamins and antioxidants**.
  ये **शाकाहारी होते हैं और विटामिन तथा एंटीऑक्सीडेंट से भरपूर** होते हैं।
- Mushrooms grow using **external materials including food waste**.
  मशरूम **बाहरी पदार्थों, जैसे खाद्य अपशिष्ट**, का उपयोग करके बढ़ते हैं।
- They are also frequently recommended by **nutritionists in diets**.
  इन्हें **पोषण विशेषज्ञ (nutritionists)** भी आहार में शामिल करने की सलाह देते हैं।

- The **December 2025 study** tested **more than 100 types of mushrooms** from different countries.
  December 2025 के अध्ययन में विभिन्न देशों के **100 से अधिक प्रकार के मशरूम** का परीक्षण किया गया।
- These mushrooms were found **highly efficient at breaking down indigestible wastes**.
  ये मशरूम **अपाच्य अपशिष्ट को तोड़ने में अत्यधिक सक्षम** पाए गए।
- The researchers studied how **fungi digest carrot waste and produce edible material**.
  शोधकर्ताओं ने अध्ययन किया कि **फंगी गाजर के अपशिष्ट को पचाकर खाद्य पदार्थ कैसे बनाते हैं।**
- The **mycelia of pink oyster mushrooms grown on carrot waste** were converted into **"vegan patties."**
  गाजर के अपशिष्ट पर उगे pink oyster mushroom के mycelia को **"vegan patties"** में बदला गया।
- These patties can **replace soy in some recipes**.
  ये पैटीज़ कुछ व्यंजनों में **सोया के विकल्प के रूप में** उपयोग की जा सकती हैं।
- While many people consume **carrots in curries, salads, snacks, and sweets**, experts suggest using **more mushrooms for health benefits**.
  हालाँकि लोग **करी, सलाद, स्नैक्स और मिठाइयों में गाजर** का उपयोग करते हैं, विशेषज्ञ स्वास्थ्य लाभ के लिए अधिक मशरूम खाने की सलाह देते हैं।
- Our **future food security** may depend on **transforming food waste into high-quality proteins and vitamins using fungi**.
  हमारी **भविष्य की खाद्य सुरक्षा** इस बात पर निर्भर कर सकती है कि हम **फंगी की मदद से खाद्य अपशिष्ट को उच्च गुणवत्ता वाले प्रोटीन और विटामिन में** कैसे बदलते हैं।
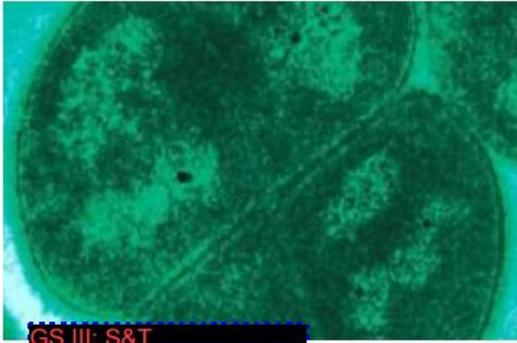
GS III: S&T

Supertough bug may also survive colliding worlds

The bacteria *Deinococcus radiodurans* is famous for being able to survive extreme radiation and dryness. Researchers have found it can also survive the intense pressures of being blasted off a planet's surface: 14,000-24,000 earth atmospheres. Genetic analysis revealed the survivors focused on DNA repair and iron transport to recover from the trauma. The findings support the idea that life could travel between planets inside ejected rocks, potentially expanding our search for extraterrestrial life.

