IQRA IAS

AN INSTITUTE FOR CIVIL SERVICES

CURRENT AFFAIRS

WEEKLY 01st July - 06th July (2025)

IQRA
Wisdom leads to success

EMPLOYMENT-LINKED INCENTIVE SCHEME

INDIA-AFRICA RELATIONS

IQRA IAS
An Institute for Civil Services

WEEKLY UPDATES

DATE :1ˢᵗ July- 6ᵗʰ July

Table of Contents

POLITY

Torture Behind Bars

📌 **Syllabus Mapping:**
✅ **GS Paper 2 – Governance: Mechanisms, Laws, Institutions for Accountability**
✅ **GS Paper 2 – Polity: Fundamental Rights, Judiciary**
✅ **GS Paper 3 – Internal Security: Police Reforms, Human Rights Issues**

1. Context

A recent incident in **Sivaganga, Tamil Nadu**, where **Ajith Kumar** died under alleged custodial torture, was termed by the **Madurai Bench of the Madras High Court** as "**more brutal than a murder**." This incident revives national concern over rising **custodial deaths** and institutional **impunity**.

2. What is Custodial Death?

- **Definition**: The **death of a person** while in **police**, **judicial**, or **military custody**, whether **before**, **during**, or **after** a trial.
- **Types**:
    - **Natural Death**: Due to pre-existing medical conditions or illness.
    - **Unnatural Death**: Includes **torture**, **suicide**, **neglect**, or **physical assault**.

3. Custodial Death Statistics in India

Agency/Period	Key Figures
NHRC (2021–22)	2,150 **judicial** + 155 **police** custody deaths
Disciplinary Action Taken	Only **21 cases** (≈0.23%)
NCRB (2000–2020)	1,888 deaths reported, **only 26 convictions**
2017–2022	345 inquiries, 123 arrests, 79 chargesheets, **0 convictions**
Tamil Nadu (2016–2022)	490 custodial deaths—the **highest in southern India**

4. Causes of Custodial Deaths in India

🔷 **a. Absence of a Standalone Anti-Torture Law**

- **India signed** but has **not ratified** the **UN Convention Against Torture (UNCAT)**.
- The **273rd Law Commission Report (2017)** strongly recommended anti-torture legislation.

🔷 **b. Weak Investigative Accountability**

- **Evidence manipulation**, delay in **filing FIRs**, **missing CCTV footage**, and **non-cooperation** with inquiries.
- In Ajith Kumar's case: **Post-mortem was shifted**, CCTV footage was missing—raising concerns over transparency.

🔷 **c. Systemic Overcrowding & Neglect**

- Overcrowded prisons with **poor healthcare**, **inadequate mental health support**, and **high stress** lead to suicides and deaths.

🔷 **d. Disproportionate Targeting of Marginalized Groups**

- **Scheduled Castes** formed **38.5% of preventive detentions** in Tamil Nadu, despite being **20% of population**.
- Structural discrimination results in **greater abuse risk**.

🔷 **e. Ineffective Internal Policing Mechanisms**

- Arrests **without FIR**, unofficial detentions, **no clear accountability** mechanisms, and poor implementation of **human rights protocols**.

5. Major Judicial Guidelines and Interventions

Case	Judgment/Significance
DK Basu vs State of West Bengal (1996)	Laid down **11 mandatory guidelines** for arrest and custody, including **medical examination** and **arrest memo**.
Nilabati Behera vs State of Orissa (1993)	Recognised **State liability under Article 21**, awarded **compensation** to the victim's family.
PUCL vs Union of India (2005)	Directed **CCTV installation in lockups** and police stations.
In Re: Custodial Violence (2020)	Supreme Court directed **compliance reporting** from states on **CCTV usage** in custodial premises.

6. Constitutional and Legal Dimensions

- **Article 21**: *Right to Life and Personal Liberty* – custodial deaths are direct violations.
- **Article 22(1)**: Right to be informed of grounds of arrest and consult a legal practitioner.
- **Section 176(1A) CrPC**: Mandates **judicial inquiry** in case of custodial deaths.
- **SC/ST (Prevention of Atrocities) Act**: Provides additional safeguards during arrest and detention of SC/ST individuals.

7. International Linkages and Norms

Convention/Body	India's Status / Issue
UNCAT (1984)	**Signed but not ratified**
Paris Principles (NHRC)	India's NHRC lacks **full independence**
UN Basic Principles on Use of Force and Firearms	Under-implemented in policing procedures

8. Challenges in Implementation

- **Lack of political will** to pass reforms.
- **Police–political nexus** limits accountability.
- **Low conviction rate** discourages victims from filing complaints.
- **Technological gaps** in forensic and CCTV coverage.

9. Way Forward

✅ **a. Anti-Torture Law**

- Enact a **comprehensive law** with **penal consequences**, modeled on global best practices and **Law Commission's 273rd Report**.

✅ **b. Independent Oversight**

- **Strengthen NHRC** with **suo motu powers**, regular audits, and public reporting.

✅ **c. Police Reforms**

- Implement **Prakash Singh Guidelines**:
  - Fixed tenure for DGPs
  - Separation of **law & order** from **investigation**
  - Transparent transfer policies

✅ **d. Technology-Based Safeguards**

- **Body-worn cameras**, **automated digital logs**, and **forensic auditing** of video feeds.

✅ **e. Fast-Track Custodial Death Courts**

- **Dedicated benches** for custodial violence to **ensure time-bound trials and deterrence**.

✅ **f. Community Monitoring & Legal Aid**

- Engage **civil society**, ensure **legal aid** and access to **public defenders** for vulnerable detainees.

✅ **g. Ratify UNCAT**

- Signal global compliance and integrate **international human rights norms** into national policy.

✅ Conclusion

Custodial deaths are a **glaring violation of the rule of law and Article 21**, reflecting a **disturbing erosion of human dignity**. A combination of **legislative action**, **judicial vigilance**, **police reform**, and **public accountability** is vital to uphold the ideals of the **Indian Constitution** and secure a **rights-based criminal justice system**.

Criminal Law Reforms

📌 **Syllabus Mapping:**
✅ **GS Paper II – Polity & Governance**
✅ **GS Paper III – Internal Security, Legal Reforms, E-Governance**

1. Introduction: Overhauling the Criminal Justice Framework

- On **1st July 2024**, **three new criminal laws** came into force, replacing outdated **colonial-era statutes**.
- The intent was to **simplify**, **modernize**, and make the justice system more **affordable**, **accessible**, **approachable**, and **technology-driven**.

