DAILY CURRENT AFFAIRS 17-02-2026

Mapping Perspective

1. **INDO-PACOM**

Prelims Perspective

2. **Pochampally Village**

3. **PM RAHAT Scheme**

Mains Perspective

4. **Indian Scientific Service**

5. **Bio-based chemicals**

INDO-PACOM

Syllabus: GS-3: International Relations – Geopolitics.

Context:

INDO-PACOM Chief praises Operation Sindoor, calls for vigilance, deeper India-U.S. defence cooperation.

What is INDO-PACOM?

- **INDO-PACOM** = United States Indo-Pacific Command
- One of the **11 Unified Combatant Commands** of the United States Department of Defense
- Responsible for U.S. military operations in the **Indo-Pacific region**

Historical Evolution

- Established in **1947** as **U.S. Pacific Command (USPACOM)**
- Renamed **U.S. Indo-Pacific Command (USINDOPACOM)** in **2018**
- Renaming signified:
    - Recognition of India's growing role
    - Integration of the **Indian Ocean & Pacific Ocean strategic theatres**

Headquarters & Structure

- **Headquarters:** Camp H. M. Smith, Hawaii
- Commander: Four-star Admiral

Strategic Significance

- Region hosts:
    - 50% of world population
    - Key global trade routes
    - Emerging power rivalry (esp. U.S.–China competition)
- Focus Areas:
    - Freedom of Navigation Operations (FONOPs)
    - Deterrence against coercion
    - Maritime security
    - Alliance strengthening

Key Partnerships

- **Treaty Allies:**
  - Japan
  - South Korea
  - Australia
  - Philippines
  - Thailand
- Works closely with:
  - India (Major Defense Partner)
  - QUAD framework (India, U.S., Japan, Australia)

Indo-Pacific

Meaning

- A **geostrategic and geopolitical construct** linking the **Indian Ocean** and the **Pacific Ocean**.
- Emphasises maritime connectivity, trade routes, and strategic competition.
- Not a formally defined geographic region in international law.

Evolution of the Concept

- Popularised by:
  - Shinzo Abe (2007 speech: "Confluence of the Two Seas" in Indian Parliament).
- Institutionalised in U.S. strategy:
  - Renaming of United States Indo-Pacific Command in 2018.
- Adopted in strategic documents of:
  - India
  - United States
  - ASEAN
  - European Union

Geographical Scope

- Extends from:
  - Eastern coast of Africa
  - Western Pacific Ocean

> Includes key choke points:

- o Strait of Malacca
- o South China Sea
- o Bab-el-Mandeb
- o Strait of Hormuz
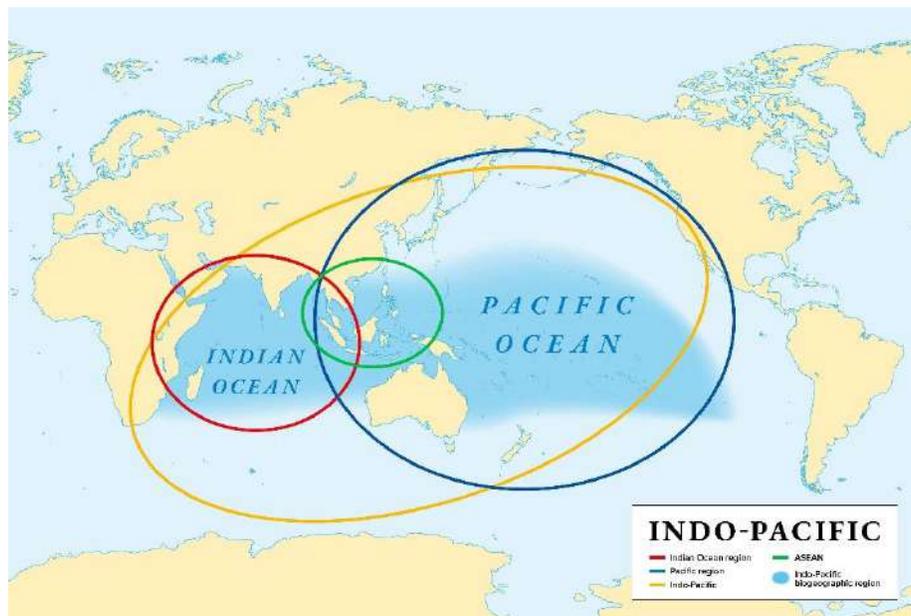
Strategic Importance

