



NAMAN SHARMA
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CURRENT AFFAIRS

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Index

1. World is looking at India with great hope, says PM
2. Nation is witnessing next-generation reforms, says Modi
3. Airlines must enforce regulations without delay, cautions DGCA
4. Alaknanda: Indian astronomers spot implausibly old spiral galaxy
5. Linked civilisations, a modern strategic partnership
6. What are rare-earth elements, and why is everyone looking for them?

1. World is looking at India with great hope, says PM

Why in the News?

Prime Minister Narendra Modi, in the year-ending edition of his radio programme Mann Ki Baat, stated that the world is looking at India with great hope, particularly because of its growing capabilities in innovation, technology, science, security, and youth leadership. He highlighted several achievements in 2025 across sectors such as national security, sports, space, environment, heritage, and social development, emphasising the strengthening role of India at the global stage.

Background

- India has, in recent years, emerged as a key global stakeholder in areas such as climate action, digital innovation, economic growth, humanitarian support, and strategic security.
- The Prime Minister cited Operation Sindoor as a symbol of India's firm security posture and crisis-response capability.
- India also showcased its cultural and civilizational confidence, as seen through events such as the Prayagraj Maha Kumbh and the flag-hoisting ceremony at the Ram Mandir in Ayodhya.
- Youth-driven platforms such as the Viksit Bharat Young Leaders Dialogue and the Smart India Hackathon are seen as engines of grassroots innovation.
- The year 2025 also witnessed major achievements in sports, space exploration, cultural preservation, and renewable energy adoption, strengthening India's global narrative.

Features

National Security and Global Presence

- Operation Sindoor was described as a symbol of pride, demonstrating India's commitment to its security and sovereign interests.
- India's assertive geopolitical presence reflects its growing strategic capability.

Sporting Excellence

- **India recorded major victories in:**
 - Men's ICC Champions Trophy
 - Women's Cricket World Cup
 - Women's Blind T20 World Cup
 - Asia Cup T20
 - World Para Athletics Championships
- These achievements enhance India's global sporting profile.

Science & Space

- Shubhanshu Shukla became the first Indian to reach the International Space Station, marking a milestone in India's space journey.

Environmental Conservation

- The number of cheetahs in India rose to over 30, reflecting ongoing wildlife restoration efforts.

Culture, Faith & Heritage

- **Integration of faith and heritage highlighted through:**

- Prayagraj Maha Kumbh
- Ceremony at Ayodhya's Ram Mandir
- Growing pride in swadeshi and cultural revival.

Youth-Led Innovation

- Smart India Hackathon
 - Over 13 lakh students have participated over 7–8 years
 - Students worked on 270+ problem statements from 80+ government departments
- Viksit Bharat Young Leaders Dialogue encourages civic participation.

Social Initiatives

- Solar energy campaign in remote Manipur highlighted as an example of grassroots action.
- Under the PM Surya Ghar Muft Bijli Yojana, households receive ₹75,000–₹80,000 financial support for rooftop solar installation.

Cultural Engagement in Institutions

- Geetanjali IISc, a cultural centre at IISc, promotes Indian classical and folk music engagement among students.

Diaspora Cultural Connect

- Indian communities abroad, such as Kannada families in Dubai, are promoting native language learning.

Public Health Concern

- The PM raised alarm over antimicrobial resistance, urging citizens to avoid self-medication with antibiotics.

Women-Led Craft & Livelihood

- Highlighted lace craft of Narasapuram (Andhra Pradesh), supported by the State government and NABARD for
- skill upgrading
 - new design development
 - improved market access

Challenges

- **Antimicrobial Resistance (AMR):** Misuse of antibiotics weakens disease treatment effectiveness.
- **Balancing Growth with Inclusion:** Ensuring that technological and economic gains reach all regions and social groups.
- **Environmental Sustainability:** While initiatives are ongoing, conservation and climate resilience require stronger implementation.
- **Skilling and Employment:** Large youth participation must translate into productive and meaningful employment.
- **Cultural Preservation vs Modernisation:** Need to sustain heritage while fostering innovation.
- **Energy Transition Barriers:** Financing, awareness, and infrastructure gaps persist in the renewable energy sector.