2. New Legal Framework Replacing Colonial Laws

Old Law	New Legislation
Indian Penal Code (IPC), 1860	**Bharatiya Nyay Sanhita (BNS), 2023**
Criminal Procedure Code (CrPC), 1973	**Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023**
Indian Evidence Act, 1872	**Bharatiya Sakshya Adhiniyam (BSA), 2023**

3. Key Developments in the First Year of Implementation

🔹 **Digital Integration in Criminal Justice**

- **e-Sakshya** (electronic evidence) and **e-Summons** operationalized in **11 States/UTs**.
- **Nyaya Shruti** project enabled **video conferencing of witness depositions** in **6 States/UTs**.
- **Crime and Criminal Tracking Network & Systems (CCTNS)**:
  - Integrated with **14,000+ police stations**
  - Connected to **22,000 courts**, enabling faster data sharing and case updates.

🔹 **Institutional and Human Resource Reforms**

- **100% capacity-building** achieved in **23 States/UTs**, focusing on training of police, prosecutors, and judiciary.
- **Community service** introduced as a **non-custodial punishment** in **12 States/UTs**, in line with global penal reform trends.

4. Persistent Challenges in Implementation

🔸 **Infrastructural Deficits**

- Many **courts, police stations, and prisons** lack **digital infrastructure**, e.g., internet connectivity and basic devices.

🔸 **Enforcement and Personnel Shortages**

- Although **BNSS prescribes time-bound justice**, its enforcement remains weak due to:
  - **22% vacancy in police forces**
  - **22% shortfall in district judiciary**

🔸 **Forensic Dependency without Adequate Capacity**

- BNSS and BSA stress on **forensic evidence**, but:
  - **47% administrative vacancies** and **49% scientific vacancies** exist in forensic labs.
  - This hampers timely evidence processing and prosecution.

5. Judicial Scrutiny and Landmark Interpretations

🧑‍⚖️ **Notable Supreme Court Cases**

- **Re-Inhuman Conditions In 1382 Prisons v. Director General of Prisons**:
  - Addressed **retrospective application** of **Section 479 BNSS** on undertrial detention.
- **Badshah Majid Malik v. Directorate of Enforcement**:
  - **Bail granted under PMLA**, as the accused had served **1/3rd of the maximum sentence**, aligning with **BNSS norms**.

- **Re-Inhuman Conditions In 1382 Prisons** (second reference):
  - Directed **release of eligible women prisoners** under **Section 479 BNSS**, ensuring humane treatment of undertrials.

6. Critical Analysis

🔍 **Strengths**

- **De-colonisation of the legal framework** aligns with post-colonial constitutionalism.
- Emphasis on **citizen-centricity**, **timeliness**, and **digital justice** mechanisms.
- Enhanced reliance on **forensics**, which can improve conviction rates if implemented properly.

⚠️ **Weaknesses**

- **Capacity constraints**, especially in forensics and judiciary, **undermine the reforms**.
- **Inter-State disparity** in adoption of digital modules and training remains high.
- **Absence of a monitoring framework** for enforcement timelines in BNSS.

🔙 Conclusion: Towards a More Responsive Justice System

- The shift to **BNS, BNSS, and BSA** is a **landmark in India's legal evolution**, aimed at making criminal justice **people-centric, tech-enabled**, and **efficient**.
- However, **legislative change must be complemented by administrative reform**, infrastructure upgrade, and adequate **human resource deployment**.
- A balance between **legal intent** and **ground realities** is critical to ensure the vision of **accessible and expeditious justice** is realized.

GOVERNANCE

RECLAIM Framework

📌 **Syllabus Mapping:**
✅ **GS Paper 2 – Governance (Decentralisation, Inclusive Development)**
✅ **GS Paper 3 – Environment (Pollution, Land Degradation, Conservation, Energy Transition)**
✅ **GS Paper 1 – Society (Vulnerable Sections, Livelihoods)**

1. Context

The **Ministry of Coal** is set to launch the **RECLAIM Framework**, a **first-of-its-kind community engagement model** for **mine closure and repurposing**, with the objective of ensuring **just transitions** for mining-affected communities in India.

2. What is the RECLAIM Framework?

- **RECLAIM = Responsive Engagement for Closure, Land Restoration, and Inclusive Alternative Models**
- It is a **structured, participatory framework** for ensuring **social, economic, and ecological transitions** in coal mining regions post-closure.

Aspect	Details
Launched By	Ministry of Coal, in collaboration with **Coal Controller Organisation** and **Heartfulness Institute**
Nature	**Toolkit-based framework** for community-led, ecologically sustainable mine closures
Target Audience	Coal mining regions and communities dependent on coal-based livelihoods

3. Objectives of RECLAIM

- **Just Transition**: Ensuring communities dependent on coal do not suffer economic or social setbacks post mine closure.
- **Community Empowerment**: Active participation of stakeholders in the closure process.
- **Ecological Restoration**: Environmental rejuvenation of mined-out lands and degraded ecosystems.
- **Socio-economic Resilience**: Promoting alternative livelihoods, skilling, and long-term sustainability.

4. Key Features of the Framework

🧩 **Participatory Governance**

- **Institutionalises local engagement** through Gram Sabhas and **Panchayati Raj Institutions (PRIs)**.

- Community consultation in **closure planning, repurposing, and monitoring**.

🛠️ **Toolkit-Based Approach**

- Field-tested **tools, templates, and models** to guide planning.
- Customized for **diverse socio-economic and geographic contexts** in India.

👷 **Equity and Inclusion**

- **Prioritises women, SC/ST groups, and vulnerable populations** in transition planning.
- Integrates SDG principles—**"Leave No One Behind"**.

🌱 **Ecological Rehabilitation**

- **Land reclamation**, **afforestation**, and **aquifer revival**.
- Focus on building **natural capital** and mitigating legacy pollution.

💼 **Livelihood Diversification**

- Focus on **alternate employment avenues** like eco-tourism, agroforestry, MSMEs.
- **Capacity-building and skilling** of displaced workers in non-coal sectors.

5. Significance of the RECLAIM Framework

Dimension	Impact
Social	Empowers communities; reduces vulnerability due to coal economy dependence
Environmental	Aids in **climate adaptation**, land recovery, and India's **Net-Zero 2070** goals
Economic	Converts mine closure into **economic opportunity** through new industries
Policy Innovation	Aligns with global Just Transition frameworks like **ILO's Guidelines**
Governance	Promotes **decentralised, accountable** and inclusive planning

6. Global Comparisons

Country	Practice
Germany	**Coal Commission** model for worker resettlement and green energy skilling
USA	**RECLAIM Act (2019)** focused on reclaiming abandoned mine lands for development
South Africa	Emphasises **social dialogue** and worker retraining in post-coal transitions

7. Challenges Ahead

- **Digital Divide**: Use of toolkits and platforms may limit access in digitally backward regions.
- **Funding Gaps**: Need for a **dedicated Mine Closure Fund** with CSR + public finance synergy.
- **Implementation Capacity**: PRIs may lack capacity to execute ecological and economic recovery plans.
- **Monitoring**: Lack of third-party audits could undermine transparency.