> Accounts for:

- o ~60% of global population
- o Major share of global GDP & trade

> Critical Sea Lines of Communication (SLOCs).

> Region of **great power competition** (especially U.S.–China rivalry).

> Emerging security challenges:

- o Maritime disputes
- o Militarisation of South China Sea
- o Piracy & non-traditional threats

India's Indo-Pacific Vision

> Based on:

- o **SAGAR (Security and Growth for All in the Region)**

- o Free, Open, Inclusive Indo-Pacific
- ➢ Focus areas:
  - o Maritime security
  - o Connectivity
  - o Blue economy
  - o Disaster resilience
- ➢ Institutional participation:
  - o Quadrilateral Security Dialogue
  - o Indian Ocean Rim Association

Competing Strategic Narratives

- ➢ U.S.: Free and Open Indo-Pacific (FOIP).
- ➢ China: Belt and Road Initiative (BRI) & Maritime Silk Route.
- ➢ ASEAN: "ASEAN Outlook on the Indo-Pacific" (inclusive approach).

Pochampally Village

Syllabus: GS-1: Indian Culture - Handlooms

Context:

Pochampally Village located in YadadriBhuvanagiri district of Telangana, is famous for its traditional Ikat handloom weaving, popularly known as Pochampally Ikat.

Location & Identity

- ➢ YadadriBhuvanagiri district, Telangana (~50 km from Hyderabad)
- ➢ Known as **"Silk City of India"**
- ➢ Famous for **Pochampally Ikat handloom**

UN Recognition (2021)

- ➢ Selected as **Best Tourism Village (2021)** by United Nations World Tourism Organization
- ➢ Announced at 24th General Assembly, Madrid (Dec 2021)
- ➢ From India (recommended): Kongthong, Ladhpura Khas, **Pochampally (selected)**
- ➢ Recognised for: rural tourism + sustainability + handicrafts promotion

Pochampally Ikat

- **GI Tag: 2004**

- "Ikat" = Malaysian-Indonesian term → *Tie & Dye*

- Process: Threads tied → dyed → woven (pre-dyed yarn weaving)

United Nations World Tourism Organization (UNWTO)

- Established: 1975

- HQ: Madrid, Spain

- Members: 159 countries

- Initiative: **Best Tourism Villages (2021)** – part of Tourism for Rural Development Programme

- Evaluates villages on sustainability, culture, economy, governance

PM RAHAT Scheme

Syllabus: GS-2: Governance

Context:

- India records one of the highest numbers of road accident fatalities globally (as per MoRTH data, ~1.6–1.7 lakh deaths annually).

- High out-of-pocket expenditure and delay in hospitalization worsen trauma outcomes.

- The scheme operationalizes the spirit of the **Good Samaritan guidelines** and **Motor Vehicles (Amendment) Act, 2019**.

Objective

- **Life-saving intervention** through time-bound trauma care.

- **Cashless and assured treatment** up to a defined financial limit.

- **Financial certainty to hospitals** for trauma care reimbursement.

- Creation of a **structured, tech-enabled emergency response ecosystem**.

Key Features

(A) Cashless Treatment

- Up to ₹1.5 lakh per road accident victim.

- Applicable to **all categories of roads** (National Highways, State Highways, district roads, rural roads, etc.).

- Covers immediate stabilization and hospitalization.

(B) Integration with Emergency System

- Linked to **Emergency Response Support System (ERSS) – 112**.

