NEXT IAS

DAILY NEWS ANALYSIS

7th January

Explained

1. Aditya L 1 Mission
2. Biomaterials
3. Skilling in India
4. India's Public Health System
5. Ratle Hydro Project

Playlist Link:

What to Read: https://bit.ly/3FYdutC

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EXPLAINED

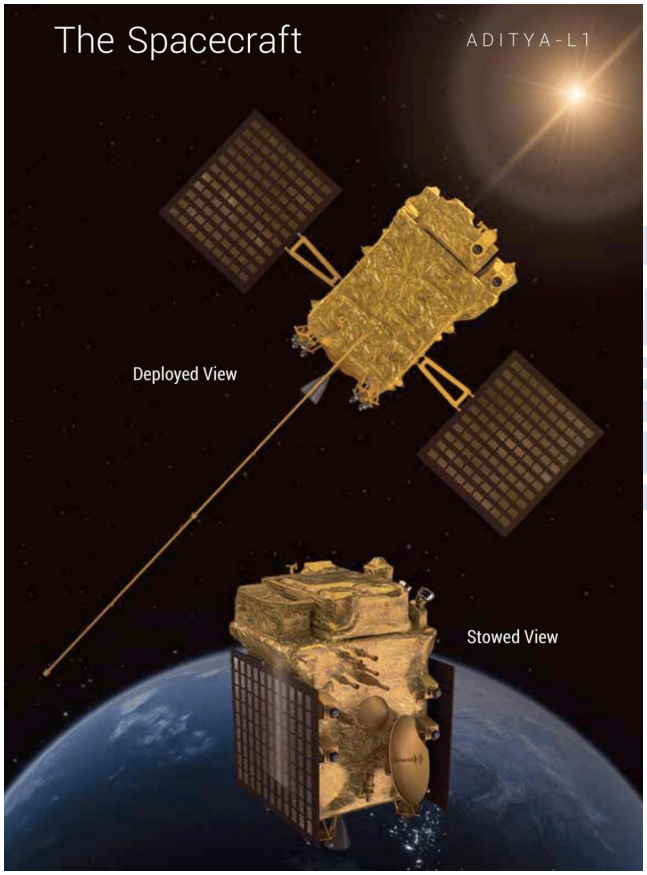
1. ADITYA L 1 MISSION

Backdrop - ISRO calls for proposals from Indian Scientists to analyse data from Aditya - L1

Relevance : GS Prelims - Science and Technology - Space

About News

On the second anniversary of India's maiden solar mission, Aditya-L1 reaching the Lagrangian point (L1), the Indian Space Research Organisation (ISRO) on Tuesday (January 6, 2026) made the Announcement of Opportunity (AO) soliciting proposals for the first AO cycle observations.



Aditya-L1 Mission

- **India's first space-based solar observatory mission** to study the Sun.
- **Launched:** 2 September 2023
- **Launch Vechicle : PSLV-C57**
- **Orbit/Location: Halo orbit around Sun–Earth L1 Lagrange Point** (~1.5 million km from Earth)
- Provides a **continuous and uninterrupted view of the Sun**, unlike Low Earth Orbit missions where Earth blocks observation.

Objectives

- Study the **solar atmosphere** (photosphere, chromosphere, corona)
- Understand **solar flares, coronal mass ejections (CMEs)**
- Examine **solar wind and space weather** and their impact on Earth

Lagrange Points

- Proposed by **Joseph Louis Lagrange**.
- Points in space where the **gravitational forces of two large bodies (Sun and Earth)** balance, allowing objects to orbit with minimal fuel.
- There are **five Lagrange points (L1–L5)**.

Classification of Lagrange Points

- L1, L2, L3:
  - Lie along the line connecting the Sun and Earth.
  - **Gravitationally unstable**.
- L4 and L5:
  - Form equilateral triangles with the two large bodies.
  - **Gravitationally stable**.
  - Objects here are called **Trojans**.