Way Forward

Strengthen Public Health Governance

- Promote responsible antibiotic use
- Expand awareness and surveillance on AMR

Invest in Youth-Centric Innovation

- Scale hackathons, leadership dialogues, and incubation support
- Focus on rural and tier-II/III inclusion

Deepen Strategic Self-Reliance

- Boost defence R&D and indigenous manufacturing
- Build resilient supply chains

Accelerate Renewable Energy Adoption

- Simplify rooftop solar processes
- Expand subsidies and technical hand-holding

Promote Cultural & Civilisational Diplomacy

- Use heritage as a bridge for global partnerships.

Build Inclusive Growth Models

- Strengthen MSMEs, crafts, and women-led enterprises
- Support local-to-global market linkages

Conclusion

Prime Minister Modi's message underscores a narrative of confidence, national pride, youth-driven innovation, and global leadership. With achievements spanning security, space, sports, technology, heritage, and sustainability, India is positioning itself as a responsible, capable, and aspirational global actor. The key challenge ahead lies in converting potential into inclusive and sustained national progress, ensuring that India's rise benefits both its citizens and the wider world.

2. Nation is witnessing next-generation reforms, says Modi

Why in the News?

Prime Minister Narendra Modi addressed the Conference of Chief Secretaries, emphasising that India is entering a phase of next-generation reforms driven by the theme "Human Capital for Viksit Bharat". He highlighted that empowering youth and improving governance quality are central to achieving the vision of a developed India by 2047.

Background

- India is currently focused on building an Aatmanirbhar Bharat (self-reliant nation) through structural reforms across governance, industry, education, agriculture, and services.
- The Conference of Chief Secretaries serves as a key platform for Centre–State collaboration.
- India’s large demographic dividend is seen as a strategic strength, requiring investment in education, skills, innovation, and employment-oriented growth.
- The PM reiterated the principle of “Zero Defect, Zero Effect, linking industrial expansion with quality and environmental sustainability.

Features

Human Capital at the Core

- Youth development and empowerment are identified as the main engines of growth.
- Focus areas included:
 - skill development
 - higher education
 - youth empowerment
 - sports

Next-Generation Reforms

- The PM said India has “boarded the Reform Express”, signalling:
 - governance reforms
 - technology-enabled service delivery
 - institutional efficiency

Quality-Centric Development

- Call for quality in governance, manufacturing, and services.
- Aim to make ‘Made in India’ equal to world-class standards.

Use of Technology

- **Technology is positioned as a key driver to:**
 - improve citizen services
 - enhance transparency
 - modernise work culture

Role of States

- **States urged to:**
 - promote manufacturing
 - improve ease of doing business
 - strengthen the services sector
- Goal: India as a global services hub

Agricultural Transformation

- India has the potential to become the world’s food basket.
- Emphasis on transition to:
 - high-value agriculture
 - horticulture
 - dairy & animal husbandry
 - fisheries

- Objective: boost agri-exports and farm incomes

Challenges

- Skilling–employment mismatch despite demographic potential
- Uneven development across States and regions
- Quality and productivity gaps in manufacturing and services
- Agricultural vulnerabilities (price volatility, climate shocks, structural inefficiencies)
- Need for institutional capacity building in governance
- Balancing rapid reform with inclusivity and sustainability

Way Forward

Invest deeply in human capital

- modern, industry-linked education
- large-scale skilling & re-skilling
- innovation ecosystems

Strengthen cooperative federalism

- Centre–State reform coordination
- shared development goals

Promote quality-led manufacturing

- global-standard production
- adherence to “Zero Defect, Zero Effect”

Leverage digital governance

- AI, data-driven policy
- citizen-centric platforms

Agriculture diversification

- value-added farming
- farm-to-export infrastructure
- farmer producer organisations (FPOs)

Boost services competitiveness

- IT, tourism, logistics, healthcare, education
- global market integration

Conclusion

Prime Minister Modi’s address underscores a reform-driven development model centred on human capital, quality improvement, and innovation-led growth. With the youth as a strategic asset, coordinated State participation, and technology-based governance, India aims to transition from a developing to a Viksit Bharat. The challenge ahead lies in ensuring inclusive, sustainable, and employment-rich reforms that fully harness the demographic dividend.