08Mar. Supertough bug may also survive colliding worlds
अत्यंत मजबूत सूक्ष्मजीव टकराते हुए ग्रहों में भी जीवित रह सकता है

- The **bacteria Deinococcus radiodurans** is famous for its ability to survive **extreme radiation and dryness**.
  Deinococcus radiodurans नामक **बैक्टीरिया** अपनी **अत्यधिक विकिरण (radiation) और सूखे (dryness)** में जीवित रहने की क्षमता के लिए प्रसिद्ध है।
- Researchers have found that it can also survive the **intense pressures of being blasted off a planet's surface**.
  शोधकर्ताओं ने पाया है कि यह **किसी ग्रह की सतह से विस्फोट के साथ बाहर फेंके जाने के दौरान उत्पन्न अत्यधिक दबाव** को भी सहन कर सकता है।
- The pressure endured ranges between **14,000–24,000 Earth atmospheres**.
  यह **14,000–24,000 पृथ्वी वायुमंडलीय दबाव (Earth atmospheres)** तक सहन कर सकता है।
- **Genetic analysis** of the survivors revealed that they focused on **DNA repair and iron transport** mechanisms.
  जीवित बचे जीवों के **आनुवंशिक विश्लेषण (genetic analysis)** से पता चला कि वे **DNA मरम्मत (DNA repair) और आयरन परिवहन (iron transport)** प्रक्रियाओं पर ध्यान केंद्रित करते हैं।
- These mechanisms help them **recover from the trauma caused by extreme pressure**.
  ये तंत्र उन्हें **अत्यधिक दबाव से उत्पन्न क्षति से उबरने में सहायता** करते हैं।
- The findings support the idea that **life could travel between planets inside ejected rocks**.
  ये निष्कर्ष इस विचार का समर्थन करते हैं कि **जीवन ग्रहों के बीच उछले हुए पत्थरों (ejected rocks) के अंदर यात्रा कर सकता है।**

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- This concept suggests the possibility of **panspermia**, where life spreads between planets.
  यह अवधारणा **पैनस्पर्मिया (panspermia)** की संभावना को दर्शाती है, जिसमें **जीवन ग्रहों के बीच फैल सकता है।**

- Such findings may **expand the search for extraterrestrial life** beyond Earth.
  ऐसे निष्कर्ष **पृथ्वी से परे बाह्य-ग्रहीय जीवन (extraterrestrial life)** की खोज को **और विस्तृत कर सकते हैं।**

Simulated reality

Simulated reality
सिम्युलेटेड रियलिटी (अनुकरणित वास्तविकता)

Why do some people believe the whole universe is a simulation?

In half a century, video games have gone from dots on a screen to lifelike 3D worlds. Believers argue that in future, we'll eventually create simulations indistinguishable from reality. If an advanced civilisation creates millions of such simulations, simulated 'people' could far outnumber real people. Extrapolating from there, if there are a million 'fake universes' and only one real one, it's statistically more likely that we're in a fake one. There are many problems with the idea. It doesn't explain the origins of reality, only abstracts it back one level. Second, our universe alone being real is simpler than our universe being simulated by a parent universe (Occam's razor). The best computers also struggle to simulate hundreds of atoms at the quantum level; simulating a universe could demand more energy than what the universe itself holds. One condition for a scientific theory to be valid is it must be falsifiable: you can test it and potentially prove it wrong with an experiment. The simulation idea isn't falsifiable.

Readers may send their questions / answers to science@thehindu.co.in

- Why do some people believe the whole **universe** is a **simulation**?
  कुछ लोग क्यों मानते हैं कि पूरा **ब्रह्मांड (Universe)** एक **सिमुलेशन (Simulation)** है?

- In half a century, **video games** have gone from **dots on a screen** to **lifelike 3D worlds**.
  आधे शतक में **वीडियो गेम्स स्क्रीन पर बिंदुओं** से विकसित होकर **जीवन जैसे 3D संसारों** तक पहुँच गए हैं।

- **Believers** argue that in **future**, we'll eventually create **simulations indistinguishable from reality**.
  समर्थक तर्क देते हैं कि **भविष्य में** हम ऐसे **सिमुलेशन** बना लेंगे जिन्हें **वास्तविकता से अलग पहचानना असंभव होगा।**

- If an **advanced civilization** creates **millions of such simulations**, simulated '**people**' could far outnumber **real people**.
  यदि कोई **उन्नत सभ्यता** ऐसे **लाखों सिमुलेशन** बनाती है, तो सिमुलेटेड '**लोग**' वास्तविक **लोगों** से कहीं अधिक हो सकते हैं।