L1 Point

- Located about **1.5 million km from Earth towards the Sun**.
- Continuous, uninterrupted view of the Sun
- Allows spacecraft to **always face the Sun**, unlike heliocentric probes.
- Spacecraft at L1 orbit the Sun at the **same angular speed as Earth**.
- Early warning of **space weather events** affecting satellites, power grids, communication
- Allows **early detection of CMEs and solar flares** heading towards Earth.
- Provides greater **lead time for space-weather forecasting**.
- Requires **relatively low fuel** for station-keeping.

Already hosts the **SOHO (Solar and Heliospheric Observatory)** mission.

Payloads (7 Scientific Instruments)

- **VELC:** Solar corona imaging
- **SUIT:** Solar photosphere & chromosphere
- **SoLEXS & HEL1OS:** X-ray and energetic particle studies

- **ASPEX & PAPA:** Solar wind and particle analysis
- **MAG:** Interplanetary magnetic field measurement

Significance of Aditya-L1 Mission

1. India's Own Space-Based Solar Observatory
- Enhances **space weather prediction capabilities**.
- Protects **satellites, power grids and communication systems**.
- Demonstrates capability in **deep-space missions and advanced instrumentation**.
- Diversifies ISRO's expertise beyond communication and Earth observation.

2. Foundation for Future Solar Exploration
- Strengthens India's status as a **major space-faring nation**.
- Lays groundwork for India to become a **global hub for solar system science**.
- Opens avenues for studying **solar poles and magnetic field dynamics**.
- Proposed **Aditya-L2 and Aditya-L3 missions**:
  - L2 mission may enable **direct imaging of the Sun's far side**.

Solar Space Programmes of Other Countries

Major Missions
- Helios-2 (1976):
  - NASA–West Germany collaboration; approached within **43 million km** of the Sun.
- Advanced Composition Explorer (ACE) – 1997:
  - Studies **solar wind and cosmic rays**.
- Parker Solar Probe – 2018 (NASA):
  - Studies **coronal heating and solar wind acceleration**.
  - Part of **'Living with a Star' programme**.
- Solar Orbiter – 2020 (ESA–NASA):
  - Addresses key questions in **heliophysics**.
  - Also part of **'Living with a Star' initiative**.

Other Active Solar Missions

- **IRIS (2013)** – NASA
- **WIND (1994)** – NASA
- **Hinode (2006)** – JAXA
- **STEREO (2006)** – NASA

2. BIOMATERIALS

Backdrop : Biomaterials are emerging as the **next frontier in materials engineering**.

Relevance : GS III - Science and Technology

About News
- Global shift towards **cleaner and sustainable manufacturing** for consumer products like plastics and textiles.
- **Biomaterials** are emerging as the **next frontier in materials engineering**.
- They align with climate goals, circular economy principles, and reduced fossil-fuel dependence.

What are Biomaterials?
- Materials derived **wholly or partly from biological sources** or engineered using **biological processes**.
- Designed to **replace or interact with conventional materials**.
- Widely used in **packaging, textiles, construction, and healthcare**.

Types of Biomaterials
- Drop-in Biomaterials
  - Chemically identical to petroleum-based materials.
  - Compatible with existing manufacturing systems.
  - *Example:* Bio-PET.
- Drop-out Biomaterials
  - Chemically different from conventional materials.
  - Require new processing methods or end-of-life systems.
  - *Example:* Polylactic Acid (PLA).
- Novel Biomaterials
  - Offer properties not found in traditional materials.
  - Include **self-healing materials, bioactive implants, advanced composites**.

Biomaterials - Benefits for India India
- Addresses **environmental sustainability, industrial growth, and revenue generation** simultaneously.
- Supports **farmer livelihoods** through diversified income streams.
- Reduces India's **dependence on fossil-based imports** for plastics and chemicals.
- Enables value addition to **agricultural feedstocks and residues**.
- Enhances competitiveness as global markets shift to **low-carbon and circular products**.
- Supports domestic goals like **single-use plastic bans** and **climate action commitments**.