- Victims or Good Samaritans can dial **112**:

  o Ambulance dispatch.

  o Identification of nearest designated hospital.

  o Seamless referral mechanism.

(C) Digital Architecture

- Implemented by integrating:

  o **Electronic Detailed Accident Report (eDAR)** – Ministry of Road Transport and Highways.

  o **Transaction Management System (TMS 2.0)** – National Health Authority (NHA).

- Ensures:

  o Real-time accident documentation.

  o Paperless claim settlement.

  o Fraud minimization.

Financial Mechanism

(A) Reimbursement Source

➤ Payments to hospitals made through the **Motor Vehicle Accident Fund (MVAF)**.

(B) Case-wise Funding

➤ **Insured Vehicles**

o Funded through contributions from General Insurance Companies.

➤ **Uninsured / Hit & Run Cases**

o Funded through **budgetary allocation by Government of India**.

Institutional Framework

➤ **Grievance Redressal Officer (GRO)**:

o Nominated by the **District Road Safety Committee**.

o Committee chaired by the **District Collector / District Magistrate**.

➤ Ensures:

o Time-bound grievance handling.

o Accountability at district level.

Indian Scientific Service

Syllabus: GS-2: Governance - Civil Service

Context:

➤ Post-Independence India prioritised **administrative stability and political integration**.

➤ A **generalist civil service model** ensured:

o Uniform law enforcement

o Revenue administration

o Institutional continuity

o National integration

➤ However, **21st-century governance challenges** (climate change, pandemics, AI risks, ecological degradation) require **deep scientific expertise**, not merely administrative coordination.

➤ Scientists in government operate under rules framed for generalist administrators → creating a **structural mismatch**.

Historical Logic of the Generalist Civil Service

Why Generalists Were Necessary (Post-1947)

- ➤ Territorial consolidation and linguistic integration.
- ➤ Ensuring constitutional governance across diverse regions.
- ➤ Creation of unified administrative systems.
- ➤ Merit-based recruitment through competitive examinations (e.g., civil services).

Nature of Governance Then vs Now

Early Governance (1947–1970s)	Contemporary Governance
Land revenue, policing, law & order	Climate systems & carbon cycles
Institutional integration	Epidemiological modelling
Public administration	AI regulation & tech governance
Political consolidation	Environmental risk & sustainability

Earlier focus: **Territorial & Institutional Management**

Present focus: **Complex Systems & Scientific Risk Assessment**

The Administrator–Scientist Paradox

Differences in Professional Orientation

Administrator	Scientist
Selected via competitive exam	Emerges through research & peer review
Trained for coordination & implementation	Trained for hypothesis testing & uncertainty
Works in hierarchy	Works in intellectual autonomy
Clear authority & career path	Limited career progression in govt

Core Contradiction

- ➤ Scientists are:
  - o Placed in technical portfolios.
  - o Evaluated using administrative metrics.
  - o Denied professional safeguards for independent inquiry.
- ➤ Bureaucracy emphasises:

- o Discipline

- o Hierarchy

- o Political neutrality

Whereas science requires:

- ➤ Evidence transparency

- ➤ Documentation of uncertainty

- ➤ Freedom to question policy assumptions

Result: Scientific advice becomes **advisory, not integral**.

Administrative Rules & Their Consequences

Role of Service Rules

- ➤ Governed under **Central Civil Services (Conduct) Rules, 1964**

- ➤ Designed for:

  - o Neutrality

  - o Administrative efficiency

  - o Hierarchical discipline

Structural Consequences

- ➤ Hesitation to formally record long-term risks in:

  - o Environmental regulation

  - o Nuclear safety

  - o Public health

- ➤ Science becomes:

  - o Crisis-driven (reactive)

  - o Symbolic rather than substantive

- ➤ Lack of formal recording → weak accountability in policy failures.

International Experience

Several democracies institutionalise scientific advice within governance:

United States

- ➤ White House Office of Science & Technology Policy (OSTP).

