

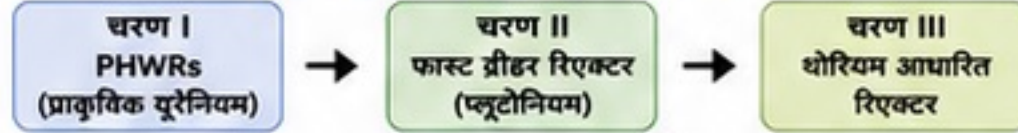
1. भारत का परमाणु ऊर्जा रोडमैप

SMRs, थोरियम और 2047 तक 100 GWe



दीर्घकालिक लक्ष्य
100 GWe
परमाणु क्षमता
2047 तक
5 स्वदेशी SMRs
2033 तक

तीन चरणीय परमाणु कार्यक्रम



- न्यूक्लियर एनर्जी मिशन का लक्ष्य परमाणु क्षमता विस्तार।
- 2047 तक 100 GWe परमाणु क्षमता का लक्ष्य।
- 2033 तक कम से कम 5 स्वदेशी SMRs का लक्ष्य।
- तीन-चरणीय परमाणु कार्यक्रम जारी रहेगा।
- भारत के थोरियम संसाधनों के उपयोग पर दीर्घकालिक रणनीति।
- घरेलू विनिर्माण से आयात निर्भरता घटेगी।
- निजी क्षेत्र की भागीदारी कानूनी व नियामक ढांचे से प्रोत्साहित।

मूल्य संवर्धन आधारभूत बिजली • कर्जा सुरक्षा • डिकार्बोनाइजेशन
कोवर्ड SMR | PHWR | FBR | थोरियम | न्यूक्लियर मिशन

2. MSME विकास (संशोधन) विधेयक, 2026

MSMEs को प्रतिस्पर्धी और भविष्य के लिए तैयार बनाना



- निवेश + टर्नओवर के आधार पर MSME वर्गीकरण।
- डिजिटल प्लेटफॉर्म के माध्यम से निःशुल्क व स्वेच्छिक पंजीकरण।
- केंद्रीय PSUs को MSME इनवॉल्स भुगतान TReDS के माध्यम से।
- अनेक MSE फेसीलिटेशन काउंसिल बनाए जा सकेंगे।
- ऑनलाइन मध्यस्थता / पंचाट तंत्र की व्यवस्था।
- मध्यस्थता की समय सीमा: 90 दिन।
- पंचाट निर्णय: कया-निवेदन पूर्ण होने के 90 दिन के भीतर।
- डिजिटल विवाद समाधान से EoDB को बल।

मूल्य संवर्धन 9.16 करोड़ MSMEs | 31.1% GDP
35.4% विनिर्माण उत्पादन | 48.58% निर्यात
रोजगार > 40 करोड़ लोग

कोवर्ड MSMED अधिनियम | TReDS | उद्यम | ODR | EoDB

3. जुलाई 2026 CPI मुद्रास्फीति

नया CPI आधार वर्ष: 2024

CPI मुद्रास्फीति
(जुलाई 2026)
4.45%



- नया CPI श्रृंखला आधार वर्ष 2024 पर आधारित।
- RBI का मुद्रास्फीति लक्ष्य: 4% (±2%) लचीला ITF ढांचा।
- CPI उपभोक्ता-स्तर पर मूल्य परिवर्तन को मापता है।
- WPI थोक-स्तर पर मूल्य परिवर्तन को मापता है।
- खाद्य मुद्रास्फीति घरेलू क्रय शक्ति को प्रभावित करती है।
- मुद्रास्फीति आय, उपभोग और विकास को प्रभावित करती है।
- प्रमुख कारण: खाद्य झटके, मौसम, लॉजिस्टिक्स, वैश्विक कीमतें।

मूल्य संवर्धन RBI के लिए मौद्रिक नीति निर्णय में CPI महत्वपूर्ण
कोवर्ड CPI | आधार वर्ष | CFPI | मुद्रास्फीति लक्ष्य | RBI

4. भारत की EEZ में मत्स्य पालन के लिए एक्सेस पास



क्षेत्रीय समुद्र
0 – 12 नौटिकल मील
संवर्धित क्षेत्र
24 नौटिकल मील तक
विशेष आर्थिक क्षेत्र (EEZ)
200 नौटिकल मील तक

- ReALCRaft पोर्टल के माध्यम से निःशुल्क डिजिटल मत्स्य पास।
- भारत के EEZ (200 NM) में पात्र गतिविधियों के लिए मान्य।
- Sustainable Harnessing of Fisheries in EEZ Rules, 2025 के अंतर्गत।
- पारंपरिक मछुआरों व सहकारी समितियों / FPOs का समर्थन।
- समुद्री संसाधनों के सतत उपयोग को बढ़ावा।
- मत्स्य गतिविधियों की डिजिटल निगरानी में सहायता।
- बिना मोटर वाले व छोटे परंपरागत मछली पकड़ने वाले यान मुक्त।

मूल्य संवर्धन ब्लू इकोनॉमी • खाद्य सुरक्षा • तटीय आजीविका
कोवर्ड EEZ | UNCLOS | ब्लू इकोनॉमी | मत्स्य नियम 2025

5. BRICS महासागर और ध्रुवीय विज्ञान बैठक

गोवा में कार्यसमूह बैठक

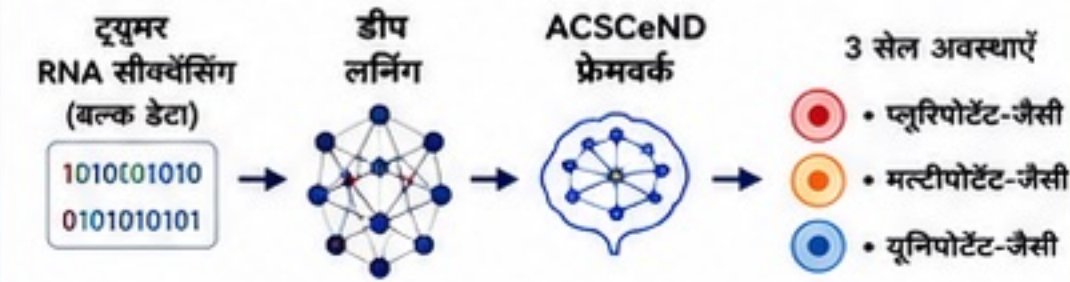


- महासागर विज्ञान
- ध्रुवीय अनुसंधान
- ब्लू इकोनॉमी
- जलवायु लचीलपन
- स्थिरता
- वैज्ञानिक सहयोग
- नवाचार

- 8वीं BRICS Working Group Meeting, भारत की BRICS अध्यक्षता में।
- 12-14 अगस्त 2026, गोवा में आयोजित।
- आयोजन: नेशनल सेंटर फॉर पोलर एंड ओशन रिसर्च (NCPOR)।
- जलवायु, महासागर शासन और सतत विकास को बढ़ावा।
- विज्ञान कृतीति और ग्लोबल साउथ सहयोग को मजबूत करता है।
- ध्रुवीय अनुसंधान का संबंध समुद्र स्तर, मानसून व जलवायु से है।
- नवाचार व तकनीक साझाकरण से विकास तेज होगा।

मूल्य संवर्धन महासागर → जलवायु → मानसून → अर्थव्यवस्था
कोवर्ड BRICS | NCPOR | पोलर साइंस | ब्लू इकोनॉमी | विज्ञान कृतीति

6. AI से कैंसर स्टेम सेल की छिपी पहचान



- भारतीय शोधकर्ताओं द्वारा ACSCeND AI फ्रेमवर्क का विकास।
- ट्यूमर जीन-अभिव्यक्ति डेटा से कैंसर स्टेम-जैसी कोशिकाओं की पहचान।
- उपचार प्रतिरोध, पुनरावृत्ति व मेटास्टेसिस को समझने में मदद।
- डीप लर्निंग से बड़ी संख्या में मरीजों के नमूनों का विश्लेषण संभव।
- सिंगल-सेल सीक्वेंसिंग की तुलना में कम लागत व अधिक स्केलेबल।
- सहयोग: S. N. Bose NCBS और अशोका यूनिवर्सिटी।
- प्रिसिजन मेडिसिन व बेहतर उपचार रणनीति में सहायक।