- Extrapolating from there, if there are a **million** '**fake universes**' and only **one real one**, it's **statistically** more likely that we're in a **fake one**.
  इससे आगे अनुमान लगाते हुए, यदि **दस लाख 'नकली ब्रह्मांड'** हों और केवल **एक वास्तविक**, तो **सांख्यिकीय रूप से** यह अधिक संभव है कि हम **नकली ब्रह्मांड** में हों।

- There are many **problems with the idea**.
  इस **विचार** के साथ कई **समस्याएँ** हैं।

- It doesn't explain the **origins of reality**, only abstracts it back **one level**.
  यह **वास्तविकता की उत्पत्ति** की व्याख्या नहीं करता, बल्कि इसे केवल **एक स्तर पीछे** ले जाता है।

- Second, our **universe alone being real** is simpler than our **universe being simulated by a parent universe (Occam's razor)**.
  दूसरा, हमारा **ब्रह्मांड अकेले वास्तविक होना** इस विचार से सरल है कि हमारा **ब्रह्मांड किसी मूल ब्रह्मांड द्वारा सिमुलेट किया गया है (ऑक्कम का उस्तरा सिद्धांत)।**

- The best **computers** also struggle to **simulate hundreds of atoms** at the **quantum level**; simulating a **universe** could demand more **energy** than what the **universe itself holds**.
  सबसे अच्छे **कंप्यूटर** भी **क्वांटम स्तर** पर **सैकड़ों परमाणुओं** का **सिमुलेशन** करने में संघर्ष करते हैं; पूरे **ब्रह्मांड** का सिमुलेशन करने के लिए उससे भी अधिक **ऊर्जा** की आवश्यकता हो सकती है जितनी **ब्रह्मांड स्वयं में रखता है।**

- One **condition for a scientific theory** to be valid is it must be **falsifiable**: you can **test it** and potentially **prove it wrong** with an **experiment**.
  किसी **वैज्ञानिक सिद्धांत** के वैध होने की एक **शर्त** यह है कि वह **फॉल्सिफाएबल (Falsifiable)** होना चाहिए: अर्थात आप उसे **परीक्षण** कर सकें और **प्रयोग** के माध्यम से **गलत सिद्ध कर सकें।**

- The **simulation idea** isn't **falsifiable**.
  सिमुलेशन का विचार फॉल्सिफाएबल नहीं है।

GS Paper III: Environment,	
TOPICS COVERED	08 March 2026
08Mar	What is the state of the environment in India? भारत में पर्यावरण की स्थिति क्या है?
08Mar	Govt. announces standards for green ammonia, methanol सरकार ने ग्रीन अमोनिया और मेथनॉल के लिए मानक घोषित किए

What is the state of the environment in India?

What does the Centre for Science and Environment's report for 2025 say about pressing challenges?

GS III: Environment

Nikhil M. Babu   MQB

The story so far:

On February 25, the Delhi-based Centre for Science and Environment (CSE) released the 'State of India's Environment 2026', a report that the research and advocacy non-profit has been publishing since 1982. The report gives a bird's-eye view of the environmental challenges the country faces, ranging from floods, extreme weather events, changes in tiger behaviour, and air pollution. It also gives a global perspective of climate change and connects it to the Indian context.

Are extreme weather events increasing?

The report says that in 2025, India experienced the highest rise in both the frequency and severity of extreme weather events over the past four years, including heatwaves, cold waves, heavy rainfall, and floods. Data from January 1 to November 30, 2025, show that such events were recorded on 99% of the days in 2025, resulting in 4,419 reported deaths and affecting at least 17.41 million hectares of crop area. This is a sharp rise from 2024, when extreme weather events occurred on 88% of days, causing 3,393 deaths and impacting 3.61 million ha of crop area. In 2023, 89% of days experienced such events, resulting in 3,208 deaths and 2.09 million ha of crop damage.