✅ Conclusion

The **RECLAIM Framework** marks a **paradigm shift in India's resource governance**—from extraction-led to **community-centred regeneration**. By turning **mine closures into engines of transformation**, it aligns with India's vision of **Viksit Bharat 2047**, ensuring **socio-ecological justice**, local empowerment, and long-term sustainability.

National Indicator Framework Report 2025

📌 **Syllabus Mapping:**
✅ **GS Paper 2 – Governance: Government Reports, Development Processes, Welfare Indicators**
✅ **GS Paper 3 – Environment, Inclusive Growth, Sustainable Development, SDGs**
✅ **GS Paper 1 – Society: Inequality, Demographic Indicators**

1. Context: India's Official Monitor for Sustainable Development

- The **Ministry of Statistics and Programme Implementation (MoSPI)** released the **National Indicator Framework (NIF) Progress Report 2025**.
- The report tracks India's performance on **Sustainable Development Goals (SDGs)** through **quantifiable indicators**, acting as the **primary monitoring tool at the national level**.
- The NIF is aligned with the **UN 2030 Agenda** and showcases India's strides and gaps in fulfilling its global development commitments.

2. What is the National Indicator Framework (NIF)?

- **Introduced:** 2016, updated periodically
- **Purpose:** Provides a **statistical foundation** to assess SDG performance across 17 goals, 169 targets, and over 300 indicators
- **Developed by:** MoSPI in coordination with **central ministries and state governments**
- Ensures **data-driven governance** and enables **SDG-localisation** in India

3. Key Achievements Highlighted in NIF Report 2025

a) Zero Hunger (SDG 2)

- **Agricultural productivity** rose significantly
- **Income per agricultural worker** increased from **₹61,247 (2015–16)** to **₹94,110 (2024–25)**
- Reflects success of initiatives like **PM-KISAN**, **eNAM**, and **Soil Health Cards**

b) Clean Water and Sanitation (SDG 6)

- **Rural access to safe drinking water** rose from **94.57% to 99.62%**
- Driven by flagship schemes like **Jal Jeevan Mission** and **Swachh Bharat Mission**

c) Affordable and Clean Energy (SDG 7)

- **Renewable energy share** in total installed capacity increased from **16.02% to 22.13%**
- **Per capita renewable energy capacity** surged from **64.04 W (2014–15)** to **156.31 W (2024–25)**
- Signifies growing emphasis on **solar, wind, and green hydrogen**

d) Decent Work and Economic Growth (SDG 8)

- **Social protection coverage** improved from **22% (2016)** to **64.3% (2025)**
- Indicates better access to pensions, health insurance, and welfare programs

e) Industry, Innovation and Infrastructure (SDG 9)

- **Emission intensity of GDP** fell by **36% between 2005 and 2020**, reflecting **low-carbon industrialisation**
- Aided by energy efficiency programs like **PAT Scheme** and **Ujjwala 2.0**

f) Reduced Inequality (SDG 10)

- **Gini Coefficient of Household Expenditure**:
    - **Rural areas:** Declined from **0.283 to 0.237**
    - **Urban areas:** Declined from **0.363 to 0.284**
- Suggests improvement in **income distribution and access to services**

g) Responsible Consumption and Production (SDG 12)

- **Waste processing rate** improved dramatically from **17.97% (2015–16)** to **80.7% (2024–25)**
- Reflects effectiveness of **Solid Waste Management Rules, 2016**

h) Life on Land (SDG 15)

- **Forest cover** grew from **21.34% (2015)** to **21.76% (2023)**
- Driven by **Green India Mission**, CAMPA Fund utilisation, and **community forestry**

4. Areas of Concern and Policy Gaps

Despite several gains, the report highlights **key emerging concerns** that require policy attention:

Indicator	Concern
Adolescent Birth Rate	Rising rates among girls, posing risks to maternal and child health
Road Accident Fatalities	Increased numbers indicate poor road safety enforcement
Soil Health Cards	Declining issuance threatens sustainable farming
Budget Utilisation	Reduction in **primary government expenditure** as a share of the original budget raises efficiency concerns

5. Significance of the NIF Progress Report

- Acts as a **mirror to India's developmental journey** under the SDG framework
- Enables **state and district-level planning** through disaggregated data
- Facilitates **evidence-based policymaking** and inter-ministerial coordination

- Aligns with international commitments under:
  - **United Nations 2030 Agenda**
  - **Global Sustainable Development Report (GSDR)**
  - **Voluntary National Reviews (VNRs)** submitted to **UN High-Level Political Forum (HLPF)**

6. Way Forward: Strengthening India's SDG Monitoring Framework

- **Enhance Data Infrastructure**: Invest in real-time, disaggregated data systems across ministries and states
- **Bridge Regional Gaps**: Focus on **Aspirational Districts** and backward regions
- **Gender-Responsive Indicators**: Improve monitoring of **SDG 5, 3, and 4** with gender disaggregation
- **Encourage SDG Budgeting**: Link fund allocation and performance with SDG targets
- **Periodic Updates**: Update indicators in sync with evolving **UN methodology and global best practices**

7. Conclusion: NIF as a Cornerstone for Developmental Accountability

- The **NIF Progress Report 2025** underscores India's **steady advancement toward inclusive, sustainable development**.
- While key targets in health, energy, and equity have shown progress, challenges in **safety, adolescent health, and fiscal discipline** need urgent reforms.
- With robust data systems, **centre–state alignment**, and **citizen-centric monitoring**, India can set a **global example** in SDG implementation and impact.

Cabinet Clears Employment Linked Incentive Scheme

📌 **Syllabus Mapping:**
✅ **GS Paper 2 – Welfare Schemes for Vulnerable Sections**
✅ **GS Paper 3 – Indian Economy: Employment, Inclusive Growth, and Labour Reforms**
✅ **GS Paper 2 – Government Policies and Interventions**

1. Context: Green Signal for Job-Centric Incentive Scheme

- The **Union Cabinet** has approved the launch of the **Employment Linked Incentive (ELI) Scheme**, a major initiative aimed at **accelerating formal job creation** across India.
- The scheme, part of the **Prime Minister's 5-Scheme Employment Package** announced in the **Union Budget 2024–25**, will be implemented over a **two-year period (2025–2027)**.