- ➤ Strong advisory and regulatory scientific bodies.

➢ Legal safeguards against suppression of scientific findings.

United Kingdom

➢ Government Chief Scientific Adviser system.

➢ Scientific Advisory Group for Emergencies (SAGE).

➢ Transparent documentation of scientific advice.

Germany / FR France / JP Japan

➢ Dedicated scientific councils embedded within ministries.

➢ Institutional protection of research autonomy.

➢ Political authority remains final, but evidence remains documented.

Indian Situation

➢ Strong research ecosystem (IITs, IISc, CSIR, ISRO etc.).

➢ However:

    o Limited institutional authority of government scientists.

    o Cautious communication.

    o Science invoked mainly during crises (e.g., pandemics, disasters).

The Case for an Indian Scientific Service (ISS)

Concept

➢ A **permanent All-India cadre**.

➢ Works **alongside**, not replacing:

    o Indian Administrative Service

    o Indian Police Service

    o Indian Forest Service

Key Features

➢ National-level recruitment + professional evaluation.

➢ Embedded in:

    o Ministries

    o Regulatory authorities

    o Environmental agencies

➢ Separate service rules to:

- o Protect scientific independence

- o Ensure transparent documentation

- o Clarify advisory vs political authority roles

Proposed Institutional Structure of ISS

Possible specialised branches:

- ➢ Environmental & Ecological Services

> ➢ Climate & Atmospheric Services

> ➢ Hydrological Services

> ➢ Marine & Ocean Services

> ➢ Nuclear & Energy Risk Services

> ➢ Public Health & Epidemiological Services

Functional Division

Administrators	ISS Scientists
Policy coordination	Risk modelling
Implementation	Technical evaluation
Inter-ministerial integration	Long-term forecasting
Political accountability	Evidence documentation

Significance of ISS

> ➢ Strengthens Evidence-Based Governance
> ➢ Institutionalises Risk Assessment
> ➢ Enhances Transparency & Accountability
> ➢ Improves Crisis Preparedness
> ➢ Aligns India with Global Best Practices

Conclusion

> ➢ India's generalist civil service model ensured **post-Independence unity and stability**.

> ➢ However, governance now involves:

> > o Climate systems

> > o Technological disruption

> > o Epidemiological modelling

> > o Ecological resilience

> ➢ Scientific expertise cannot operate effectively under purely administrative frameworks.

> ➢ Establishing an **Indian Scientific Service** represents:

> > o An **evolution**, not replacement, of governance.

> > o A structural reform integrating **scientific reasoning into statecraft**.

➤ By embedding institutionalised science within policymaking, India can:

- o Improve long-term policy quality

- o Strengthen democratic accountability

- o Enhance national resilience
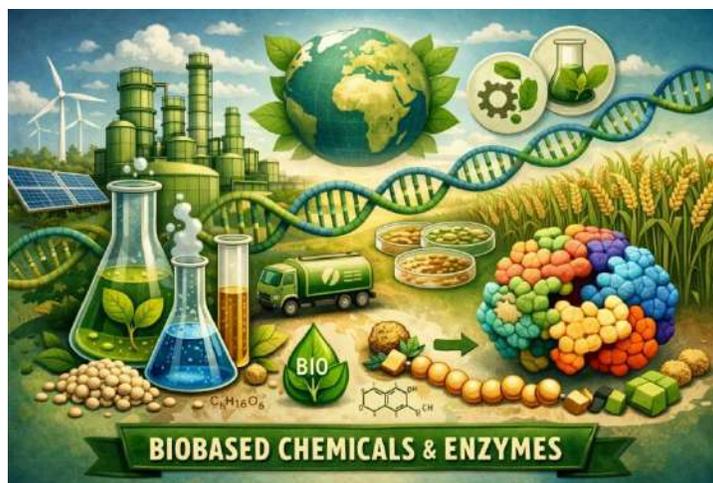
Bio-based chemicals

Syllabus: GS-3: Science and Technology – Biotechnology.