Himachal Pradesh was the worst hit by extreme weather events (267 days), followed by Kerala (173 days), and Madhya Pradesh (162 days).

Taken together, these trends signal a "widening ecological backlash and underscore the urgency of meaningful climate action. Without decisive efforts to cut risks and emissions, the disasters we face today risk becoming the norm tomorrow," the report said.

Are floods becoming more intense?

The report talks about how a warming climate will substantially increase the possibility of widespread floods. It says, "Climate change is not a distant possibility; it is already shaping our rivers, our cities, and our lives. Future resilience will depend on how quickly we can integrate climate science into everyday planning – from how we design culverts to how we allocate land along rivers." It says India's approach should move from post-disaster relief work to pre-disaster resilience. The report emphasises the need for nature-based solutions such as restoring wetlands, reconnecting rivers to floodplains, recharging groundwater, harvesting rainwater, and restoring and constructing lakes.

Is tiger behaviour changing?

The report notes that there is an increase in tigers killing humans. From January to June 2025, at least 43 people were killed near tiger reserves, with tigers consuming parts of their victims in four cases. In the same period in 2024, 44 people lost their lives to tiger attacks.

Tigers rarely turn into compulsive human-eaters, but tiger attacks and consumption of humans increase when the wild cats grow old or suffer from injuries and are unable to hunt for food, or when their natural prey base disappears. According to experts and wildlife observers, says the report, one of the reasons why tigers seem to be increasingly targeting humans is proximity of humans to tiger territory.

CSE notes that both the tiger population and the number of people living near forests are on the rise. In 20 States with tiger populations, around 40% of tiger territory overlaps with land home to 60 million people. Tiger populations inside reserve areas are at a saturation point. As a result, the big cats are venturing outside protected areas. Experts cited in the report attribute these behavioural changes to overcrowding, habitat loss, and human activity near tiger habitats.

Is India measuring air pollution properly?

As per CSE's analysis, only 15% of India's population (about 200 million people) live within 10 kilometres of a continuous air quality monitor. The remaining 85% (more than 1.2 billion people) breathe air that is outside any measurable range. Air quality monitoring remains concentrated in a limited set of large cities, primarily State capitals and metropolitan regions. "Entire districts, industrial belts and fast-growing peri-urban belts remain outside the monitoring grid. The result is a fragmented picture: a few zones with dense, overlapping data coverage and vast regions that appear blank," it says. This absence is not just a gap in information, but an example of structural inequality in India's environmental governance. Hundreds of smaller towns, many of which experience comparable or even higher levels of air pollution due to local industrial and transport activities, have no real-time data at all, according to the report.

faces.
यह रिपोर्ट देश के सामने मौजूद **environmental challenges** का **bird's-eye view** प्रस्तुत करती है।

- These range from **floods, extreme weather events, changes in tiger behaviour, and air pollution**.
  इनमें **बाढ़, extreme weather events, बाघों के व्यवहार में बदलाव और वायु प्रदूषण** शामिल हैं।
- It also gives a **global perspective of climate change** and connects it to the **Indian context**.
  यह **climate change** का **global perspective** भी प्रस्तुत करती है और इसे **भारतीय संदर्भ** से जोड़ती है।

Are extreme weather events increasing?
क्या extreme weather events बढ़ रहे हैं?