2. Overview of the ELI Scheme

Parameter	Details
Administering Ministry	**Ministry of Labour & Employment**
Budget Outlay	**₹99,446 crore**
Duration	**2025 to 2027**
Coverage	**Manufacturing sector** and allied industries
Job Creation Target	**3.5 crore jobs**, including **1.92 crore first-time entrants**

3. Objectives of the ELI Scheme

- **Stimulate Large-Scale Employment**: Incentivise companies to **expand their workforce**, especially in labour-intensive sectors.
- **Enhance Employability**: Promote formal jobs with **social security**, **training**, and **benefits**.
- **Support New Workforce Entrants**: Focus on absorbing **first-time workers**, including **youth, women, and marginalized sections**.
- **Strengthen Formalization**: Encourage registration of workers under **EPFO**, **ESIC**, and **UAN systems**.
- **Complement Skilling Ecosystem**: Aligns with schemes like **PMKVY**, **Skill India Mission**, and **National Career Service (NCS)**.

4. Strategic Importance

- Aims to **bridge the employment gap** in post-pandemic recovery years.
- Targets **manufacturing growth-led employment**, leveraging momentum from **PLI (Production Linked Incentive) schemes**.
- Expected to drive **inclusive job creation** in:
  - **Textiles and apparel**
  - **Electronics and assembly**
  - **Automobile components**
  - **Food processing**
  - **Construction and logistics**

5. Significance for Indian Economy

- Addresses the persistent issue of **jobless growth**, especially among **youth and semi-skilled workers**.
- A boost to **formal employment**, which stands at just over **20% of India's total workforce**.
- Supports **MSMEs** to onboard employees in the formal sector, reducing informal dependency.
- Contributes to India's vision of becoming a **$5 trillion economy** by creating a **skilled, productive, and protected workforce**.

6. Way Forward

- **Digital Integration**: Seamless tracking of new employment via **Aadhaar-linked employment databases**.
- **Private Sector Engagement**: Collaborate with **industry associations** to expand outreach and implementation.
- **Focus on Underrepresented Segments**: Special incentives for hiring **women, differently-abled individuals**, and **rural youth**.
- **Impact Assessment**: Regular monitoring through **labour market analytics** and **employment impact dashboards**.

7. Conclusion: Employment as a Pillar of Inclusive Growth

- The **ELI Scheme** reflects India's strategic shift towards **employment-centric policymaking**, where job creation is not just a byproduct of growth but a **deliberate policy target**.
- With a strong budgetary push and sectoral alignment, the scheme holds promise to **catalyse productive employment**, promote **dignity of labour**, and support **social protection expansion** across India.

Chhattisgarh Withdraws Restrictive Directive on Forest Governance

📌 **Syllabus Mapping:**
✅ **GS Paper 2 – Governance (Government Policies & Interventions)**
✅ **GS Paper 3 – Environment (Conservation, Forest Rights, and Environmental Governance)**

1. Context: Withdrawal of Directive on CFRR in Chhattisgarh

- The **Chhattisgarh Forest Department** has **withdrawn a directive** that had restricted **government departments, NGOs, and private entities** from engaging in **Community Forest Resource Rights (CFRR)**-related work.
- The earlier directive intended to align CFRR implementation with the **National Working Plan Code (NWPC) 2023**, but was criticised for **undermining the Forest Rights Act (FRA), 2006**.

2. What Are Community Forest Resource Rights (CFRR)?

- **Legal Backing**: Provided under **Section 3(1)(i)** of the **Forest Rights Act (FRA), 2006**.
- **Definition**: Rights of **Gram Sabhas** over **common forest land traditionally protected and used** for sustainable livelihood and cultural practices.
- **Scope of Rights**:
  - **Protect, regenerate, conserve, and manage** community forest resources.
  - **Frame rules** for forest usage and govern access for both locals and outsiders.
  - Enable **community-based forest governance** and ecological stewardship.

3. The Forest Rights Act (FRA), 2006: A Rights-Based Framework

- **Objective**: To **correct historical injustices** faced by **Scheduled Tribes (STs)** and **Other Traditional Forest Dwellers (OTFDs)**.
- **Significance**: Secures both **livelihood** and **cultural identity** of forest communities.

🔹 **Types of Rights Recognised under FRA**

Category	Examples
Individual Forest Rights (IFR)	Right to self-cultivation, residential land, in-situ rehabilitation.
Community Forest Rights (CFR)	Grazing, fishing, access to water bodies, traditional resource use.
Community Forest Resource Rights (CFRR)	Right to manage forest resources sustainably through Gram Sabha governance.
Development Rights	Right to use forest land for schools, health centres, roads, etc.

4. National Working Plan Code (NWPC) 2023: A Conflicting Framework?

- **Issued by**: Ministry of Environment, Forest and Climate Change (MoEFCC).
- **Objective**: To guide the **scientific management of forests** across different divisions in India.
- **Controversy**:
  - The CFRR directive tried to **subsume community rights under forest bureaucracy** by aligning them with NWPC.
  - This contradicts the **Gram Sabha-centric approach of FRA**, leading to tensions in forest governance models.

5. Significance of the Directive Withdrawal

- **Reinforces FRA's Primacy**: Upholds the **statutory authority of Gram Sabhas** in forest management.
- **Revives Participatory Governance**: Reopens space for **multi-stakeholder involvement**, including civil society and local institutions.
- **Promotes Environmental Justice**: Protects **decentralised forest rights regimes** crucial for tribal autonomy and forest sustainability.

6. Broader Challenges in CFRR Implementation

Challenges	Details
Bureaucratic resistance	Tendency to prioritise forest department control over community rights.
Delayed Recognition	Slow pace of claim processing, verification, and approval.
Poor Awareness	Limited knowledge among forest dwellers about CFRR provisions.
Conflicting Legal Frameworks	Overlap and contradictions between FRA and forest conservation laws.

7. Way Forward

- **Legal Harmonisation**: Align FRA implementation with other environmental and forest management codes.
- **Capacity Building**: Train local communities and forest officials on participatory governance.
- **Supportive Ecosystem**: Encourage collaboration with NGOs and academic institutions to aid CFRR implementation.
- **Data & Transparency**: Use geospatial tools and public dashboards to track CFRR claims and outcomes.

8. Conclusion: Reaffirming Forest Democracy

The withdrawal of the CFRR directive in Chhattisgarh **reasserts the constitutional and statutory role of Gram Sabhas** in managing forest resources. In a climate-vulnerable world, empowering communities to sustainably govern forests through **rights-based and decentralised models** is crucial for **ecological justice, tribal dignity, and sustainable development**.