मूल्य संवर्धन AI + जीनोमिक्स → बेहतर निदान → बेहतर परिणाम
कोवर्ड कैंसर स्टेम सेल | AI | जीनोमिक्स | RNA Seq | प्रिसिजन मेडिसिन

7. विश्व हाथी दिवस 2026

भारत के एशियाई हाथियों का संरक्षण



विश्व के जंगली एशियाई
हाथियों का लगभग 60%
भारत में
SAIEE 2021-25
अनुमान: 22,446
33 एलिफेंट रिजर्व
150 कॉरिडोर चिह्नित

- भारत में एशियाई हाथियों की लगभग 60% आबादी।
- SAIEE 2021-25 के अनुसार भारत में 22,446 जंगली हाथी।
- 33 एलिफेंट रिजर्व और 150 हाथी कॉरिडोर चिह्नित।
- कीस्टोन प्रजाति: बीज प्रसार व वन पुनर्जनन में भूमिका।
- प्रमुख खतरे: आवास हानि, विघाटन, मानव-हाथी संघर्ष, शिकार, तस्करी, अवैध व्यापार।
- संरक्षण दृष्टिकोण: सुरक्षित क्षेत्र, कॉरिडोर, तकनीक व समुदाय भागीदारी।
- प्रोजेक्ट एलिफेंट और वैज्ञानिक निगरानी से संरक्षण सुदृढ़।

मूल्य संवर्धन जैव विविधता संरक्षण • पारिस्थितिक संतुलन
कोवर्ड प्रोजेक्ट एलिफेंट | कॉरिडोर | HEC | कीस्टोन स्पीशीज

8. डिजिटल पब्लिक इंफ्रास्ट्रक्चर नागरिक-केंद्रित शासन



- DPI सभी हितधारकों को कुशल सेवाओं तक पहुँच सक्षम बनाता है।
- पारदर्शिता, समावेशन और पोर्टेबिलिटी को बढ़ावा।
- प्रमुख द्वाहरण: आधार, UPI, DBT, DigiLocker, ABDM, GeM, ONDC, आदि।
- वित्तीय समावेशन और प्रत्यक्ष लाभ अंतरण को सुदृढ़ करता है।
- चुनौतियाँ: डिजिटल विभाजन, गोपनीयता, साइबर सुरक्षा, बहिष्करण त्रुटियाँ।
- प्रोबोगिकी जवाबदेही का विकल्प नहीं, लक्षिक सक्षमक है।
- संविधान के समानता, पारदर्शिता और सुशासन के सिद्धांतों को बल।

मूल्य संवर्धन डिजिटल समावेशन → साप्ताहिक व आर्थिक सशक्तिकरण
कोवर्ड DPI | डिजिटल इंडिया | DBT | UPI | डेटा गवर्नेंस | e-Governance

9. PIB बैकग्राउंडर भारतीय कृषि व संबद्ध क्षेत्र का नया युग



उत्पादकता संवर्धन
विविधीकरण
मूल्य संवर्धन
बाजार एकीकरण
जलवायु लचीलपन

- कृषि व संबद्ध क्षेत्र लगभग 46.1% कार्यबल को आजीविका देते हैं।
- पशुपालन और मत्स्य पालन की वृद्धि दर ~5-6% बनी हुई।
- फसल विविधीकरण से जोखिम कम और आय स्थिर।
- खाद्य प्रसंस्करण से मूल्य संवर्धन और बेहतर आय।
- सिंचाई व जल प्रबंधन से उत्पादकता व लचीलपन बढ़ता है।
- प्रमुख चुनौतियाँ: छोटे जोत, जल तनाव, पोस्ट-हार्वैस्ट नुकसान, मूल्य असंचितता।
- FPOs, डिजिटल कृषि और जलवायु-सहिष्णु कृषि भविष्य की दिशा।

मूल्य संवर्धन खाद्य सुरक्षा • ग्रामीण आय • सतत कृषि
कोवर्ड विविधीकरण | FPOs | प्रसंस्करण | जलवायु लचीलपन

अन्य महत्वपूर्ण वन-लाइनर्स

भारत में वित्तीय समावेशन में
बड़ा सुधार: खाते की स्वामित्व
~89% तक (Global Findex 2025)।

RBI ने लगातार पाँचवीं बार रेपो
दर 5.50% पर यथावत रखा;
मौदिक नीति समिति की बैठक।

राष्ट्रीय डेटा गवर्नेंस नीति (NDGP)
सार्वजनिक प्रतिष्ठिका हेतु
प्राकृप के रूप में जारी।

कक्षा 3 और 6 के लिए दो नई
NCERT पुस्तकें NEP 2020
के अनुरूप जारी।

भारत अहमदाबाद में 23वें विश्व
पुलिस एवं फायर गेम्स 2029
की मेजबानी करेगा।

1. NUCLEAR ENERGY ROADMAP

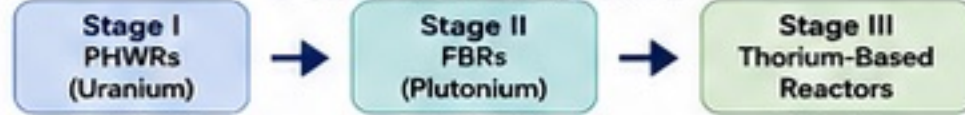
SMRs, THORIUM & 100 GWE BY 2047



100 GWe
by 2047

5 Indigenous SMRs
by 2033

3-Stage Nuclear Programme



- Nuclear Energy Mission in Union Budget 2025-26
- 100 GWe nuclear capacity target by 2047
- At least 5 indigenous SMRs targeted by 2033
- Continues three-stage nuclear power programme
- Long-term strategy for thorium utilisation
- Greater domestic manufacturing, lower import dependence
- Private sector participation enabled by legal framework

VALUE ADDITION Base-load power | Energy security | Decarbonisation

KEYWORDS SMR | PHWR | FBR | Thorium | NEM

2. MSME AMENDMENT BILL, 2026

Making MSMEs Competitive & Future Ready



- Classification based on investment + turnover
- Free registration on Udyam (digital platforms)
- Central PSUs to pay via TReDS
- Multiple MSE Facilitation Councils can be set up
- Online mediation (90 days) & arbitration
- Arbitration award in 90 days post pleadings
- Digital dispute resolution to improve EoDB

VALUE ADDITION 9.16 crore MSMEs | 31.1% GDP
35.4% manufacturing output | 48.58% exports
Employ > 40 crore people

KEYWORDS MSME Act | TReDS | Udyam | ODR | EoDB

3. JULY 2026 CPI INFLATION

New CPI Base: 2024

CPI Inflation
(July 2026)
4.45%



- New CPI series uses 2024 as base year
- RBI inflation target: 4% ($\pm 2\%$) under flexible ITF
- CPI measures consumer-level price changes
- WPI measures wholesale-level price changes
- Food inflation impacts household purchasing power
- Inflation affects real income, consumption & growth
- Drivers: food shocks, weather, logistics, global prices

VALUE ADDITION RBI uses CPI for monetary policy decisions

KEYWORDS CPI | Base Year | CFPI | Inflation Targeting | RBI

4. ACCESS PASS FOR FISHING IN INDIA'S EEZ



Territorial Sea
0 – 12 NM

Contiguous Zone
Up to 24 NM

EEZ
Up to 200 NM

- Free digital fishing pass via ReALCraft Portal
- For eligible fishing activity in India's EEZ (200 NM)
- Under Sustainable Harnessing of Fisheries in EEZ Rules, 2025
- Supports traditional fishers & cooperatives/FPOs
- Promotes sustainable marine resource utilisation
- Digital monitoring improves traceability & compliance
- Traditional non-motorised & small artisanal crafts exempt

VALUE ADDITION Blue economy | Food security | Coastal livelihoods

KEYWORDS EEZ | UNCLOS | Blue Economy | Fisheries Rules 2025

5. BRICS OCEAN & POLAR SCIENCE

Working Group Meeting in Goa



- Ocean science
- Polar research
- Blue economy
- Climate resilience
- Sustainability
- Scientific cooperation
- Innovation