3. Airlines must enforce regulations without delay, cautions DGCA

Why in the News?

The Directorate General of Civil Aviation (DGCA) has issued a safety circular warning airline operators and aviation stakeholders that delays in implementing regulatory guidelines pose potential risks to aviation safety. The regulator stressed the need for advanced preparedness and timely compliance with all operational regulations.



Background

The DGCA issues safety and operational guidelines through:

- Civil Aviation Requirements (CARs)
- Aeronautical Information Circulars (AICs)
- Other safety notifications

These regulations ensure:

- flight safety
- operational efficiency

- passenger protection
- International Aviation Compliance
- Recent observations indicate that some operators are slow in operational readiness when new rules take effect, leading to safety vulnerabilities and passenger inconvenience.

Features

Warning on Lack of Preparedness

- DGCA noted insufficient planning and readiness by certain operators.
- This delay poses potential aviation safety hazards.

Mandatory Compliance

- All operators must comply with DGCA-issued regulations.
- Failure to do so impacts flight and passenger safety.

Advance Implementation Strategy

- **Airlines must:**
 - Plan implementation well before the effective date
 - assess available resources
 - arrange additional resources where required

Resource Readiness

- **Operators must ensure:**
 - staff readiness
 - systems functionality
 - infrastructure availability

Dry Runs and Trials

- DGCA mandates completion of functionality trials/dry runs before rollout.

Reporting & Monitoring

- **Operators must submit:**
 - implementation plans
 - trial results
- Continuous monitoring is required for six months after implementation
- Periodic reports must be sent to DGCA.

Challenges

- Operational delays in implementing new safety standards
- Gaps in manpower training and capacity building
- Infrastructure and technology readiness issues
- Compliance culture deficits among some operators
- Passenger safety exposure during transition periods
- Coordination challenges between stakeholders (airlines, airports, ground staff, regulatory bodies)