INTERNATIONAL RELATIONS

India–Africa Relations: Reinforcing South-South Solidarity

📌 **Syllabus Mapping:**
✅ **GS Paper 2 – International Relations (India and Africa, South-South Cooperation)**
✅ **GS Paper 2 – Governance (Global Institutions, G20, UN Reforms)**
✅ **GS Paper 3 – Economic Development, Climate Change**

1. Context: Strengthening India-Africa Partnership

- During his **state visit to Ghana in July 2025**, the **Prime Minister of India reaffirmed India's unwavering commitment** to Africa's development, guided by principles of **equality, partnership, and shared growth**.
- India seeks to be a **reliable partner** in Africa's journey towards **Agenda 2063**, sustainable development, and strategic autonomy.

2. Emerging Dimensions in India–Africa Relations

🔷 **Global South and Multilateralism**

- **Amplification of Africa's Voice:** India championed the **African Union's permanent membership in G20** during its presidency in 2023.
- **Reformed Global Governance:** India has called for **greater African representation** in institutions like the **UN Security Council**, in line with the **Ezulwini Consensus**.

🔷 **Strategic and Developmental Cooperation**

- **Joint Initiatives:** Collaboration on the **Asia-Africa Growth Corridor (AAGC)** with Japan for **infrastructure, connectivity, and human development**.
- **Support for Africa's Agenda 2063:** India aligns its assistance programs with **Africa's own development blueprint**.

🔷 **Economic Engagement**

- **India is Africa's 4th largest trading partner**, with **US$ 100 billion** in bilateral trade and **US$ 75+ billion** in cumulative investments (June 2024).
- Key sectors: Energy, agriculture, pharmaceuticals, digital connectivity, and SMEs.

◆ **Climate and Renewable Energy Partnerships**

- Africa's active participation in:
  - ○ **International Solar Alliance (ISA)**
  - ○ **Global Biofuel Alliance**
  - ○ **Coalition for Disaster Resilient Infrastructure (CDRI)**
- India extends **green financing, technology transfer**, and disaster resilience support to African nations.

◆ **Capacity Building and Education**

- India's support to **"Educate an African Fit for the 21st Century"**, aligned with **African Union's priorities**.
- Initiatives: **ITEC scholarships**, **e-Vidya Bharti-Arogya Bharti (e-VBAB) tele-education and telemedicine**, **training for African civil servants, diplomats, and defence personnel**.

◆ **Cultural and People-to-People Ties**

- **e-Visa extended to 33 African countries**
- Growth in **diaspora engagement**, student exchanges, and promotion of **Indo-African heritage**.

3. Challenges in India-Africa Relations

Challenge Area	Explanation
Chinese Dominance	China's **BRI** and aggressive funding have outpaced India's presence in African infrastructure and trade.
Implementation Gaps	India has faced criticism over **project delays**, hampering its development credibility.
Nuclear Disagreements	Divergences remain, e.g., **South Africa supports the NPT**, while **India resists its discriminatory nature**.
Limited Institutional Presence	India's **lack of a large-scale institutional infrastructure** in Africa compared to China affects outreach.

4. Strategic Vision: From SAGAR to MAHASAGAR

- **Vision SAGAR** (Security and Growth for All in the Region) has been expanded to **Vision MAHASAGAR** (Mutual and Holistic Advancement of Security and Growth Across Regions) to reflect:
  - ○ Deeper engagement with the **Global South**
  - ○ **Maritime security cooperation**, port development, and blue economy initiatives
  - ○ Enhanced **connectivity**, trade, and **strategic alignment**

5. Conclusion: A Transformative South–South Partnership

India's approach to Africa is distinct—**demand-driven, non-prescriptive**, and rooted in **mutual respect and developmental solidarity**. Going forward, a **strategic, proactive, and accountable India-Africa framework** can serve as a **blueprint for inclusive growth**, **climate resilience**, and **multilateral reform** in a rapidly changing global order.

A World of Debt: UNCTAD's 2025 Report Warns of a Global Fiscal Time Bomb

📌 **Syllabus Mapping:**
✅ **GS Paper 2 – International Institutions, Global Groupings, and Reports**
✅ **GS Paper 3 – Economy: Mobilization of Resources, Fiscal Policy, Global Debt Trends**
✅ **GS Paper 2 – Development: Global Inequality, Financial Inclusion**

1. Context: UNCTAD Flags Global Debt Imbalance

- The **United Nations Conference on Trade and Development (UNCTAD)** has released its **"A World of Debt: 2025"** report, raising alarm over the **unsustainable surge in global public debt**, particularly in **developing nations**.
- The report paints a picture of **fiscal stress**, unequal **borrowing landscapes**, and **rising default risks**, threatening **global development goals**.

2. Global Public Debt: Alarming Trends

a) Record Debt Levels

- **Global Public Debt (GPD)** reached an **all-time high of $102 trillion in 2024**.
- If current trends persist, GPD is projected to **exceed 100% of global GDP by 2030**.

b) Disproportionate Growth in Developing Countries

- Developing economies account for **less than one-third** of global debt (**$31 trillion**), but their debt levels have grown **twice as fast** as those in advanced economies **since 2010**.

- Reflects growing dependence on **external borrowing**, weak domestic savings, and repeated **global crises** (COVID-19, geopolitical shocks, climate disasters).

3. Regional Analysis: Uneven Burden Within Developing World

Region	Share of Global Public Debt
Asia and Oceania	24%
Latin America and Caribbean	5%
Africa	2%

- Despite holding a **smaller share**, regions like **Africa** are under greater stress due to:
    - High borrowing costs
    - Currency volatility
    - Weak credit ratings

4. Borrowing Costs and Debt Servicing: A Growing Trap

- **Developing countries face borrowing costs** that are **2–4 times higher** than those of the **United States**.
- In **61 developing countries**, **interest payments alone exceed 10% of total government revenues**.
- Consequences include:
    - **Diminished fiscal space**
    - **Cuts in education, health, and infrastructure**
    - **Delayed progress on SDGs**

5. Impact on Development and Global Equity

- **Financing for development is shrinking**, even as needs grow due to climate change, humanitarian crises, and inequality.
- **Aid flows have declined**, while public debt interest payments have surged.
- The gap between **developed and developing nations** in terms of **fiscal resilience** and **policy autonomy** continues to widen.