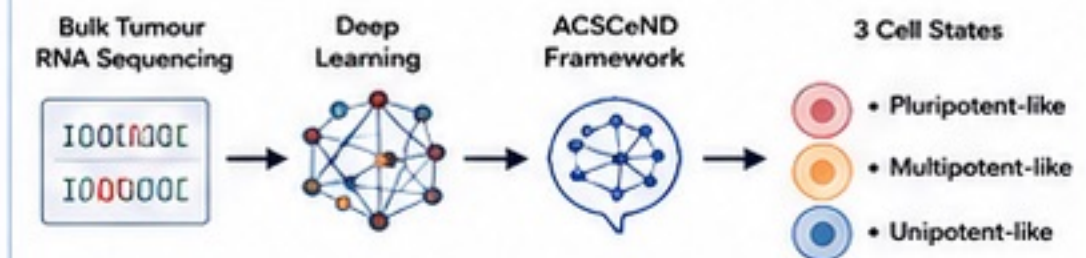
Hosted by NCPOR | Goa | 12-14 August 2026

- 8th BRICS Working Group Meeting during India's Presidency
- Scientists & officials from 8 BRICS countries
- Hosted by National Centre for Polar and Ocean Research
- Boosts scientific diplomacy & Global South cooperation
- Polar regions influence climate, sea-level & monsoon
- Supports sustainable ocean governance
- Advances innovation, technology & capacity building

VALUE ADDITION Ocean science → Climate → Monsoon → Economy

KEYWORDS BRICS | NCPOR | Polar Science | Blue Economy

6. AI UNCOVERS HIDDEN CANCER STEM CELLS



- AI framework ACSCeND developed by Indian researchers
- Identifies hidden cancer stem-like cell states
- Helps understand treatment resistance & recurrence
- Uses deep learning on bulk tumour RNA sequencing
- Enables large-scale analysis at lower cost
- Supports precision medicine & better therapies
- Collaboration: S. N. Bose NCBS & Ashoka University

VALUE ADDITION AI + Genomics → Precision Medicine → Better Outcomes

KEYWORDS Cancer Stem Cells | AI | Genomics | RNA Seq | Precision Medicine

7. WORLD ELEPHANT DAY 2026

Conservation of Indian Elephants



Nearly 60% of
World's Wild Asian
Elephants in India

SAIEE 2021-25
Estimates: 22,446

33 Elephant Reserves
150 Corridor Identified

- India hosts nearly 60% of world's wild Asian elephants
- SAIEE 2021-25 estimates population at 22,446
- 33 Elephant Reserves & 150 identified corridors
- Keystone species: seed dispersal & forest regeneration
- Threats: habitat loss, fragmentation, HEC, poaching
- Conservation: Project Elephant, PA, corridors, tech, community
- Focus on landscape-level connectivity & coexistence

VALUE ADDITION Biodiversity conservation | Ecosystem services

KEYWORDS Project Elephant | Corridors | HEC | Keystone Species

8. DIGITAL PUBLIC INFRASTRUCTURE For Citizen-Centric Governance



- DPI enables efficient access to services for all stakeholders
- Reduces intermediaries, cost & time
- Promotes transparency, inclusion & portability
- Key DPIs: Aadhaar, UPI, DBT, DigiLocker, ABDM, GeM, ONDC
- Challenges: digital divide, privacy, cybersecurity, exclusion
- Advances equality, welfare access & good governance
- Technology is an enabler, not a substitute for accountability

VALUE ADDITION Digital inclusion → Social & economic empowerment

KEYWORDS DPI | Digital India | DBT | UPI | Data Governance

9. PIB BACKGROUNDER New Era of Indian Agriculture & Allied Sectors



- Agriculture & allied activities employ ~46.1% workforce
- Livestock & fisheries growing at ~5-6% annually
- Diversification reduces dependence on few crops
- Food processing enhances value addition & incomes
- Digital agriculture improves market & information access
- Irrigation efficiency strengthens resilience
- Challenges: small holdings, climate, water stress, post-harvest loss

VALUE ADDITION Food security | Rural income | Sustainable agriculture

KEYWORDS Diversification | FPOs | Processing | Climate Resilience

OTHER IMPORTANT ONE-LINERS

Financial inclusion in India reaches ~89% account ownership (Global Findex 2025).

RBI keeps repo rate unchanged at 5.50% for fifth consecutive policy review.

National Data Governance Policy (NDGP) releases draft rules for public feedback.

Two new NCERT textbooks for Class 3 & Class 6 aligned with NEP 2020 released.

India to host 23rd World Police & Fire Games in Ahmedabad, Gandhinagar in 2029.

9 IMPORTANT UPSC CSE TOPICS

1. India’s Nuclear Energy Roadmap: SMRs, Thorium & 100 GWe by 2047

GS3 — Energy | Science & Technology | Infrastructure

Why in News?

The government outlined a roadmap for a **self-reliant and globally competitive nuclear-energy ecosystem**, with emphasis on **Small Modular Reactors (SMRs)**, **indigenous technology**, **domestic manufacturing**, **private-sector participation** and **thorium utilisation**.

Key Points

- **Nuclear Energy Mission** aims to expand India's nuclear capacity.
- Long-term target: **100 GWe nuclear capacity by 2047**.
- At least **five indigenous SMRs** are targeted by **2033**.
- India continues to follow the **three-stage nuclear power programme**.
- Long-term strategy seeks greater utilisation of India's **thorium resources**.
- Domestic manufacturing can reduce dependence on imported nuclear technology and components.
- Greater private-sector participation is being enabled through the evolving legal and regulatory framework.

Three-Stage Nuclear Programme

Stage I: PHWRs

Natural uranium → Plutonium



Stage II: Fast Breeder Reactors

Plutonium → More fissile material



Stage III: Thorium-based reactors

Long-term utilisation of India's thorium resources

Why SMRs Matter?

Small size + modular construction + flexible deployment + potentially lower upfront costs

UPSC Value Addition

Nuclear energy can contribute to:

Energy security + Base-load electricity + Decarbonisation + Technological self-reliance

Keywords: SMR | PHWR | FBR | Thorium | Nuclear Energy Mission | Energy Security

2. MSME Development (Amendment) Bill, 2026

GS3 — Indian Economy | Industry | Employment

Why Important?

The amended framework seeks to make MSMEs more competitive by addressing **classification, delayed payments, dispute resolution and digital compliance**.

Key Data

- MSMEs contribute **31.1% of GDP**.
- Around **35.4% of manufacturing output**.
- About **48.58% of exports**.
- **9.16 crore MSMEs** registered on Udyam.
- They employ **more than 40 crore people**.

Major Changes

- MSME classification based on **investment + turnover**.
- Free and voluntary registration through digital platforms.
- Central PSUs required to settle MSME invoices through **TReDS**.
- Multiple **MSE Facilitation Councils** can be established.
- Online mediation/arbitration mechanism.
- Mediation timeline: **90 days**.
- Arbitration award targeted within **90 days after completion of pleadings**.
- Digital dispute resolution can strengthen Ease of Doing Business.

TReDS

MSME invoice

↓

Buyer acknowledgement

↓

Financial institution

↓

Early payment to MSME

↓

Reduced working-capital stress

UPSC Linkage

MSMEs → Employment → Manufacturing → Exports → Formalisation → Inclusive growth

Keywords: MSME Act | TReDS | Udyam | Delayed Payments | ODR | Ease of Doing Business

3. July 2026 CPI Inflation & New CPI Base

GS3 — Economy | Inflation | Monetary Policy

Key Data

July 2026 **CPI inflation = 4.45%**

- Rural inflation: **4.84%**
- Urban inflation: **3.96%**
- Food inflation: **5.52%**
- Housing inflation: **2.22%**
- Revised CPI series uses **2024 as the base year**.

CPI vs WPI

CPI

- Consumer-level price changes
- Purchasing power
- Important for monetary policy

WPI

- Wholesale-level prices
- Greater emphasis on goods

Inflation Framework

The RBI's flexible inflation-targeting framework aims at **4% CPI inflation**, with a tolerance band of **±2 percentage points**.

Why Food Inflation Matters?

Food-price shock → CPI → Real income → Consumption → Inflation expectations

UPSC Takeaway

Indian inflation can arise from:

Food supply shocks + Weather + Global commodity prices + Logistics + Exchange-rate movements

Keywords: CPI | Base Year | CFPI | Inflation Targeting | RBI | Flexible Inflation Targeting

4. Access Pass for Fishing in India's EEZ

GS3 — Agriculture & Blue Economy | Environment | Coastal Security

What is the Access Pass?