Way Forward

Strengthen organisational preparedness

- structured implementation roadmaps
- internal audits

Enhance training & simulation

- regular safety drills
- mock checks and dry runs

Improve regulatory compliance systems

- digital monitoring dashboards
- automatic compliance alerts

Promote safety culture

- leadership accountability
- zero-delay compliance mandate

Stakeholder coordination

- joint DGCA–airline–airport working groups

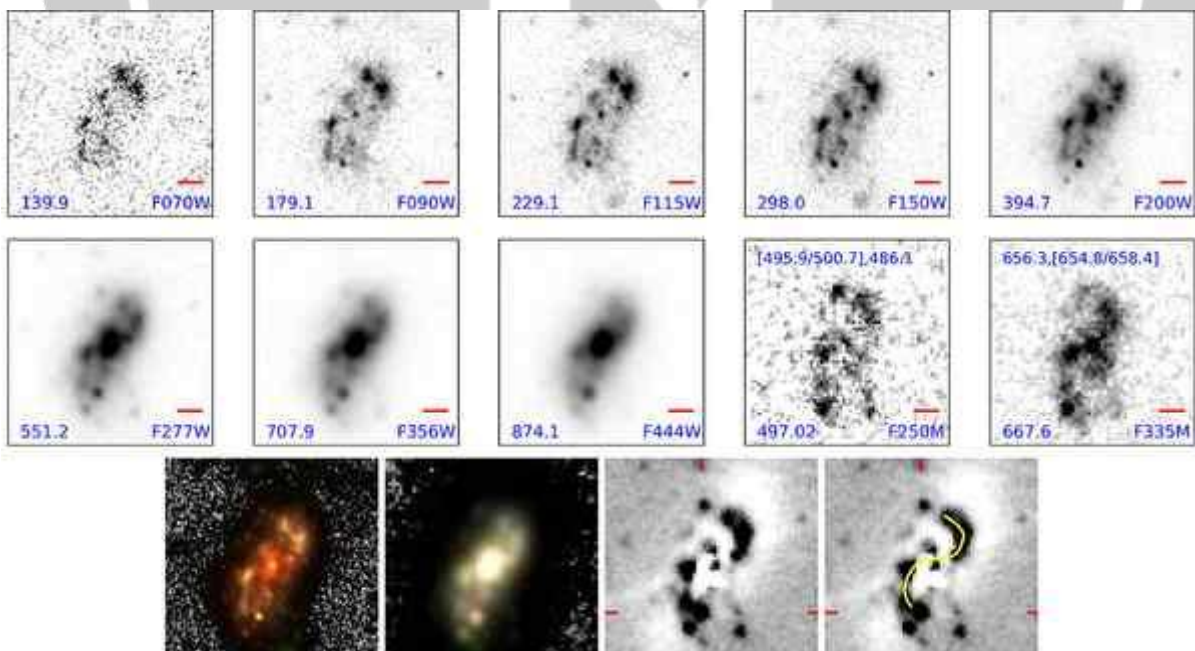
Transparent reporting

- proactive disclosure of compliance readiness

Conclusion

The DGCA's directive underlines that aviation safety depends on the timely and disciplined implementation of regulatory standards. With air traffic expanding rapidly in India, delays in preparedness pose unacceptable risks. A strong compliance culture, robust planning, and coordinated stakeholder effort are essential to ensure safe, reliable, and passenger-centric aviation operations.

4. Alaknanda: Indian astronomers spot implausibly old spiral galaxy



Why in the News?

Indian astronomers, using data from the James Webb Space Telescope (JWST), have discovered “Alaknanda,” the second-farthest spiral galaxy ever observed in the universe. Remarkably, it appears to have formed only 1.5 billion years after the Big Bang, challenging current theories of galaxy formation. The findings were published in *Astronomy & Astrophysics* in November 2025.

Background

- Spiral galaxies typically require stable rotating disks and density waves to form spiral arms - a process believed to take billions of years.
- Most early-universe galaxies observed so far are irregular or clumpy.
- The discovery was made by Rashi Jain, a PhD student at the National Centre for Radio Astrophysics (Pune), while examining galaxies from the JWST UNCOVER survey.
- Alaknanda has:
 - two perfectly symmetrical spiral arms
 - a disk and a small central bulge
 - active star formation (~60 solar masses/year)
- Its redshift is $\sim z = 4$, placing it in the early universe.

The galaxy is named Alaknanda, after the Himalayan river, chosen to complement the Milky Way's Hindi name Mandakini.

Features

“Too young” for a spiral galaxy

- Current models say spiral galaxies need long, stable evolution periods.
- Yet Alaknanda shows:
 - defined spiral arms
 - rotational disk stability
 - sustained star formation

Photometric Analysis

- Redshift and properties derived from brightness across wavelengths, not yet spectroscopy.
- Three independent methods confirmed consistent results -indicating robustness.

Possible Formation Mechanisms

Two hypotheses exist:

Cold-gas accretion

- Gas steadily flows into the galaxy
- forms a stable rotating disk

Minor merger/interaction

- gravitational disturbance triggers spiral arms

But both typically require more time than the early universe allows.

Significance for Astronomy

- Current simulations do not predict such mature spirals at $z \sim 4$.
- The discovery implies:
 - gaps in models
 - missing inputs in simulations
 - faster-than-expected structure formation

Science Milestone

- Demonstrates increasing Indian contribution to front-line astronomy
- Highlights:
 - need for more funding
 - training
 - access to large observatories

Challenges

Theoretical gap

- Existing galaxy-formation models need refinement.

Data limitations

- Current findings rely primarily on photometry, not spectroscopy.

Complexity of modelling

- Galaxy formation is a complex-systems problem, like climate dynamics.

Instrumentation access

- India has limited direct access to cutting-edge global telescopes.

Human resource constraints

- Fewer trained astronomers compared to major research economies.

Way Forward

Spectroscopic follow-up

- Use JWST & Atacama Large Millimeter/submillimeter Array (ALMA)
- Confirm redshift
- Map gas & motion
- Verify true spiral structure

Improve simulations

- incorporate gas dynamics
- early-universe conditions
- merger effects

Strengthen Indian astronomy ecosystem

- Expand training programs
- support young researchers
- increase project participation (SKA, LIGO, etc.)