- The report says that in **2025**, India experienced the **highest rise in both the frequency and severity of extreme weather events** over the past **four years**.
  रिपोर्ट के अनुसार **2025** में भारत में पिछले **चार वर्षों** की तुलना में **extreme weather events की आवृत्ति और तीव्रता दोनों में सबसे अधिक वृद्धि** देखी गई।
- These include **heatwaves, cold waves, heavy rainfall, and floods**.
  इनमें **heatwaves, cold waves, भारी वर्षा और बाढ़** शामिल हैं।
- Data from **January 1 to November 30, 2025**, show that such events were recorded on **99% of the days in 2025**.
  1 जनवरी से 30 नवंबर 2025 के आंकड़ों के अनुसार ऐसे घटनाक्रम **2025 के 99% दिनों में** दर्ज किए गए।
- This resulted in **4,419 reported deaths**.
  इससे **4,419 मौतें** दर्ज की गईं।
- It also affected at least **17.41 million hectares of crop area**.
  इससे कम से कम **17.41 million hectares फसल क्षेत्र** प्रभावित हुआ।
- This is a sharp rise from **2024**, when extreme weather events occurred on **88% of days**.
  यह **2024** की तुलना में तेज वृद्धि है, जब ऐसे घटनाक्रम **88% दिनों** में हुए थे।
- That year they caused **3,393 deaths**.
  उस वर्ष **3,393 मौतें** हुई थीं।
- They also impacted **3.61 million ha of crop area**.
  और **3.61 million ha फसल क्षेत्र** प्रभावित हुआ था।
- In **2023**, **89% of days** experienced such events.
  2023 में **89% दिनों** में ऐसे घटनाक्रम दर्ज किए गए।
- This resulted in **3,208 deaths**.
  इससे **3,208 मौतें** हुईं।
- And **2.09 million ha of crop damage**.
  और **2.09 million ha फसल क्षति** हुई।
- **Himachal Pradesh** was the **worst hit by extreme weather events** with **267 days**.
  हिमाचल प्रदेश में **extreme weather events** का सबसे अधिक प्रभाव पड़ा, जहाँ **267 दिन** ऐसे घटनाक्रम हुए।
- It was followed by **Kerala (173 days)**.
  इसके बाद **केरल (173 दिन)** रहा।
- And **Madhya Pradesh (162 days)**.
  और **मध्य प्रदेश (162 दिन)** रहा।
- Taken together, these trends signal a **"widening ecological backlash"**.
  इन सभी रुझानों से **"widening ecological backlash"** का संकेत मिलता है।
- They underscore the **urgency of meaningful climate action**.
  ये **meaningful climate action** की **तत्काल आवश्यकता** को रेखांकित करते हैं।
- Without **decisive efforts to cut risks and emissions**, the disasters we face today risk becoming the **norm tomorrow**.
  यदि **risks और emissions को कम करने के लिए निर्णायक प्रयास** नहीं किए गए, तो आज की आपदाएँ **कल का सामान्य परिदृश्य** बन सकती हैं।
- The report said this clearly.
  रिपोर्ट ने इसे स्पष्ट रूप से कहा है।

Are floods becoming more intense?
क्या बाढ़ अधिक तीव्र हो रही है?

- The report talks about how a **warming climate** will substantially increase the possibility of **widespread floods**.
  रिपोर्ट बताती है कि **warming climate** के कारण **व्यापक बाढ़** की संभावना काफी बढ़ जाएगी।

- It says **climate change is not a distant possibility**.
  रिपोर्ट कहती है कि **climate change कोई दूर की संभावना नहीं है।**

- It is already shaping **our rivers, our cities, and our lives**.
  यह पहले से ही **हमारी नदियों, हमारे शहरों और हमारे जीवन** को प्रभावित कर रहा है।

- Future **resilience** will depend on how quickly we can **integrate climate science into everyday planning**.
  भविष्य की **resilience** इस बात पर निर्भर करेगी कि हम कितनी जल्दी **climate science को रोज़मर्रा की योजना में शामिल** करते हैं।

- This includes how we **design culverts** and how we **allocate land along rivers**.
  इसमें यह भी शामिल है कि हम **culverts कैसे डिजाइन करते हैं** और **नदियों के किनारे भूमि का आवंटन कैसे करते हैं।**

- It says India's approach should move from **post-disaster relief work** to **pre-disaster resilience**.
  रिपोर्ट कहती है कि भारत को **post-disaster relief work** से आगे बढ़कर **pre-disaster resilience** पर ध्यान देना चाहिए।

- The report emphasises **nature-based solutions**.
  रिपोर्ट **nature-based solutions** पर जोर देती है।