A free digital fishing pass issued through the **ReALCRAFT Portal** for eligible fishing activity in India's Exclusive Economic Zone (EEZ).

Maritime Zones

Territorial Sea: 12 nautical miles

Contiguous Zone: 24 nautical miles

EEZ: 200 nautical miles

Sustainable Fisheries

The Access Pass operates under the **Sustainable Harnessing of Fisheries in the EEZ Rules, 2025**.

It aims to:

- Support traditional fishers.
- Facilitate cooperatives and **Fish Farmer Producer Organisations**.
- Promote sustainable marine-resource utilisation.
- Improve digital monitoring of fishing activity.

Important Exemption

Traditional **non-motorised and small artisanal fishing crafts** are exempt, protecting local livelihoods.

Why Important?

Blue economy + Fisheries + Food security + Coastal livelihoods + Marine-resource management

UPSC Link

UNCLOS → Maritime Zones → EEZ → Living Resources → Sustainable Fisheries

Keywords: EEZ | UNCLOS | Blue Economy | Sustainable Fisheries | Coastal Livelihoods

5. BRICS Cooperation in Ocean & Polar Science

GS2 — International Relations | GS3 — Science & Technology | Environment

Why in News?

The **8th BRICS Working Group Meeting on Ocean and Polar Science & Technology** is being held in **Goa** from **12–14 August 2026** during India's BRICS Presidency.

Participating Countries

Brazil + China + Egypt + Indonesia + Russia + South Africa + UAE + India

Focus Areas

- Ocean science
- Polar research
- Blue economy
- Climate resilience
- Sustainability
- Scientific cooperation
- Innovation

India's Institutional Role

The meeting is hosted by the **National Centre for Polar and Ocean Research (NCPOR)** under the Ministry of Earth Sciences.

Why Polar Science Matters to India?

Polar regions influence:

Global climate + Sea-level rise + Ocean circulation + Monsoon + Cryosphere + Marine ecosystems

Strategic Dimension

Scientific diplomacy can promote cooperation even amid wider geopolitical competition.

Keywords: BRICS | NCPOR | Blue Economy | Polar Science | Ocean Governance | Science Diplomacy

6. AI Uncovers Hidden Cancer Stem Cells

GS3 — Science & Technology | Biotechnology | Health

What is the Development?

Researchers from the **S. N. Bose National Centre for Basic Sciences**, in collaboration with **Ashoka University**, developed an AI framework called **ACSCeND** to identify hidden cancer stem-like cell states from tumour gene-expression data.

Why Cancer Stem Cells Matter?

Cancer stem-like cells may contribute to:

Treatment resistance → Tumour recurrence → Metastasis

What Does ACSCeND Identify?

Three developmental states:

- **Pluripotent-like**
- **Multipotent-like**
- **Unipotent-like**

How Does It Work?

Single-cell sequencing knowledge

+

Deep learning

↓

Analysis of conventional **bulk tumour RNA sequencing**

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Identification of hidden cell populations

Why Significant?

Single-cell experiments can be expensive and difficult at very large scale.

The framework could potentially allow analysis of **large numbers of patient samples** where single-cell sequencing is unavailable.

UPSC Link

AI + Genomics + Precision Medicine + Biotechnology

Ethical Dimension

Validation + Data privacy + Bias control + Explainability + Clinical oversight

Keywords: Cancer Stem Cells | AI | Deep Learning | Genomics | RNA Sequencing | Precision Medicine

7. World Elephant Day 2026 — Conservation of India's Asian Elephants

GS3 — Environment | Biodiversity | Species Conservation

Key Facts

India is home to **nearly 60% of the world's wild Asian elephants**.

The **Synchronous All India Population Estimation of Elephants (SAIEE) 2021–25** estimates India's wild elephant population at **22,446**.

Conservation Network

- **33 Elephant Reserves**
- **150 identified elephant corridors**
- Project Elephant
- Protected areas
- Scientific monitoring
- Community participation

Why is the Elephant Important?

Elephants are a **keystone species**.

Elephant movement → Seed dispersal → Vegetation regeneration → Forest structure → Biodiversity

Major Threats

- Habitat loss
- Habitat fragmentation
- Human-elephant conflict
- Poaching
- Illegal wildlife trade
- Infrastructure development

Conservation Approach

Protected areas + Corridors + Technology + Scientific monitoring + Community participation

UPSC Linkage

Wildlife Protection Act, 1972 | Project Elephant | Elephant Corridors | Human-Wildlife Conflict | Biodiversity

Mains Dimension

Elephant conservation is not simply species protection; it requires **landscape-level ecological connectivity and coexistence between people and wildlife**.

Keywords: Keystone Species | Elephant Reserves | Corridors | Human-Wildlife Conflict | Biodiversity

8. Digital Public Infrastructure for Citizen-Centric Governance

GS2 — Governance | E-Governance | Digital India

What is DPI?

Digital Public Infrastructure (DPI) consists of shared digital systems that enable citizens, governments and businesses to access services efficiently.

Governance Transformation

Paperwork → Physical office → Multiple intermediaries

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Digital identity → Digital platform → Authentication → Service delivery

Major Indian DPI Examples

- Aadhaar
- UPI
- DigiLocker
- DBT
- ABDM
- Account Aggregator
- GeM
- ONDC

Governance Benefits

- Faster service delivery
- Lower transaction costs
- Greater transparency
- Financial inclusion
- Portability of services
- Better welfare targeting

Challenges

Digital divide + Data privacy + Cybersecurity + Exclusion errors + Algorithmic bias

Constitutional Link

DPI can advance:

Equality + Welfare access + Transparency + Good governance

But digital governance must preserve **privacy, due process and inclusion**.

UPSC Takeaway

Technology is an enabler of governance, not a substitute for accountability.

Keywords: DPI | Digital India | DBT | UPI | Aadhaar | Data Governance | E-Governance

9. PIB BACKGROUNDER — The New Era of Indian Agriculture & Allied Sectors

GS3 — Agriculture | Rural Economy | Food Security

Big Picture

India's agriculture and allied sectors are undergoing structural transformation through:

Higher productivity + Farmer support + Diversification + Technology + Resilience

Agriculture and allied activities provide livelihoods to approximately **46.1% of India's workforce**.

Livestock and fisheries have maintained growth of around **5–6%**, strengthening rural incomes and diversification.

Transformation of Agriculture

Traditional Agriculture

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Productivity Enhancement

↓

Technology & Mechanisation

↓

Diversification

↓

Value Addition & Processing

↓

Market Integration

↓

Climate Resilience

Important Dimensions

- **Crop diversification** reduces excessive dependence on a few crops.
- Livestock provides additional income sources.
- Fisheries strengthen the **blue economy**.
- Food processing increases **value addition**.
- Digital agriculture improves information and market access.
- Irrigation and water-use efficiency strengthen resilience.
- Climate-resilient agriculture is increasingly important.

Agriculture → Rural Economy

Higher productivity → Higher farm income → Rural demand → Employment → Food security

Major Challenges

- Small and fragmented holdings
- Climate variability
- Water stress
- Post-harvest losses
- Price volatility
- Market access
- Rising input costs
- Low value addition

Way Forward

Productivity + Diversification + Irrigation + Storage + Food Processing + FPOs + Digital Agriculture + Climate Resilience

Mains Takeaway

The future of Indian agriculture lies not merely in producing more food, but in producing sustainably, earning more from every unit of output and building resilience across the farm-to-market chain.

Keywords: Food Security | Crop Diversification | Allied Activities | Climate Resilience | FPOs | Food Processing | Blue Economy

PRELIMS QUICK REVISION

1. Nuclear Energy

100 GWe by 2047 is the long-term nuclear capacity target highlighted by the government.

2. MSMEs

MSMEs contribute **31.1% of GDP, 35.4% of manufacturing output and 48.58% of exports**.

3. CPI

July 2026 CPI inflation: **4.45%**; new CPI series uses **2024 as base year**.

4. EEZ

India's EEZ extends up to **200 nautical miles** from the baseline.

5. BRICS Ocean Working Group

Hosted by **NCPOR**, Goa; meeting held **12–14 August 2026**.

6. ACSCeND

AI framework for identifying **cancer stem-like cell states** from tumour gene-expression data.

7. Asian Elephant

India hosts **nearly 60%** of the world's wild Asian elephants; there are **33 Elephant Reserves**.