Build domestic facilities

- proposed 10-metre telescope at Hanle (Ladakh)
- ensure sustained funding

Conclusion

The discovery of Alaknanda represents a major scientific puzzle and achievement. A mature spiral galaxy existing just 1.5 billion years after the Big Bang defies current galaxy-formation models and signals the need to refine our understanding of early-universe evolution. For India, the finding underscores growing scientific capability while highlighting the importance of investing in astronomy research, infrastructure, and global collaboration.

5. Linked civilisations, a modern strategic partnership

Why in the News?

India and Iran are marking 75 years of diplomatic relations, highlighting their evolving strategic partnership rooted in deep civilisational ties and expanding cooperation in energy, connectivity, trade, technology, and regional security.

Background

- India and Iran share ancient civilisational and linguistic connections, including parallels between the Rigveda and Avesta, and long-standing cultural exchanges.
- Persian served as a court and cultural language in India for centuries, giving rise to the Sabk-e-Hendi (Indian style) in Persian literature.
- Historically, relations have endured political change, temporary interruptions, and external pressures but retained a foundation of trust and familiarity.

Features

Strategic Convergence in a Multipolar World

- Both countries support multipolarity and regional autonomy.

Energy Cooperation

- Iran is a natural energy partner for India due to its hydrocarbon reserves and proximity.
- Energy ties are key to India's energy security.

Connectivity & Trade Corridors

- **Chabahar Port**
 - Enhances India's access to Afghanistan, Central Asia, and Eurasia
 - Reduces reliance on Pakistan routes
- International North-South Transport Corridor (INSTC)
 - Links India–Iran–Russia–Europe
 - ~40% shorter & ~30% cheaper than the Suez route
 - Strengthens India's Eurasian outreach

Security Cooperation

- Shared concerns over terrorism and extremism in West & South Asia
- Intelligence and security cooperation form a quiet but critical pillar.

Technology & Knowledge-based Cooperation (Emerging Area)

- **Potential complementarities:**
 - India → IT, innovation, services
 - Iran → nanotech, medical sciences, research

Challenges

- Third-party geopolitical pressures (especially sanctions-related)
- Financial transaction barriers & dollar-dependence
- Trade imbalance focused on hydrocarbons
- Slow implementation of connectivity projects
- Regional instability in West Asia

Way Forward

Strengthen rupee–rial/local-currency trade mechanisms

- Reduces exposure to sanctions & global shocks

Diversify economic engagement

- beyond oil into tech, pharma, R&D, services

Fast-track Chabahar & INSTC operationalisation

Institutionalise security cooperation

- counter-terrorism, maritime security

Adopt long-term strategic planning

- independent of external pressures
Promote people-to-people and cultural diplomacy

Conclusion

India and Iran represent “one soul in two bodies” - an ancient civilisational bond now evolving into a modern strategic partnership. As Asia rises and the world moves toward multipolarity, a deeper India-Iran partnership is emerging. Building on shared heritage and converging interests, both nations have the opportunity to shape a resilient, forward-looking strategic alliance.

6. What are rare-earth elements, and why is everyone looking for them?



Why in the News?

Rare-earth elements (REEs) have gained renewed global attention due to their critical role in green technologies, high-performance magnets, defence, and electronics, alongside rising concerns over China's dominance in REE processing and magnet manufacturing. Countries such as Japan, India, the U.S., and Australia are seeking to expand exploration, refining, and supply-chain security to reduce dependence on Chinese processing and exports.

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Background

Rare-earth elements comprise 17 metallic elements - the 15 lanthanides plus scandium and yttrium. Though not always scarce in the Earth's crust, they generally occur in low concentrations and are difficult to separate, making extraction costly. REEs are essential in permanent magnets, phosphors, optical devices, catalysts, glass, ceramics, and precision electronics. Their technological value lies in the unique magnetic and optical properties of 4f-electron shells in their atoms.