6. Recommendations: Reforming Debt Architecture for Sustainability

a) Multilateral Actions

- **Reform the G20 Common Framework** to ensure timely, inclusive debt restructuring
- **Institutionalise debt service pauses** during crises (health, climate, or war)
- **Re-channel Special Drawing Rights (SDRs)** through the **IMF's Resilience and Sustainability Trust (RST)** to help vulnerable economies

b) Cross-Border Cooperation

- Establish a **global debt transparency hub** to:
    - Share borrowing data
    - Promote **technical assistance**
    - Encourage **innovative instruments** like sustainability-linked bonds

c) National-Level Reforms

- **Strengthen institutional capacity** to manage:
    - **Liquidity risks**
    - **Currency mismatches**
    - **Public investment projects**
- Promote **debt-for-climate and debt-for-nature swaps**
- Improve **governance of public debt**, focusing on **long-term sustainability**

7. Additional Insights for Enrichment

Indicator	Status
Global Public Debt (2024)	$102 trillion
Developing Countries' Share	$31 trillion
Number of Developing Countries Paying >10% of Revenues on Interest	61
Borrowing Cost Gap (vs USA)	2x–4x higher

- **India's case**: Debt-to-GDP ratio (~83.7% in 2023–24) is relatively stable, but **external debt servicing** remains sensitive to global interest rates and exchange rate volatility.

8. Conclusion: Global Debt Needs Global Justice

- The **2025 UNCTAD report** reinforces that **global debt is not just an economic challenge, but a developmental emergency**.
- **Systemic reforms**, not piecemeal fixes, are essential to ensure:
  o **Fair access to credit**
  o **Sustainable financing pathways**
  o **Preservation of developmental sovereignty** in the Global South
- The global community must treat **debt justice as climate justice, gender justice, and economic justice**, ensuring **no nation is left behind** in the SDG race.

Global Call for Wealth Equity: Spain and Brazil Push for Taxing the Super-Rich

📌 **Syllabus Mapping:**
✅ **GS Paper 2 – International Institutions and Policies**
✅ **GS Paper 3 – Inclusive Growth, Tax Reforms, and Inequality**
✅ **GS Paper 1 – Society: Poverty and Developmental Issues**

1. Context: A Historic Proposal at the UN Forum

- At the **4th UN International Conference on Financing for Development (FFD4)** held in **Seville, Spain**, **Brazil and Spain jointly proposed a global framework** for:
  o **Fair taxation of High-Net-Worth Individuals (HNIs)**
  o **Creation of a Global Wealth Registry**
- The proposal is central to the **Seville Platform for Action**, aiming to fast-track progress towards the **Sustainable Development Goals (SDGs)**.

2. Key Proposals by Spain and Brazil

a) Global Tax on the Super-Rich

- Advocacy for **universal enforcement of wealth taxation** on HNIs and billionaires.
- Aim: Ensure **equity in fiscal contributions** and curb **growing economic disparities**.

b) Establishment of a Global Wealth Registry

- Proposal to create a **comprehensive, transparent database** capturing:
  o **Wealth holdings and real asset ownership**
  o **Beneficial ownership of offshore assets and trusts**
- Purpose: To improve **global accountability** and **curb tax evasion and illicit wealth transfers**.

3. Why the World Needs Wealth Taxes: Understanding the Inequality Crisis

a) Staggering Wealth Gap

- The **top 1%** of the global population owns **more wealth than the bottom 95% combined**.
- The **wealth of billionaires has increased by $6.5 trillion since 2015**, surpassing the estimated **$4 trillion annual cost** of achieving the **SDGs**.

b) Low Effective Tax Rates

- Despite rising wealth, billionaires pay just **0.3% in real tax** annually.
- In contrast, **middle-income earners** often pay disproportionately higher tax rates.

c) Public vs. Private Wealth

- From **1995 to 2023**, **global private wealth** surged by **$342 trillion**, **8 times more** than the increase in global public wealth.
- Reflects the **shrinking fiscal capacity of states** to provide public goods and services.

4. Global and National Efforts to Address Inequality

a) International Initiatives

Initiative	Objective
Seville Platform for Action	Supports coordinated global efforts to finance SDGs.
G20 Tax Agenda (2024)	Working on a joint framework to tax HNIs and corporate giants.
Proposed UN Convention on Tax	Aims to establish binding rules for fair international taxation and combat base erosion.

b) India's Efforts to Reduce Inequality

Domain	Key Schemes
Employment Generation	**MGNREGA**, **DDU-GKY**, PMEGP
Financial Inclusion	**Jan Dhan Yojana**, **MUDRA**, Digital Payments Ecosystem
Social Security	**Atal Pension Yojana**, **PM Jeevan Jyoti Bima Yojana**, **Ayushman Bharat**
Welfare Programs	PM-KISAN, Ujjwala, Housing for All, and Skill India Mission

5. Need for Systemic Reforms: The Broader Perspective

- **UNCTAD's 2025 "World of Debt" Report** highlighted how **developing countries face rising debt burdens**, limiting their ability to invest in welfare.
- According to **Oxfam's 2023 Report**, taxing the richest 1% even by 2% annually could **generate $2.5 trillion**, enough to lift **2 billion people out of poverty**.
- The **World Inequality Report 2022** revealed that India's top 10% hold **over 65% of national wealth**, pointing to a need for wealth redistribution mechanisms.

6. Challenges Ahead

- **Lack of international consensus** on taxation standards.
- Potential **capital flight and tax base erosion** if wealth moves to tax havens.
- **Political resistance** from elite groups within nations.

7. Way Forward

- **Multilateral Agreement** under the UN to standardize tax norms and enforce compliance.
- **Digital tracking and reporting systems** to monitor cross-border wealth flows.
- Promotion of **progressive taxation models** to make taxation equitable.
- Strengthen domestic institutions for **wealth monitoring, transparency, and enforcement**.

8. Conclusion: Reimagining Global Fiscal Justice

The joint proposal by Spain and Brazil marks a pivotal shift towards a **more equitable global tax architecture**. With widening wealth gaps and shrinking public finance, taxing the super-rich is not merely a fiscal option but a **moral and developmental necessity**. A coordinated global response—rooted in transparency and fairness—will be key to building **inclusive, sustainable societies** and realising the **2030 Agenda for Sustainable Development**.

The Rise of the Global South: Redefining the World Order

📌 **Syllabus Mapping:**
✅ **GS Paper 2 – International Relations (Global Groupings, World Order, India's Role)**
✅ **GS Paper 1 – World History (Post-WWII World Order)**
✅ **GS Paper 3 – Economic Development (South-South Cooperation)**

1. Background: Changing Global Architecture Since WWII

- **Post-World War II Era (1945–1991)**:
  - Emergence of a **bipolar world**, dominated by two superpowers:
    - **USA (Capitalist bloc)**
    - **USSR (Communist bloc)**
  - This phase was marked by the **Cold War**, arms race, and ideological competition.
- **Post-1991 (Post-USSR Dissolution)**:
  - A **unipolar world order** led by the United States.
  - Institutions like **IMF, World Bank, WTO** continued to reflect Western-dominated structures.
- **Current Global Scenario (Multipolarity emerging)**:
  - **India's Prime Minister**, in recent remarks, emphasised that the **"World Order is rapidly shifting"**, driven by the **rise of the Global South**.