8. Digital Public Infrastructure

Important examples: **Aadhaar, UPI, DBT, DigiLocker, ABDM and GeM**.

9. Agriculture

Agriculture and allied sectors provide livelihoods to approximately **46.1% of India's workforce**.

1. लद्दाख के विशाल 'बर्फीले नदियां' धीमी हुई



- जंस्कर (लद्दाख) के ग्लेशियरों की गति ~2.4 मी./वर्ष/दशक धीमी हुई।
- सतही पतन 0.22 मी./वर्ष (2000-05) से बढ़कर 0.57 मी./वर्ष (2015-20) हुई।
- ग्लेशियर पतले → डाइविंग तनाव कम → बर्फ का प्रवाह धीमा।
- आरंभिक पिघलाव से बहाव बढ़ सकता है ('पीक वाटर'), बाद में घटेगा।
- प्रभाव: जल सुरक्षा, कृषि, जलविद्युत, डाउनस्ट्रीम पारिस्थितिकी तंत्र।

क्रायोस्फीयर • पीक वाटर • सिंधु बेसिन जलवायु परिवर्तन • ग्लेशियर मास ब्रैलेंस

2. सतह क्षेत्रफल: रोजमर्रा का चैंपियन



- अधिक सतह क्षेत्रफल → अधिक अंतःक्रिया।
- किचन स्पंज: ~10,000 m²/m³ या अधिक।
- कॉफी पाउडर: ~2,000-10,000 m²/m³।
- एक्टिवेटेड चारकोल: > 1,000 m²/g।
- मिट्टी कण: जल व पोषक तत्व धारित रखने की क्षमता बढ़ती है।
- कैटेलिस्ट: अधिक सक्रिय स्थल, तेज अभिक्रिया।
- नैनोपोरस सामग्री: छोटे आयतन में हजारों m² सतह समा सकती है।

नैनोप्रौद्योगिकी • कैटेलिसिस • अवशोषण मूदा विज्ञान • पर्यावरणीय उपचार

3. बीच की रुकावट (संपादकीय)



- राष्ट्रीय ट्रिब्यूनल आयोग (NTC) पर फोकस; वास्तविक स्वतंत्रता आवश्यक।
- न्यायिक पुनरावलोकन मूल संरचना का हिस्सा।
- सकारात्मक: 5 वर्ष कार्यकाल, समान सेवा शर्तें, डेटा प्रिड, लंबित नियुक्तियों की सुरक्षा।
- चिंताएं: कार्यपालिक नियमों से योग्यता/शर्तें तय, शिकायतों की प्रारंभिक छंटनी, नियुक्ति/वित्त पर केंद्र का प्रभाव।
- सुधार: आयोग की वास्तविक संस्थागत स्वायत्तता सुनिश्चित होनी चाहिए।

न्यायिक पुनरावलोकन • मूल संरचना • ट्रिब्यूनल शक्तियों का पृथक्करण • संस्थागत स्वायत्तता

4. मेक्का समझौता और रणनीतिक हेजिंग का उदय



- सऊदी अरब, तुर्की और पाकिस्तान के बीच संयुक्त रक्षा समझौता।
- किसी एक पर हमला, तीनों पर हमला माना जाएगा।
- क्षेत्रीय सुरक्षा दांचे की ओर संभावित बदलाव।
- स्वतः रूप से अमेरिका-ईरान-विरोधी नहीं। सदस्य देशों के अनेक हित जुड़े हैं।
- भारत के लिए: वेस्ट एशिया में हित, सऊदी से आश्वासन आवश्यक; बहुआयामी दुष्टचक्र।
- रणनीतिक हेजिंग = एक से अधिक विकल्प सुरक्षित रखना, किसी एक से पूर्ण संरक्षण नहीं।

रणनीतिक हेजिंग • बहुध्रुवीय विश्व • वेस्ट एशिया भारत के हित • सामरिक स्वायत्तता

5. हाइपरपॉलिटिक्स: CJP प्रदर्शन और परिणाम



- "हाइपरपॉलिटिक्स" = डिजिटल रूप से तीव्र गतिशील और उच्च दृश्यता वाला राजनीतिक आंदोलन।
- CJP उभरा मुख्यतः डिजिटल माध्यम से।
- सहभागी: NEET अभ्यर्थी, गिग वर्कर, बेरोजगार युवा।
- Instagram + YouTube से व्यापक राजनीतिक संचार और लामबंदी।
- डिजिटल लामबंदी ≠ संस्थागत क्षमता।
- टिकाऊ परिवर्तन हेतु संगठन + संस्थागत जुड़नव आवश्यक।
- पथ: डिजिटल लामबंदी → संगठन → संस्थागत जुड़ाव → नीतिगत परिवर्तन।

लोकतंत्र • डिजिटल राजनीति • लामबंदी संस्थागत क्षमता • युवा सहभागिता

6. क्या क्षेत्रीय दलों की प्रासंगिकता घट रही है?

चुनाव वर्ष	राष्ट्रीय दल (%)	क्षेत्रीय दल (%)
2009	63.59	31.22
2014	60.04	35.85
2019	68.15	28.10
2024	62.72	33.53

- क्षेत्रीय दलों का संयुक्त समर्थन लगभग 1/3 के आसपास बना।
- विधानसभा चुनावों में कई राज्यों में मजबूत प्रदर्शन।
- राज्य-स्तरीय पहचानें अभी भी अत्यंत महत्वपूर्ण।
- चुनौती: संगठनात्मक पुनरुत्थान, न कि मतदाताओं की सरल अस्वीकृति।
- भारत में बहु-स्तरीय दल प्रणाली: केंद्र पर राष्ट्रीय, राज्यों में क्षेत्रीय दलों की मजबूत उपस्थिति।

भारतीय राजनीति • संघवाद • दल प्रणाली राज्य राजनीति • चुनावी रुझान

7. भारत की U.S. LPG पर बढ़ती निर्भरता



- 67% LPG आयात U.S. से (रिपोर्टेड)।
- भारत विश्व का दूसरा सबसे बड़ा LPG आयातक।
- 2026 दीर्घकालिक डील: 2.2 मिलियन टन।
- जून में U.S. से आयात: 0.77 मिलियन टन।
- पश्चिम एशिया से आयात ~85% घटा (फरवरी-जून 2026)।
- जोखिम: मूल्य, आपूर्ति एकाग्रता, कॉरिक्स, भाड़ा, भू-राजनीतिक प्रभाव, लंबा परिवहन समय (25-35 दिन)।
- Q1 FY27: उत्पादन 4.3 MMT; उपभोग 6.5 MMT।

ऊर्जा सुरक्षा • LPG • विविधीकरण रणनीतिक भंडार • घरेलू उत्पादन

8. दीपक धर और डिरेक मेडल



- दीपक धर को 2026 ICTP डिरेक मेडल मिला।
- योगदान: सांख्यिकीय भौतिकी में महत्वपूर्ण कार्य।
- एबेलियन सैंडपाइल मॉडल: दाने जुड़ते → क्रिटिकल स्टेट → छोटा व्यवधान → बड़ा अवालांच।
- दानों के गिरने के क्रम से अंतिम अवस्था नहीं बदलती।
- स्व-संगठित क्रिटिकलिटी की अवधारणा को गहराया।
- अनुप्रयोग: भूकंप, अवालांच, ट्रेफिक जाम, वित्तीय उतार-चढ़ाव, जटिल प्रणालियाँ।
- 1985 से प्रदत्त प्रतिष्ठित अंतराष्ट्रीय सम्मान।

सांख्यिकीय भौतिकी • सैंडपाइल मॉडल जटिल प्रणालियाँ • स्व-संगठित क्रिटिकलिटी

9. EV संक्रमण में 'रीयूज' का अभाव



- वर्तमान पथ: पुरानी गाड़ी → स्कैप → नई EV
- बेहतर पथ: उपयोग → मरम्मत → रेट्रोफिट → रीयूज/पुनः उपयोग → रीसाइकिल
- 1. सुरक्षित व कुशल वाहन: रखरखाव के साथ उपयोग जारी।
- 2. संरचनात्मक रूप से ठीक पर प्रदूषक/अकुशल: इलेक्ट्रिक पावरट्रेन से रेट्रोफिट।
- 3. असुरक्षित/जीवन-समाप्त: स्कैपेज + रीसाइकिल।
- रेट्रोफिट से उपयोग अवधि बढ़ेगी, संसाधन माँग व कचरा घटेगा।
- उम्र नहीं, स्थिति व शेष उपयोगिता से स्कैपेज तय हो।