Current Status of Biomaterials in India

- Rapidly emerging as a **strategic industrial and sustainability sector**.
- **Bioplastics market** valued at around **$500 million in 2024**, with strong growth prospects.
- Major investm
- ents:
  - **Balrampur Chini Mills' PLA plant** in Uttar Pradesh.
- Growing domestic innovation:
  - **Phool.co** – converts temple flower waste into biomaterials.
  - **Praj Industries** – developing a demonstration-scale bioplastics plant.
- Despite strong agricultural base, **technology dependence persists** in some transformation processes.

Challenges Ahead

- Risk of **feedstock competition with food crops** if demand rises sharply.
- Potential **water stress and soil degradation** due to intensive agriculture.
- **Weak waste management and composting infrastructure** may dilute environmental benefits.
- **Fragmented policy coordination** across agriculture, environment, and industry.
- Delay in scaling could result in **continued import dependence** as other countries advance faster.

Way Forward for India

- **Scale up biomanufacturing infrastructure**, especially fermentation and polymerisation capacity.
- Improve **feedstock productivity** (sugarcane, maize, agricultural residues) using emerging technologies.
- Increase **investment in R&D and standards** for drop-in and novel biomaterials.
- Establish **clear regulatory definitions, labelling norms, and end-of-life pathways**.
- Strengthen **recycling and industrial composting systems**.
- Use **government procurement, time-bound incentives, pilot plants, and shared facilities** to de-risk early investments.
- Biomaterials offer India a **strategic opportunity** to combine sustainability with economic growth.
- Timely policy action and coordinated implementation are critical to **realise long-term benefits** and global leadership in this sector.

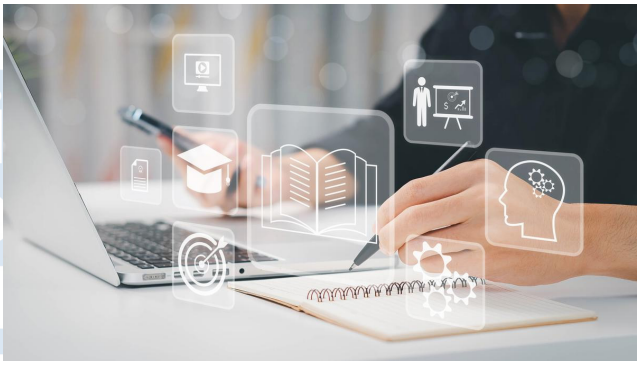
3. SKILLING IN INDIA

Backdrop : Workforce receiving vocation training has only improved from 2% to 4.1% in the last decade.

Relevance : GS III - Economics - Employment

About News

1. What prevents skilling from becoming a first-choice pathway for youth?
2. Why has formal vocational training reached only a small share of the workforce?
3. What limits industry participation in public skilling programmes?
4. Why do Sector Skill Councils lack credibility with employers?



Rethinking India's Skilling Outcomes | Explained

- Over the past decade, India has created **one of the world's largest skilling ecosystems**.
- **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)** trained and certified about **1.40 crore candidates (2015–2025)**.
- Despite scale, **skilling has not emerged as a first-choice pathway** for most youth.
- **Employability outcomes remain uneven**, especially in the informal sector.
- **PLFS data** shows wage gains from vocational training are **modest and inconsistent**.
- Informal employment dominates absorption of skilled workers, with **limited recognition of certified skills**.

Why Skilling Fails to Inspire Aspiration

- India's **Higher Education Gross Enrolment Ratio (GER)** is around **28%**;
  - **Target of NEP 2020 - 50% by 2035**.

- Expansion cannot rely only on traditional education; **skilling must integrate with higher education pathways**.
- Only about **4.1% of India's workforce** has formal vocational training, up marginally from **~2% a decade ago**.
  - **OECD countries** have:
    - ~44% enrolment in vocational education at upper-secondary level.
    - ~70% in countries like **Austria, Finland, Netherlands, Czech Republic, Slovakia, and Slovenia**.
- **India Skills Report 2025** shows post-degree skilling is **not mainstream** among graduates.
  - To increase this, **skilling must run alongside formal education**, not as a parallel or terminal option.

Industry Participation: Why Is It Limited?