2. Understanding the Global South

- **Definition**: Refers to countries located primarily in **Africa, Latin America, and Asia** that are **economically developing**, facing structural constraints in health, education, technology, etc.
- **Brandt Line**: Proposed in the **Brandt Report (1980)**, it divides the globe into the **North (developed)** and **South (developing)** based on GDP, industrialisation, and technological advancement.
- **Global South Characteristics**: Lower income levels, high population growth, colonial legacies, dependency on global North institutions.

3. Factors Behind the Global South's Resurgence

◆ A. Economic Transformation

- According to **UNCTAD**, the Global South now contributes to **40% of world trade**.
- **India, China, Indonesia, Brazil**, and others have experienced **robust GDP growth**.
- South-led trade corridors like the **India-Middle East-Europe Corridor (IMEC)** and **China's Belt and Road Initiative (BRI)** are reshaping connectivity.

◆ B. Institutional Alternatives

- Rise of **Southern-led financial mechanisms**:
  - **New Development Bank (NDB)** by BRICS
  - **BRICS Contingent Reserve Arrangement (CRA)** for emergency liquidity
- Reduced reliance on Bretton Woods institutions like IMF and World Bank.

◆ C. Assertive Multilateralism

- Success at **COP27** in securing a **Loss and Damage Fund**, led by developing nations.
- Active push by India and others for **United Nations Security Council (UNSC) reform**.
- **Group of 77 (G-77)** and **Non-Aligned Movement (NAM)** reasserting relevance.

◆ D. Demographic Dividend

- **More than 65%** of the world's population lives in the Global South.
- **Youthful populations** in India, Nigeria, and Indonesia present opportunities for economic productivity and innovation.

◆ E. South-South Cooperation

- Collaboration in areas like:
  - Technology transfer
  - Health and vaccine diplomacy (e.g., India's **Vaccine Maitri**)
  - Climate and disaster resilience

4. Implications for the Global Power Structure

Previous Order	Emerging Order
Unipolar/Western-centric	**Multipolar and decentralised**
Dominance of IMF-WB-WTO	Parallel institutions like **NDB, AIIB, CRA**
North-South dependency	Rise of **South-South alliances**
Western strategic agenda	Focus on **climate justice**, **food security**, **digital sovereignty** by the Global South

- **Example**: G20 Presidency of India in 2023 showcased Global South priorities by including **African Union** as a permanent member.

5. Challenges Ahead for the Global South

- **Geopolitical fragmentation** (e.g., Russia-Ukraine, China-Taiwan tensions)
- **Debt distress** in several African and Asian nations (highlighted in UNCTAD's 2025 report)
- **Technology gap** and **climate vulnerability**
- **Lack of a unified voice** across the South

6. Conclusion: A More Inclusive Future Order

The **rise of the Global South** signals a **rebalancing of global power**, challenging entrenched Western-centric norms. For India, this presents an opportunity to act as a **bridge between developed and developing worlds**, lead initiatives like **reformed multilateralism**, and push for a **more equitable, sustainable global order** rooted in **shared growth and justice**.

India Hosts 23rd OPCW Regional Meeting

📌 **Syllabus Mapping:**
✅ **GS Paper 2 – International Relations (Bilateral, Regional and Global Groupings and Agreements)**
✅ **GS Paper 3 – Security (Chemical Weapons, Internal Security, and International Cooperation)**

1. Context: India Hosts Regional Dialogue on Chemical Weapons Convention

- The **Organisation for the Prohibition of Chemical Weapons (OPCW)** convened the **23rd Regional Meeting of National Authorities of States Parties in Asia** in **New Delhi**.
- The event was co-hosted by **India's National Authority for Chemical Weapons Convention (NACWC)**.
- It marked a significant step in enhancing **regional cooperation** and **capacity building** for the effective implementation of the **Chemical Weapons Convention (CWC)**.

2. About the Organisation for the Prohibition of Chemical Weapons (OPCW)

- **Mandate**: Implements and monitors compliance with the **Chemical Weapons Convention (CWC)**.
- **Headquarters**: The Hague, Netherlands.
- **Recognition**:
    - Awarded the **Nobel Peace Prize in 2013** for its extensive efforts to eliminate chemical weapons.
    - Has facilitated the **destruction of over 98%** of declared chemical weapon stockpiles globally.
- **Membership**:
    - **193 State Parties** as of 2025.
    - Represents over **98% of the global population**.

3. Understanding the Chemical Weapons Convention (CWC)

- **Adoption**: Finalised by the **Conference on Disarmament** in 1992.
- **Entry into Force**: 29 April 1997.
- **Nature**: First multilateral disarmament treaty to eliminate an entire category of **Weapons of Mass Destruction (WMD)**.
- **Obligations on Member States**:
    - **Declare and destroy** all chemical weapons and production facilities.
    - Allow **inspections** and ensure no new chemical weapons are developed.

4. India's Role and Contributions

◆ **India's Commitment to Disarmament**

- **India is an original signatory** to the CWC and continues to champion **non-proliferation**.
- The **National Authority for Chemical Weapons Convention (NACWC)**, under the **Ministry of Chemicals and Fertilizers**, ensures national implementation.
- Enacted the **Chemical Weapons Convention Act, 2000** for domestic enforcement.

◆ **India's Global Recognition**

- In **2024**, the **Indian Chemical Council (ICC)** was awarded the prestigious **OPCW–The Hague Award** — the first time ever for an industry body globally.
- The award honoured ICC's role in:
    - Advancing the Convention's goals.
    - Promoting industry-wide **safety, compliance, and security protocols**.
- **ICC** is India's **oldest and most respected** chemical industry association.

5. Significance of the 23rd Regional Meeting

- Provided a platform for **Asia-Pacific States** to:
    - Share best practices in **chemical security**.
    - Discuss challenges in **compliance and verification**.
    - Enhance coordination between national authorities.
- Contributed to **capacity building**, especially for **developing countries** in Asia.
- Reinforced India's leadership in **chemical safety and global disarmament diplomacy**.