EV संक्रमण • रेट्रोफिट • परिपत्र अर्थव्यवस्था संसाधन दक्षता • सिविलिता

त्वरित समाचार



FCRA विधेयक JPC को भेजा जाएगा
विरोध के बीच सरकार ने विधेयक को संयुक्त संसदीय समिति को भेजने का संकेत दिया।



कावेरी जल रिलीज
CWMA ने कर्नाटक को 15 दिनों तक 12,000 क्यूसेक/दिन जल छोड़ने का निर्देश दिया।



भारत-चीन सीमा
शांति व स्थिरता संबंधों के लिए 'अत्यंत महत्वपूर्ण': सरकार ने दोहराया।



AI से हृदय रोग भविष्यवाणी
AI आधारित तकनीक अभी क्लिनिकल उपयोग के लिए तैयार नहीं: अध्ययन समीक्षा।



वंदे मातरम् कानून बना
वंदे मातरम् के अपमान/व्यवधान पर रोक हेतु विधेयक को राष्ट्रपति की मंजूरी मिली।



RBI: AI में मानव निर्णय आवश्यक
AI प्रगति से मानव निर्णय व जवाबदेही पर बड़ा खतरा: RBI गवर्नर की चेतावनी।



खाद्य प्रणाली 'सुपर' एल नीनो के लिए तैयार
रिकॉर्ड भंडार, तकनीक व सिंचाई से खाद्य प्रणाली अधिक लचीली: वैश्विक आकलन।



गंगा बाढ़ क्षेत्र नियमों में ढील
तीन-क्षेत्र आधारित विनियमित दांचा; निर्माण के लिए अनुमोदन/अनुमति निर्धारित।



NASA ने ISRO को चंद्र मिशन में आमंत्रित किया
नूनर आउटपोस्ट कार्यक्रम में ISRO को शामिल होने का न्योता; लक्ष्य दक्षिणी ध्रुव क्षेत्र।

प्रीलिम्स तथ्य



जंस्कर ग्लेशियर की धीमी गति ~2.4 मी./वर्ष/दशक।



ग्लेशियर सतही पतन दर 0.22 → 0.57 मी./वर्ष (2000-05 से 2015-20)।



एक्टिवेटेड चारकोल का सतह क्षेत्रफल > 1,000 m² प्रति ग्राम।



मेक्का समझौता सदस्य सऊदी अरब, तुर्की, पाकिस्तान।



भारत की LPG निर्भरता (U.S.) कुल आयात का 67% U.S. से (रिपोर्टेड)।



सक्रिय LPG ग्राहक (भारत) 33.14 करोड़।



एबेलियन सैंडपाइल मॉडल क्रिटिकल स्टेट → छोटा व्यवधान → बड़ा अवालांच।



गंगा बाढ़ क्षेत्र के तीन क्षेत्र सक्रिय / नियामक / चेतावनी।



NASA-ISRO लूनर मिशन फोकस चंद्रमा का दक्षिणी ध्रुव क्षेत्र।

अंग्रेजी जानें

Ubiquitous (adj.) – सर्वव्यापी, हर जगह उपस्थित

Pact (n.) – समझौता/संधि

Hedging (n.) – जोखिम कम करने हेतु एक से अधिक विकल्प सुरक्षित रखना

Retrofit (v.) – पुरानी चीज को नया रूप/तकनीक से लैस करना

Resilient (adj.) – लचीला, कठिनाइयों से शीघ्र उबरने वाला

1. LADAKH GLACIERS SLOWING



- Zaskar glaciers slowing ~2.4 m/year per decade
- Surface thinning 0.22 m/yr (2000–05) → 0.57 m/yr (2015–20)
- Thinning lowers driving stress → slower flow
- Melting may initially raise runoff = "peak water"
- After ice loss, glacier contribution will decline
- Impacts: water security, agriculture, hydropower, ecosystems
- Not a sign of stability; long-term storage at risk

Cryosphere • Peak Water • Indus Basin
Climate Change • Glacier Mass Balance

2. SURFACE AREA: DAILY LIFE CHAMP



- High surface-area-to-volume → more interaction
- Kitchen sponge: ~10,000 m²/m³ or more
- Coffee grounds: ~2,000–10,000 m²/m³
- Activated charcoal: >1,000 m²/g
- Soil particles retain more water & nutrients
- Catalysts: more active sites, faster reactions
- Nanoporous materials: thousands of m² in small volume

Nanotechnology • Catalysis • Adsorption
Soil Science • Environmental Remediation

3. IN THE WAY (EDITORIAL)



- NTC Bill aims to reduce executive influence
- Judicial review is part of Basic Structure
- Positives: 5-yr tenure, uniform service conditions, Data Grid, protection of pending appointments
- Concerns: exec. control over rules, screening of complaints, finances, administration
- Tribunal independence must be real, not nominal
- Reforms must ensure true institutional autonomy

Judicial Review • Basic Structure • Tribunals
Separation of Powers • Institutional Autonomy

4. THE MECCA PACT & STRATEGIC HEDGING



- Defence pact among Saudi Arabia, Türkiye and Pakistan
- Attack on one = attack on all
- Signals regionally driven security architecture
- Not automatically anti-US, anti-Iran or anti-India
- All three have reasons to avoid confrontation with Washington
- India: seek reassurance from Riyadh; look beyond India–Pakistan lens
- Strategic hedging = multiple options, not exclusive alignment

West Asia • Strategic Hedging • Deterrence
Multipolarity • India's Interests

5. HYPERPOLITICS: CJP PROTESTS



- "Hyperpolitics" = digitally amplified mobilisation
- CJP emerged as a digital phenomenon
- Participants: NEET aspirants, gig workers, unemployed youth
- Instagram + YouTube → political communication
- Digital mobilisation ≠ institutional capacity
- Durable change needs organisation + institutional engagement
- Path: Mobilisation → Organisation → Institutions → Policy change

Democracy • Digital Politics • Mobilisation
Institutional Capacity • Youth Participation

6. ARE REGIONAL PARTIES LOSING RELEVANCE?

Election	National Parties	Regional Parties
2009	63.59%	31.22%
2014	60.04%	35.85%
2019	68.15%	28.10%
2024	62.72%	33.53%

- Regional parties still secure ~1/3 of Lok Sabha votes
- Strong performers in many Assembly elections
- State-level identities remain significant
- Challenge is organisational renewal, not voter rejection
- India has a multi-level party system
- National contest + strong regional identities
- Federalism and diversity remain foundational

Indian Polity • Federalism • Party System
State Politics • Electoral Trends

7. INDIA'S RISING DEPENDENCE ON U.S. LPG



- 67% of India's LPG reportedly from U.S.
- India: world's 2nd largest LPG importer
- 2026 long-term deal: 2.2 million tonnes
- U.S. imports: 0.77 million tonnes in June
- West Asian LPG imports ↓ ~85% (Feb–Jun 2026)
- Risks: price, supplier concentration, forex, freight, geopolitical leverage, longer transit (25–35 days)
- Q1 FY27: production 4.3 MMT; consumption 6.5 MMT

Energy Security • LPG • Diversification
Strategic Reserves • Domestic Production

8. DEEPAK DHAR & THE DIRAC MEDAL



- Deepak Dhar awarded 2026 ICTP Dirac Medal
- For contributions to statistical physics
- Abelian Sandpile Model: grains ↔ critical state → small disturbance → large avalanche
- Dhar solved the model mathematically
- Order of topple doesn't affect final configuration
- Models self-organised criticality in complex systems
- Applications: earthquakes, avalanches, traffic, finance fluctuations

Statistical Physics • Sandpile Model •
Complex Systems • Self-Organised Criticality

9. MISSING "REUSE" IN EV TRANSITION



- Current path: Old vehicle → Scrap → New EV
- Better path: Use → Repair → Retrofit → Reuse → Recycle
- 1. Safe & efficient → continue with maintenance
- 2. Structurally sound but inefficient → retrofit EV
- 3. Unsafe/end-of-life → scrappage + recycling
- Retrofit extends life, reduces material demand & waste
- Age alone should not decide scrappage

EV Transition • Retrofit • Circular Economy
Resource Efficiency • Sustainability

QUICK NEWS



FCRA Bill → JPC
Govt. to refer FCRA Bill to JPC amid opposition and protests.