- Industry is the **largest beneficiary of effective skilling**.
- High **attrition rates (30–40%)**, long onboarding, and productivity losses impose significant costs.
- Despite this, **industry participation in public skilling programmes remains weak**.
- Employers rarely use **public skilling certifications** for hiring.
- Hiring relies more on:
  - Internal training systems
  - Referrals
  - Private platforms
- **National Apprenticeship Promotion Scheme (NAPS)** has improved participation, but benefits are **uneven**, especially among large firms.
- Industry lacks:
  - Incentives
  - Obligations to co-design curricula, certifications, and assessment standards.

Skilling is **consumed rather than co-created** by industry

Hence, skilling remains disconnected from labour-market needs.

Why do Sector Skill Councils lack credibility with employers?

- SSCs were intended as **industry-facing institutions** to:
  - Define skill standards
  - Ensure relevance
  - Anchor employability
- Their mandate covered the **entire skilling value chain** — from demand identification to certification.
- In practice, this mandate remains **unfulfilled**.

Structural Weaknesses of SSCs

- **Fragmentation of responsibility**:
  - Training by one agency
  - Assessment by another
  - Certification by SSCs
  - Placement often absent or unclear
- Unlike universities or polytechnics, **lack of reputational risk** enforces accountability.
- This diffusion of responsibility has **eroded employer trust**.
- Employer surveys show SSC certifications have **low signalling value** compared to:
  - Academic degrees
  - Prior work experience
- Standards exist, but **employers do not hire reliably against them**.

> Signalling value refers to the **ability of a qualification, certificate, or credential** to **credibly convey information** to employers about a candidate's **skills, competence, and job-readiness**.

Lessons from Industry-Led Certifications

- Certifications by **AWS, Google Cloud, Microsoft** work because:
  - Certifier's credibility is at stake.
  - Assessments are **graded, not binary**.
  - Employers clearly understand certified competencies.
- SSCs were meant to replicate this model at a national scale.
- Instead, they focus largely on **standards creation**, not employment outcomes.
- Without accountability for **placements and employability**, certification remains **symbolic rather than economic**.
- Ongoing reforms of standard-setting bodies must address this gap.

How Can Skilling Drive Sustained Economic Growth?

- India's skilling challenge is primarily a **failure of accountability**, not of intent or funding.

- **Expanding NAPS (National Apprenticeship Promotion Scheme)** and embedding skilling in workplaces can rapidly improve job readiness.
- Schemes like **PM-SETU** (PM Scheme for Emerging Technologies & Upgradation of ITIs) show promise by building **industry ownership** into programme design.
- Key reforms needed:
  - Embed skills within degree programmes
  - Treat industry as a **co-owner**, not just a consumer
  - Make SSCs **answerable for placement outcomes**

Skilling must evolve from a **fragmented welfare intervention** into a **core pillar of economic strategy**.

Effective skilling is not just about employment:

- It is about **dignity of labour**
- Productivity gains
- Converting India's **demographic dividend into sustained economic growth**

4. INDIA'S PUBLIC HEALTH SYSTEM

Backdrop : Privatisation and policy gaps threaten India's public health system

Relevance : GS II - Issues Relating to Development and Management of Social Sector/Services relating to Health

About News

Privatisation and Policy Gaps in India's Public Health System

- India's public health system is under strain due to:
  - Chronic underfunding
  - Rapid privatisation
  - Policy failures
  - Deep-rooted social inequities
- Doctors occupy a **unique position of trust, authority, and proximity to suffering**, enabling them to act as agents of social change.
- Health outcomes in India are shaped not just by biology, but by **policy choices and structural conditions**.

Rising Health Risks and Social Inequities

- Increasing disease burden driven by:
  - High consumption of ultra-processed foods → rise in non-communicable diseases
  - Air, water, and soil pollution
  - Climate change impacts
- Access to healthcare remains **unequal and privilege-based**.
- Health outcomes strongly influenced by:
  - Class
  - Caste
  - Religion
  - Gender
  - Other social markers

Challenges Within the Public Health System

- Persistent issues faced by healthcare providers:
  - Poor working conditions in public hospitals
  - ASHA workers struggling for fair wages and rights
- Systemic neglect weakens morale and service delivery.