Context:

Bio-based chemicals are industrial chemicals produced using biological feedstocks like sugarcane, corn, starch, or biomass residues, often through fermentation or enzymatic processes.

Definitions and Core Concepts

➤ **Bio-based Chemicals:** Organic compounds derived from renewable biological resources (plants, animals, marine organisms, or microorganisms) rather than traditional fossil fuels (petroleum/natural gas).

- o *Examples:* Polylactic acid (PLA) for bioplastics, Bio-ethanol, Succinic acid.

➤ **Bio-enzymes:** These are biological catalysts (mostly proteins) that speed up biochemical reactions without being consumed.

- o *Mechanism:* They lower the "activation energy" required for a reaction to occur.

- o *Source:* Primarily extracted from bacteria, fungi, or plant waste (e.g., citrus peels).

BIOBASED CHEMICALS & ENZYMES

The Shift: Fossil-based vs. Bio-based

Feature	Fossil-based Chemicals	Bio-based Chemicals/Enzymes
Feedstock	Non-renewable (Crude oil, Coal)	Renewable (Agri-waste, Biomass, Algae)
Carbon Footprint	High (releases sequestered carbon)	Low (Carbon neutral/Circular)
Process Conditions	High temp/pressure; toxic solvents	Mild temp/pressure; aqueous media
Biodegradability	Generally low (leads to microplastics)	High (naturally decomposable)

Key Applications

➢ **Industrial Biomanufacturing:** Using enzymes like *cellulase* to break down plant waste into sugars for biofuels (Ethanol).

➢ **Waste Management:** Bio-enzymes are used in "Bio-toilets" (patented by DRDO) to decompose human waste into water and methane, and in "Septabs" to extend the life of septic tanks.

➢ **Household & Personal Care:** * *Cleaning:* Bio-enzymes from citrus peels replace harsh chemical surfactants (detergents).

     o *Textiles:* Used for "biopolishing" of fabrics to remove fuzz and improve texture.

➢ **Agriculture:** Acting as soil stabilizers and biopesticides; converting agricultural residues (rice/wheat straw) into high-value platform chemicals like *furfural*.

India's Policy Landscape: BioE3 Policy (2024)

The Cabinet recently cleared the **BioE3 Policy** to transition India from "fossil-based" to "bio-based" manufacturing.

➢ **Six Focus Verticals:**

1. Bio-based chemicals and enzymes.

2. Functional foods and smart proteins.

3. Precision biotherapeutics.

4. Climate-resilient agriculture.

5. Carbon capture and utilization.

6. Futuristic marine and space research.

- ➢ **Goal:** Reach a **$300 billion bioeconomy by 2030**.

- ➢ **Infrastructure:** Setting up **Bio-foundries** (specialized hubs to design and build biological systems) and Bio-AI hubs.

Advantages for India

- ➢ **Circular Economy:** Utilizes India's massive agricultural waste (stubble), reducing the environmental hazard of crop residue burning.

- ➢ **Import Substitution:** Reduces dependence on imported crude oil and petrochemical building blocks.

- ➢ **Net Zero 2070:** Aligns with India's commitment to reduce carbon emissions and achieve climate goals.

Challenges in Scaling Up

- ➢ **Economic Viability:** Producing bio-chemicals is currently more expensive than traditional petroleum-based methods due to lack of scale.

- ➢ **Feedstock Supply Chain:** Collecting and transporting agricultural waste to bio-refineries remains a logistical bottleneck.

- ➢ **Regulatory Gaps:** Need for an independent certification body to verify the efficacy and safety of the plethora of bio-products entering the market.

Practice Qs

"The transition from a petroleum-based chemical industry to a bio-based one is not just an environmental necessity but an economic opportunity for India." Discuss in the light of the BioE3 Policy. (15 marks, 250 words)