Cauvery Water Release
Karnataka to release 12,000 cusecs/day for 15 days to Tamil Nadu.



India-China Border
Peace on border is of 'utmost importance' for ties: Govt.



AI Heart Disease Tech
AI prediction tech not yet ready for clinical use: Review.



Vande Mataram Bill
Gets President's assent, becomes law; equal legal status as National Anthem.



RBI Governor on AI
Human judgment at risk as AI advances; oversight must remain.



Food System Resilient
Inventories, tech & irrigation boost preparedness against 'super' El Niño.



Ganga Floodplain Rules
Centre relaxes construction hurdles; 3-zone regulated framework.



ISRO–NASA Cooperation
NASA invites ISRO to join mission for lunar outpost near S. Pole.

PRELIM FACTS



Zaskar Glacier Slowdown
~2.4 m/year per decade.



Glacier Thinning Rate
0.22 → 0.57 m/year (2000–05 to 2015–20).



Activated Charcoal Surface Area
>1,000 m²/g.



Mecca Pact Members
Saudi Arabia, Türkiye, Pakistan.



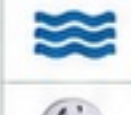
India's LPG Dependence (U.S.)
67% of total LPG imports.



Active LPG Customers in India
33.14 crore.



Abelian Sandpile Model
Grains → Critical State → Avalanche.



Ganga Floodplain Zones
Active / Regulatory / Warning.



NASA–ISRO Lunar Mission
Focus on lunar South Pole.

KNOW YOUR ENGLISH

Ubiquitous (adj.) – present, appearing or found everywhere.

Pact (n.) – a formal agreement between parties.

Hedging (n.) – a strategy to reduce risk by keeping multiple options open.

Retrofit (v.) – to fit (a vehicle or equipment) with new parts/technology.

Resilient (adj.) – able to withstand or recover quickly from difficulties.

12 August 2026

MAIN TOPICS

1. Ladakh's Giant 'Rivers of Ice' Are Slowing as the Mountains Warm

GS1 — Geography | GS3 — Environment & Climate Change

What happened?

A study of glaciers in **Zaskar, Ladakh** found that glaciers have been moving more slowly than around three decades ago. The average slowdown was about **2.4 m/year per decade**. At the same time, surface thinning accelerated from about **0.22 m/year** during 2000–05 to **0.57 m/year** during 2015–20.

Why are glaciers slowing?

Glacier thinning → lower driving stress → slower ice flow

Glacier behaviour is not uniform. Some glaciers can temporarily accelerate because of **meltwater reaching the glacier bed, glacier surges or interaction with proglacial lakes**.

Indus Basin significance

- Himalayan glaciers contribute significantly to **summer river flows**.
- Initially, increased melting can raise runoff — the phenomenon of **"peak water"**.
- After substantial ice loss, glacier contribution to rivers is expected to decline.
- Implications: **water security + agriculture + hydropower + downstream ecosystems**.

UPSC Takeaway

Glacier slowdown is not necessarily a sign of stability; combined with sustained thinning, it can indicate declining long-term water storage.

Keywords: Cryosphere | Glacier mass balance | Peak water | Indus Basin | Himalayan warming

2. Surface Area: Daily Life Champ

GS3 — Science & Technology

Core Concept

Materials with a high **surface-area-to-volume ratio** can interact with larger quantities of surrounding material.

Everyday examples

- **Kitchen sponge:** porous structure → around **10,000 m²/m³ or more** internal surface area.
- **Coffee grounds:** roughly **2,000–10,000 m²/m³**, increasing contact with water and air.
- **Activated charcoal:** more than **1,000 m²/g** because of microscopic pores.
- **Soil particles:** greater surface area creates more sites for retaining **water and nutrients**.
- **Catalysts:** porous structures expose more active surface for chemical reactions.
- **Nanoporous materials:** can pack thousands of square metres of surface into a hand-sized volume.

Exam Concept

Smaller particle size → greater surface area/volume ratio → greater contact and often greater reactivity.

UPSC Link

Nanotechnology | Catalysis | Adsorption | Soil science | Environmental remediation

3. In the Way

GS2 — Polity | Judiciary | Institutional Independence

Core Issue

The editorial examines the **National Tribunals Commission (NTC)** and argues that tribunals cannot provide genuinely independent adjudication if the executive retains excessive control over their **appointments, administration and finances**.

Constitutional & Judicial Background

- **S.P. Sampath Kumar (1987)** and **L. Chandra Kumar (1997)**: tribunal decisions remain subject to High Court judicial review.
- **Rojer Mathew (2019)**: Supreme Court recommended an independent statutory **National Tribunals Commission**.
- **Madras Bar Association (2025)**: Court struck down objectionable provisions and directed establishment of the NTC.
- **Tribunal Reforms Bill, 2026**: passed by both Houses.

Bill: Key Provisions

Positive

- Five-year tenure
- Uniform service conditions
- National Tribunals Data Grid
- Protection of pending appointments

Concerns

- Executive rules determine qualifications and service conditions.
- Ministry screens complaints before NTC inquiry.
- Centre retains substantial influence over appointments, finances and administration.

Constitutional Principle

Judicial review is part of the Basic Structure.

UPSC Takeaway

A tribunal designed to reduce executive influence **cannot itself remain institutionally dependent on the executive**.

Keywords: Judicial review | Basic structure | Separation of powers | Tribunalisation | Institutional autonomy

4. The Mecca Pact and the Rise of Strategic Hedging

GS2 — International Relations

What is the Mecca Pact?

A **Joint Defence Agreement among Saudi Arabia, Türkiye and Pakistan**, aimed at strengthening collective deterrence. It states that an armed attack against one would be treated as an attack against all.

Strategic Significance

The pact could indicate movement towards a more **regionally driven West Asian security architecture**, rather than one primarily dependent on external security guarantees.

What is Strategic Hedging?

Strategic hedging = maintaining relationships and strategic options with multiple competing powers rather than making an exclusive alignment.

The pact should not automatically be viewed as:

- Anti-American
- Anti-Iranian
- Anti-Indian

Saudi Arabia remains dependent on U.S. security ties; Türkiye is a NATO member; Pakistan also has reasons to avoid confrontation with Washington.

India's Concerns

- India has major economic and strategic interests in **West Asia**.
- Saudi Arabia has important relations with India.
- Türkiye's close relationship with Pakistan creates additional sensitivity.
- India needs to seek **reassurance from Riyadh** while avoiding viewing the pact solely through an India-Pakistan lens.

UPSC Takeaway

Strategic autonomy in a multipolar world increasingly means hedging, diversifying partnerships and preserving freedom of action.

5. Hyperpolitics: CJP Protests and Its Aftermath

GS2 — Polity | Democracy | Digital Governance

What is “Hyperpolitics”?

A political environment characterised by **highly visible, digitally amplified mobilisation**, which can generate spectacular dissent but may fail to produce lasting political change without institutional grounding.

CJP Phenomenon

The movement emerged substantially as a **digital phenomenon**, with social-media reach rather than a traditional organisational structure.

Participants included:

- NEET aspirants
- Gig workers
- Unemployed youth

Instagram + YouTube → political communication → mobilisation of young people

Central Limitation

Digital mobilisation ≠ durable institutional capacity.

The farmers’ movement, for example, possessed established farmers’ organisations that provided greater organisational continuity.

Political Transformation

Digital mobilisation → Organisational capacity → Institutional engagement → Policy change

UPSC Takeaway

Modern democracy is moving from **party-centric mobilisation towards networked digital mobilisation**, but durable policy change still requires institutional capacity.

6. Are Regional Parties Losing Relevance in India?

GS2 — Indian Polity | Federalism

Data: Combined Vote Share

Election	National Parties	Regional Parties
2009	63.59%	31.22%
2014	60.04%	35.85%
2019	68.15%	28.10%
2024	62.72%	33.53%

What does the data indicate?

The evidence does **not** establish that regional parties are disappearing.

- Their combined support remains around **one-third of Lok Sabha votes**.
- Regional parties often perform strongly in **Assembly elections**.
- State-level political identities remain important.
- Their challenge increasingly concerns **organisational renewal**, rather than simple voter rejection.