- These include **restoring wetlands**.
  इनमें **wetlands की बहाली** शामिल है।

- It also includes **reconnecting rivers to floodplains**.
  इसके साथ **नदियों को floodplains से फिर से जोड़ना** भी शामिल है।

- It includes **recharging groundwater**.
  इसमें **groundwater recharge** भी शामिल है।

- It also includes **harvesting rainwater**.
  इसमें **rainwater harvesting** भी शामिल है।

- And **restoring and constructing lakes**.
  और **झीलों की बहाली तथा निर्माण** भी शामिल है।

- **Is tiger behaviour changing?**
  क्या बाघों का व्यवहार बदल रहा है?

- The report notes that there is an increase in **tigers killing humans**.
  रिपोर्ट में बताया गया है कि **बाघों द्वारा मनुष्यों को मारने की घटनाएँ बढ़ रही हैं।**

- From **January to June 2025**, at least **43 people were killed** near tiger reserves.
  जनवरी से जून 2025 के बीच **tiger reserves के पास कम से कम 43 लोग मारे गए।**

- In **four cases**, tigers consumed **parts of their victims**.
  चार मामलों में बाघों ने **पीड़ितों के शरीर के कुछ हिस्से खा लिए।**

- In the same period in **2024**, **44 people lost their lives** to tiger attacks.
  2024 की इसी अवधि में **44 लोगों की मौत** बाघों के हमलों से हुई थी।

- Tigers rarely turn into **compulsive human-eaters**.
  बाघ शायद ही कभी **compulsive human-eaters** बनते हैं।

- But **tiger attacks and consumption of humans increase** when the wild cats **grow old or suffer from injuries**.
  लेकिन **tiger attacks** और **मनुष्यों को खाने की घटनाएँ** तब बढ़ती हैं जब बाघ **बूढ़े हो जाते हैं या घायल हो जाते हैं।**

- This happens when they are **unable to hunt for food**.
  यह तब होता है जब वे **शिकार करने में असमर्थ** हो जाते हैं।

- Or when their **natural prey base disappears**.
  या जब उनका **natural prey base समाप्त हो जाता है।**

- According to **experts and wildlife observers**, one reason is **proximity of humans to tiger territory**.

विशेषज्ञों और **wildlife observers** के अनुसार इसका एक कारण **मनुष्यों का tiger territory के करीब रहना** है।

- CSE notes that both the **tiger population** and the **number of people living near forests** are increasing.
  CSE के अनुसार **tiger population** और **जंगलों के पास रहने वाले लोगों की संख्या** दोनों बढ़ रही हैं।

- In **20 States with tiger populations**, around **40% of tiger territory overlaps with land home to 60 million people**.
  20 राज्यों में जहाँ बाघ पाए जाते हैं, वहाँ लगभग **40% tiger territory** ऐसी भूमि से ओवरलैप करती है जहाँ **60 million लोग रहते हैं**।

- Tiger populations inside **reserve areas** are at a **saturation point**.
  reserve areas के भीतर **tiger population saturation point** पर पहुँच चुकी है।

- As a result, the big cats are **venturing outside protected areas**.
  इसके परिणामस्वरूप बाघ **protected areas के बाहर जाने लगे हैं**।

- Experts attribute these changes to **overcrowding, habitat loss, and human activity near tiger habitats**.
  विशेषज्ञ इन बदलावों का कारण **overcrowding, habitat loss** और **tiger habitats के पास human activity** को मानते हैं।

- **Is India measuring air pollution properly?**
  क्या भारत वायु प्रदूषण को सही ढंग से माप रहा है?