Impact of Privatisation on Healthcare Delivery

- Growing role of private equity in healthcare:
  - Doctors pressured to meet revenue and procedure targets
- Expansion of:
  - Public–Private Partnerships (PPPs)
  - Ayushman Bharat – PMJAY
- Public funds increasingly diverted to private sector:
  - Weakens public healthcare infrastructure
  - Reinforces profit-driven care models

Privatisation and Medical Education

- High cost of private medical education:
  - Undergraduate fees exceeding 40 lakh in many private colleges
- Consequences:
  - Doctors prioritise income recovery over public health goals
  - Reduced focus on social determinants of disease
- Education system flaws:
  - Over-emphasis on MCQ-based learning
  - Decline in hands-on clinical skill development
- Devaluation of basic qualifications:
  - "Just an MBBS" seen as insufficient
  - Pressure to pursue multiple fellowships for employability

Policy Inertia and Implementation Gaps

- Commonly proposed solutions:

- Increased public health funding
- Strengthening primary healthcare
- Regulation of privatisation

- Reality:
  - Remain abstract and poorly implemented
  - Political apathy limits execution

Doctors as Agents of Social Change

- Doctors witness daily transformation of policy failures into suffering:
  - Poverty malnutrition
  - Unsafe infrastructure trauma
  - Weak regulation cancer, TB, kidney failure
- This proximity grants doctors:
  - Moral authority
  - Cross-class credibility
  - Influence in courts, media, and policymaking

Historical Perspective: Medicine as Social Science

Rudolf Virchow's Contribution

- Advocated that:
  - "Medicine is a social science"
  - Physicians are "natural advocates of the poor"
- Linked disease to:
  - Poverty
  - Housing
  - Hunger
  - Education
  - Political exclusion
- Actively entered politics to push:
  - Sanitation
  - Public education
  - Housing
  - Public health infrastructure

Global Examples of Physician Activism

- International Physicians for the Prevention of Nuclear War (1985)
  - Nobel Peace Prize
  - Framed nuclear war as a public health threat
- Apartheid-era South Africa
  - Doctors exposed racial discrimination in healthcare
  - Rejected medical neutrality in the face of injustice

Indian Tradition of Doctor-Led Social Reform

- Dr. Muthulakshmi Reddy
  - One of India's first women doctors and legislators
  - Campaigned against:
    - Child marriage
    - Devadasi system
    - Gender exclusion
- Demonstrated use of medical authority for:
  - Gender justice
  - Social reform
  - Public welfare

Policy Accountability Through Medical Voices

- Key questions doctors must raise:
  - Why patients present at advanced disease stages
  - Why medicines are unaffordable or ineffective
  - Why preventable diseases persist despite resources
- Specialty-specific concerns:
  - Oncology: tobacco and alcohol promotion
  - Trauma care: rising road accidents
  - Nephrology: dialysis burden and access gaps
  - Obstetrics: persistent maternal anaemia
  - Pulmonology: failure to eliminate tuberculosis

Structural Diagnosis: Policy Failure

- Root causes:
  - Absence of effective policies
  - Poor implementation of existing policies
  - State support to profit-driven industries harming health

Moral Responsibility of Doctors

- Silence is not neutrality but abdication of responsibility.
- Doctors can:
  - Amplify voices of marginalised communities
  - Challenge structures producing disease
  - Push health discourse upstream to prevention and policy reform
- Role extends beyond healing disease to:
  - Challenging injustice
  - Defending public health as a social right

India's public health crisis is rooted in policy and structural failures. Doctors, by virtue of their trust, knowledge, and lived experience of suffering, are uniquely positioned—and morally obligated—to act as agents of social and political change.

5. RATLE HYDRO PROJECT

Backdrop : The Ratle Hydroelectric Power Corporation Limited (RHPCL) has sought an extension of the environmental clearance (EC) validity

Relevance : GS III - Economics - Infrastructure and Environment

About News

Ratle Hydroelectric Project - Project Overview

- 850 MW under construction on the Chenab River.
- Located in Kishtwar district, Jammu and Kashmir.
- Implemented by Ratle Hydroelectric Power Corporation Limited (RHPCL).
  - It is joint venture of
    - National Hydroelectric Power Corporation (NHPC)
    - Jammu and Kashmir State Power Development Corporation Ltd.
- Project involves a **133 m high concrete gravity dam**.