UPSC Insight

India has a **multi-level party system**:

National competition at Centre + strong regional political identities in States

7. India's Rising Dependence on U.S. LPG

GS3 — Economy | Energy Security

Key Data

- **67%** of India's LPG reportedly came from the U.S.
- India is the **world's second-largest LPG importer**.
- A 2026 long-term deal involved **2.2 million tonnes**.
- U.S. LPG imports reached **0.77 million tonnes in June**.
- West Asian LPG imports fell nearly **85% between February and June 2026**.

Why the Shift?

Strait of Hormuz disruption → reduced Gulf supplies → diversification towards U.S. LPG

India traditionally imports about **60% of its LPG consumption**, with nearly **90% of those flows passing through the Strait of Hormuz**.

Risks

- Supplier concentration
- Commodity-price risk
- Dollar/rupee risk
- Freight costs
- Geopolitical leverage
- Longer shipping time: **U.S. 25–35 days vs Gulf 5–10 days**

Domestic LPG Position

PSU OMCs have **33.14 crore active domestic LPG customers**.

Q1 FY27:

Production → **4.3 MMT**

Consumption → **6.5 MMT**

Way Forward

Domestic production + diversified suppliers + strategic reserves + multiple supply routes

UPSC Takeaway

Energy security is not replacing one dependency with another; it is preventing any single supplier or geography from becoming indispensable.

8. The Work That Won Deepak Dhar the Dirac Medal

GS3 — Science & Technology

Why in News?

Theoretical physicist **Deepak Dhar** received the **2026 ICTP Dirac Medal** for contributions to statistical physics, sharing the honour with **Bernard Derrida, Marc Mézard and Haim Sompolinsky**.

Key Contribution: Abelian Sandpile Model

Grains added → pile approaches critical state → small disturbance → possible large avalanche

This illustrates **self-organised criticality** — a system can naturally reach a critical state where a small input can sometimes trigger a disproportionately large event.

What did Dhar contribute?

Dhar mathematically solved the **sandpile model**, showing that the order in which grains topple does not affect the eventual final configuration.

This provides a mathematical framework for studying complex systems with apparently unpredictable behaviour.

Applications

The broader concept has relevance to:

- Earthquakes
- Avalanches
- Traffic jams
- Financial fluctuations
- Other complex systems

Dirac Medal

Established in **1985** by the International Centre for Theoretical Physics in honour of **Paul Dirac**.

UPSC Link

Complex systems | Statistical mechanics | Emergent behaviour | Non-linear systems | Fundamental science

9. The Missing 'Reuse' Principle in India's EV Transition Journey

GS3 — Environment | EVs | Circular Economy

Core Argument

India's EV transition should not simply mean:

Old vehicle → Scrap → New EV

A more sustainable approach is:

Use → Repair → Retrofit → Reuse/Repurpose → Recycle

Suggested Vehicle Hierarchy

1. Safe & efficient vehicle

→ Continue using with maintenance.

2. Structurally sound but inefficient/polluting vehicle

→ **Retrofit** with an electric powertrain.

3. Unsafe/end-of-life vehicle

→ Scrappage + recycling.

Why Retrofit?

- Extends useful life.
- Reduces material demand.
- Reduces waste.
- Cuts fossil-fuel dependence.
- Supports the **circular economy**.

Key Principle

Age alone should not determine scrappage; vehicle condition and remaining utility should matter.

UPSC Takeaway

A sustainable EV transition is not merely an **energy transition**; it must also be a **resource-efficiency and circular-economy transition**.

QUICK NEWS

1. FCRA Bill → JPC

GS2 — Polity | NGOs | Civil Society

The government indicated that the **FCRA Amendment Bill, 2026** would be referred to a **Joint Parliamentary Committee** amid opposition from Tamil Nadu and protests in Mizoram.

Key Concerns

- Treatment of assets of organisations whose FCRA registration is cancelled/not renewed
- Autonomy of charitable organisations
- Natural justice
- Property rights
- Federalism

UPSC Link: FCRA | NGOs | Civil society | Article 19 | Parliamentary scrutiny

2. Cauvery Water Release

GS2 — Federalism | Inter-State Water Disputes

The **Cauvery Water Management Authority** endorsed the directive for Karnataka to release **12,000 cusecs/day for 15 days** to Tamil Nadu.

The decision involved:

- Reservoir storage
- Inflows
- Hydrological distress
- Meteorological outlook

UPSC Link: Article 262 | Inter-State River Water Disputes Act, 1956 | CWMA | Cooperative federalism

3. India-China Border

GS2 — International Relations | Security

The government reiterated that **peace and tranquillity along the border are essential for bilateral relations**.

Reported PLA activity concerns the **LAC in Arunachal Pradesh**, including Pukar La and Ollo.

UPSC Link: LAC | Border management | Confidence-building | Strategic competition

4. AI Heart-Disease Prediction

GS3 — Science & Technology | Health

A systematic review of **30 studies since 2017** found that AI could improve cardiovascular-risk prediction but is **not yet ready for routine clinical decisions**.

Requirements

Independent validation + testing across populations + clinical evidence

UPSC Link: Responsible AI | Algorithmic bias | Clinical validation | Human oversight

5. Vande Mataram Bill Becomes Law

GS2 — Polity | Culture

Presidential assent converted the **Prevention of Insults to National Honour (Amendment) Bill, 2026** into law.

The legislation provides legal protection against intentional disruption/prevention of singing of **Vande Mataram**, placing it on the same legal footing as the National Anthem.

UPSC Link: National symbols | President's assent | Parliament | Constitutional patriotism

6. RBI: Human Judgment in AI

GS3 — Economy | AI Governance

RBI Governor cautioned that a major risk of AI in banking is erosion of **human judgment and accountability**.

Principle

AI decision → Human oversight → Explain → Intervene → Override when necessary

Banks should retain meaningful human oversight rather than treating an algorithm as the ultimate decision-maker.

UPSC Link: Human-in-the-loop | AI governance | Financial stability | Accountability

7. Food System & ‘Super’ El Niño

GS3 — Agriculture | Climate Change | Food Security

Global food systems are better positioned than during earlier severe El Niño episodes because of:

Near-record inventories + drought-tolerant seeds + improved forecasting + precision agriculture + better irrigation

India accounts for about **40% of global rice exports** and currently holds substantial rice stocks.

UPSC Link: El Niño | Food security | Buffer stocks | Climate-resilient agriculture

8. Ganga Floodplain Construction Rules Relaxed

GS3 — Environment | River Ecology | Disaster Management

The Centre replaced the earlier blanket construction prohibition with a **regulated, approval-based framework**.

Three Zones

Active Floodplain

- Floods at least once in 5 years
- Strict construction restrictions

Regulatory Zone

- Moderate flooding every 5–25 years
- Construction subject to clearance

Warning Zone

- Severe flooding every 25–100 years
- Construction subject to approval

Core Debate

Development needs vs flood protection + groundwater recharge + river ecology

9. NASA Invites ISRO for Lunar Outpost

GS3 — Space Technology | International Cooperation

NASA invited ISRO to join its **Moon Base programme**, building on cooperation under the **Artemis Accords**.

The proposed lunar outpost is planned near the **Moon's South Pole**.

Areas of Cooperation

- **NISAR**
- Human-spaceflight technologies
- Future science missions
- Long-term sustainability of outer-space activities

UPSC Link: Artemis Accords | Lunar South Pole | Space diplomacy | NISAR | Sustainable space activities

RAPID REVISION — 15 KEY FACTS

Topic	Remember
Ladakh glaciers	Zaskar slowdown: 2.4 m/year/decade
Glacier thinning	0.22 → 0.57 m/year
Peak water	Temporary rise in runoff before long-term decline
Surface area	Activated charcoal: >1,000 m²/g
Tribunals	Judicial review is part of the Basic Structure
Mecca Pact	Saudi Arabia + Türkiye + Pakistan
Strategic hedging	Preserve options rather than exclusive alignment
Regional parties	Around one-third of Lok Sabha vote share
U.S. LPG	67% of India's LPG reportedly from U.S.
LPG customers	33.14 crore active domestic customers
Deepak Dhar	Abelian sandpile model
EV transition	Retrofit before scrappage , where feasible
AI banking	Human oversight must remain
Ganga floodplain	Active / Regulatory / Warning zones
Moon Base	NASA invites ISRO; focus on lunar South Pole