- As per **CSE's analysis**, only **15% of India's population** lives within **10 kilometres of a continuous air quality monitor**.
  CSE के विश्लेषण के अनुसार केवल **भारत की 15% आबादी** ही **10 किलोमीटर के भीतर किसी continuous air quality monitor** के पास रहती है।

- This means about **200 million people**.
  यह लगभग **200 million लोगों** के बराबर है।

- The remaining **85% population**, more than **1.2 billion people**, breathe air that is **outside any measurable range**.
  बाकी **85% आबादी**, यानी **1.2 billion से अधिक लोग**, ऐसी हवा में सांस लेते हैं जो **किसी भी मापनीय सीमा से बाहर** है।

- **Air quality monitoring** remains concentrated in **large cities**.
  Air quality monitoring मुख्यतः **बड़े शहरों** में केंद्रित है।

- These are primarily **State capitals and metropolitan regions**.
  ये मुख्य रूप से **राज्य की राजधानियाँ और महानगरीय क्षेत्र** हैं।

- Entire **districts, industrial belts and fast-growing peri-urban belts** remain outside the **monitoring grid**.
  पूरे जिले, **industrial belts और तेजी से बढ़ते peri-urban क्षेत्र** अभी भी **monitoring grid** से बाहर हैं।

- The result is a **fragmented picture**.
  इसका परिणाम **fragmented picture** के रूप में सामने आता है।

- A few zones have **dense overlapping data coverage**.
  कुछ क्षेत्रों में **dense overlapping data coverage** उपलब्ध है।

- But **vast regions appear blank**.
  लेकिन **विशाल क्षेत्र खाली दिखाई देते हैं**।

- This absence is not just a **gap in information**.
  यह केवल **information gap** नहीं है।

- It is also an example of **structural inequality in India's environmental governance**.
  यह **भारत की environmental governance में structural inequality** का उदाहरण भी है।

- Hundreds of **smaller towns** experience **comparable or even higher levels of air pollution**.
  सैकड़ों **छोटे शहरों** में **वायु प्रदूषण का स्तर समान या उससे भी अधिक** हो सकता है।

- This is due to **local industrial and transport activities**.
  यह **स्थानीय औद्योगिक और परिवहन गतिविधियों** के कारण होता है।

- Yet they have **no real-time data at all**.
  फिर भी वहाँ **real-time data बिल्कुल उपलब्ध नहीं है**।

Govt. announces standards for green ammonia, methanol

GS III: Environment

The government announced standards for green ammonia and green methanol for India to boost trade of green hydrogen derivatives under the National Green Hydrogen Mission. The mission, with an initial outlay of ₹19,744 crore, aims at making India a global hub for production, utilisation and export of green hydrogen and it's derivatives. The standards outline the emission thresholds and eligibility norms for ammonia and methanol to be classified as 'green'. PTI

08Mar. Govt. announces standards for green ammonia, methanol
सरकार ने ग्रीन अमोनिया और मेथनॉल के लिए मानक घोषित किए

- The **government** announced **standards** for **green ammonia** and **green methanol** for **India** to boost **trade of green hydrogen derivatives** under the **National Green Hydrogen Mission**.
 सरकार ने ग्रीन अमोनिया और ग्रीन मेथनॉल के लिए **मानक** घोषित किए ताकि **भारत** में **नेशनल ग्रीन हाइड्रोजन मिशन** के तहत **ग्रीन हाइड्रोजन डेरिवेटिव्स के व्यापार** को बढ़ावा दिया जा सके।

- The **mission**, with an **initial outlay of ₹19,744 crore**, aims at making **India a global hub** for **production, utilisation and export of green hydrogen and it's derivatives**.
 यह **मिशन**, जिसकी **प्रारंभिक लागत ₹19,744 करोड़** है, का उद्देश्य **भारत को वैश्विक केंद्र** बनाना है जहाँ **ग्रीन हाइड्रोजन और उसके डेरिवेटिव्स का उत्पादन, उपयोग और निर्यात** किया जा सके।

- The **standards** outline the **emission thresholds** and **eligibility norms** for **ammonia and methanol** to be classified as **'green'**.
 इन **मानकों** में **उत्सर्जन सीमा (Emission Thresholds)** और **पात्रता मानदंड** निर्धारित किए गए हैं ताकि **अमोनिया और मेथनॉल** को **'ग्रीन'** के रूप में वर्गीकृत किया जा सके।