Environmental Clearance (EC) Extension Request

- Original Envionment Clearance granted in **December 2012**.
- Initial validity up to **2022**, later extended to **December 11, 2025** due to relaxations for hydropower projects.
- RHPCL has sought **extension of EC validity** citing:
  - Project delays from **2016–2021**.
  - Delays caused by **litigation** and **COVID-19 pandemic**.
- Extension request to be appraised by:
  - **Expert Appraisal Committee (EAC)** on River Valley and Hydroelectric Projects.
  - Meeting scheduled for **January 9, 2026**.

Zero Period Claim

- RHPCL argues that much of the EC validity period was lost due to:
  - Court-imposed status quo orders.
  - Pandemic-related disruptions.
- Invokes:
  - **October 2025 Office Memorandum** – allows time lost due to court stays to be treated as "zero period".
  - **2021 Notification** – relaxes EC validity for COVID-19 period (April 2020–March 2021).
- On this basis, seeks recalculation and extension of EC validity.

Ongoing Legal and Environmental Issues

- Case pending before **National Green Tribunal (NGT)**:
  - Allegations of illegal muck dumping into the Chenab River.
  - Filed by residents of **Thathri village**.
  - Claim flood-related damage due to dumping.
  - NGT reserved judgment on **December 9, 2025**.

Hydroelectric Projects on the Chenab River

Major Operational Projects

- Salal Hydroelectric Project
  - Capacity: **690 MW**
  - Location: Reasi district, J&K
  - One of the earliest projects on Chenab
- Dulhasti Hydroelectric Project
  - Capacity: **390 MW**
  - Location: Kishtwar district, J&K
  - Run-of-the-river project
- Baglihar Hydroelectric Project
  - Capacity: **900 MW** (Stage I & II)
  - Location: Ramban district, J&K
  - Major project with international scrutiny under IWT

Under-Construction / Cleared Projects

- Ratle Hydroelectric Project
  - Capacity: **850 MW**
  - Location: Kishtwar district, J&K
  - Implemented by RHPCL (NHPC + J&K SPDC JV)
- Dulhasti Stage-II
  - Capacity: **258 MW** (approx.)
  - Recently granted environmental clearance

Proposed / Planned Projects

- Sawalkote Hydroelectric Project
  - Capacity: **1,856 MW**
  - One of the largest proposed projects on Chenab
  - Strategic importance post IWT suspension

PRACTICE QUESTIONS

1. With reference to the Aditya-L1 mission, consider the following statements:

1. It is India's first space-based mission dedicated to solar observations.
2. It has been placed in a halo orbit around the Sun–Earth L1 point.
3. It was launched using the Gaganyaan launch vehicle.

Which of the statements given above are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

2. Biomaterials are best described as materials that are:

(a) Exclusively derived from fossil fuels but biodegradable
(b) Derived wholly or partly from biological sources or engineered using biological processes
(c) Extracted only from plant-based raw materials
(d) Used only in medical implants and devices

3. In the context of skilling, the term "signalling value" refers to:

(a) Financial incentives attached to skill certificates
(b) Legal validity of vocational qualifications
(c) Ability of credentials to credibly convey employability to employers
(d) Public awareness of government skilling schemes

4. The term "social determinants of health" primarily refers to:

(a) Genetic and biological factors influencing disease
(b) Availability of advanced medical technology
(c) Social, economic, and environmental conditions affecting health outcomes
(d) Individual lifestyle choices alone

5. In the context of environmental clearance, the term "zero period" refers to:

(a) Time when no construction activity is allowed in eco-sensitive zones
(b) Period excluded from EC validity due to court stays or legal prohibitions
(c) Time taken for public hearings
(d) Period when compensatory afforestation is undertaken

Answer				
1. (a)	2. (b)	3. (c)	4. (c)	5. (b)

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