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Features

Key components in modern technologies

- High-performance neodymium-iron-boron magnets
- Lasers & fibre-optics using neodymium and erbium
- Lighting & display phosphors using europium and terbium

Critical for Green Transition

- Electric vehicle motors
- Wind turbine generators
- Renewable energy systems

Strategic applications

- Defence guidance systems
- Radar & jet engines

China's dominance

- ~90%+ refining & magnet production

Processing complexity

- Requires multi-stage solvent extraction
- High chemical and energy input
- Environmental concerns due to radioactive waste in some ores

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Challenges

Geopolitical Dependence

- Most nations rely on China for mid-stream refining & magnet supply

Environmental & Radioactive Waste

- Ores often associated with thorium/uranium

High processing costs

- Separation requires hundreds of extraction stages

Limited refining infrastructure outside China

- Market volatility & price manipulation risks
- Skill-intensive technology-based
- Regulatory delays in mine approvals have passed.

Way Forward

Develop complete REE value chains

- From exploration → refining → magnet manufacturing

Diversify global refining centres

- Encourage cooperation among India, Australia, Japan, U.S.

Strengthen environmental safeguards

- Safe radioactive waste handling

Invest in R&D

- Alternate magnet materials
- Recycling of e-waste and wind-turbine magnets

Strategic stockpiles

- To cushion price shocks

Public-Private Partnerships

- To make refining commercially viable

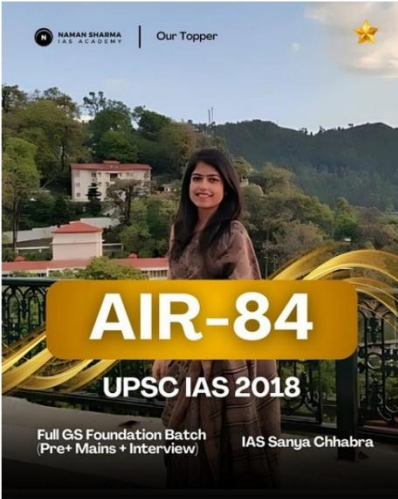
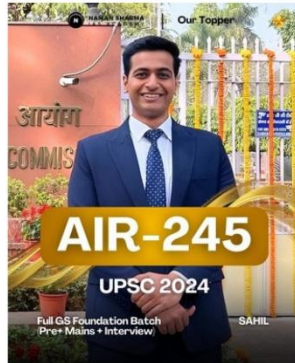
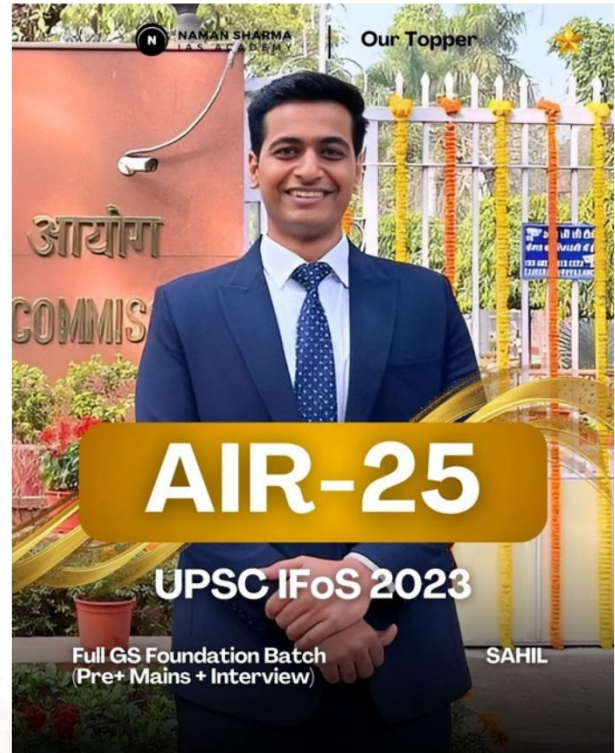
Skill development & technology transfer

- Build specialised chemical-processing expertise
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Conclusion

Rare-earth elements are the building blocks of the clean-energy and digital economy, making them as important today as oil was in the 20th century. While reserves exist worldwide, processing capability is heavily concentrated in China, creating economic and geopolitical vulnerabilities. Sustainable, diversified, and environmentally secure REE supply chains will be crucial for energy transition, national security, and technological leadership in the years ahead.

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