6. Challenges and Way Forward

Challenges	Strategic Directions
Potential misuse of dual-use chemicals	Promote awareness and regulatory compliance in industries
Emerging chemical threats in terrorism	Strengthen coordination with international enforcement bodies
Technology transfer with security implications	Use mechanisms like **End-Use Monitoring** and export controls
Maintaining CWC relevance	Expand OPCW's role to address **non-state actors** and novel threats

7. Conclusion: India as a Responsible Global Actor

India's hosting of the OPCW regional meeting and its recognition through the Hague Award reflect its **commitment to global peace, chemical disarmament, and industrial safety**. As global threats evolve, India's proactive engagement ensures a **rules-based international order**, especially in the domain of **weapons of mass destruction**.

India Expands OCI Card Access to 6th-Generation Girmitiyas in Trinidad & Tobago

📌 **Syllabus Mapping:**
✅ GS Paper 2 – Indian Diaspora
✅ GS Paper 1 – Modern Indian History (Indentured Labour Migration)
✅ GS Paper 2 – International Relations (India–Caribbean Relations)

1. Context: Strengthening Diaspora Bonds through OCI Expansion

- **Prime Minister of India** announced extension of **Overseas Citizenship of India (OCI)** card eligibility to the **6th generation of Girmitiya descendants** in **Trinidad & Tobago**.
- A **database of the Girmitiya community** will also be created to deepen cultural, social, and economic engagement with this historically significant diaspora.

2. Who are Girmitiyas?

- **Girmitiyas** were Indian indentured labourers transported to various **British colonies (1830s–early 1900s)** such as Fiji, Mauritius, Guyana, and **Trinidad & Tobago**, primarily to work on **sugar and other plantations**.
- The term "Girmitiya" comes from the word "agreement" (phonetically "girmit"), referring to the contracts signed by labourers for migration.

3. About the Overseas Citizenship of India (OCI)

Feature	OCI Card Holders
Visa Requirement	**No visa required** for travel to India
Employment	Can **work** and **study** freely in India
Ownership Rights	Can **own property** except **agricultural and plantation land**
Political Rights	**Cannot vote**, hold public office, or government jobs
Duration	**Lifelong visa** with multiple entry and multipurpose use

4. NRI vs OCI: Key Differences

Criteria	NRI (Non-Resident Indian)	OCI (Overseas Citizen of India)
Citizenship	Indian citizen living abroad	Foreign citizen of Indian origin
Voting Rights	✅ Yes	❌ No
Government Jobs	✅ Eligible	❌ Not Eligible
Indian Passport	✅ Yes	❌ No (foreign passport)
Tax Residency	Taxed based on Indian income & stay duration	Not applicable unless earning from India

5. Significance of the Announcement

🔹 **Diaspora Engagement**

- Builds **emotional and cultural connection** with descendants of indentured labourers.
- Enhances **India's soft power** and people-to-people ties in the **Caribbean region**.

🔹 **Strategic Diplomacy**

- Promotes **South–South Cooperation** by deepening ties with Caribbean nations.
- Aligns with **India's Act East & Extended Neighbourhood Policy** and its outreach to the **Global South**.

🔹 **Economic & Developmental Cooperation**

- Encourages **investments, remittances**, and knowledge transfer from the diaspora.
- Enables diaspora youth to **study, intern, and innovate** in India's growing sectors like digital economy, healthcare, etc.

6. India–Trinidad and Tobago Relations: A Snapshot

- Indian-origin population: Over **40%** of the country's population (~500,000 people).

- Shared heritage through **culture, cuisine, festivals**, and religious traditions (e.g., **Diwali is a national holiday**).
- Diplomatic ties established in 1962. Engagement includes **education scholarships**, **cultural exchanges**, and cooperation in **climate resilience**, **energy**, and **digital technology**.

7. Challenges and Way Forward

Challenges	Way Forward
Generational disconnect with Indian identity	Promote **youth cultural exchange**, OCI-linked internships, and **heritage tours**
Administrative hurdles in OCI processing	**Digitise applications**, ensure clear **ancestry verification processes**
Limited diaspora policy visibility in smaller countries	Establish **dedicated diaspora missions**, community centres, and **Diaspora Development Funds**

8. Conclusion: Strengthening Historical Roots for a Shared Future

India's move to grant OCI cards to 6th-generation Girmitiyas is a powerful reaffirmation of **historical justice and cultural diplomacy**. It strengthens bonds with a **key diaspora constituency**, enriches India's **global identity**, and anchors **inclusive development partnerships** with nations of the Global South.

Iran–IAEA Fallout: A Case of Deepening Global Institutional Erosion

📌 **Syllabus Mapping:**
✅ **GS Paper II – International Relations, Multilateral Institutions**
✅ **GS Paper III – Security Challenges, Nuclear Policy, Global Governance**

1. Introduction: Geopolitical Escalation and Institutional Breakdown

- On **3rd July 2025**, **Iran enacted a law suspending cooperation with the International Atomic Energy Agency (IAEA)**.
- This development came after **Israel and the United States conducted airstrikes** on Iranian nuclear facilities, following an **IAEA resolution** accusing Iran of **violating its obligations** under the **Nuclear Non-Proliferation Treaty (NPT)**.

2. The IAEA's Mandate under the NPT Framework

Role of the IAEA

- Functions as the **international safeguards inspectorate** under the **NPT**.
- Mandated to **verify non-nuclear weapon states' compliance** with peaceful-use obligations.
- Promotes **development and application of nuclear energy for peaceful purposes** among signatories.

Iran's Status

- As a **signatory to the NPT**, Iran's suspension of cooperation **undermines nuclear transparency** and may lead to further **non-compliance concerns** globally.

3. Broader Trends: Erosion of Global Multilateralism

Iran's move is a reflection of a **larger pattern of declining trust** in international and intergovernmental institutions.

1. Weakening Authority of Global Institutions

- Growing **non-compliance** with international law and **withdrawals from treaty obligations**.
- Example: The **US withdrawal from the Paris Climate Agreement (2017)** highlighted the fragility of climate multilateralism.

2. Crisis of Credibility

- Many international organizations face **partisan interference** and are often **unable to act independently**.
- Lack of **consensus among members**, especially in geopolitically charged matters, results in paralysis.

3. Demonstration of Ineffectiveness

- **No enforcement powers**, leaving institutions reliant on **voluntary compliance**.
- Many suffer from **resource constraints** and **obsolete governance structures**, leading to operational inefficiencies.

4. Loss of Legitimacy

- Institutions like the **UN Security Council** face criticism over **imbalanced representation**, with veto power confined to the **P-5**.
- Reform proposals remain stalled, reinforcing perceptions of inequity and irrelevance.

4. Implications of Iran's Withdrawal from IAEA Oversight

- **Security Risks:** May lead to **unchecked nuclear proliferation** in West Asia, intensifying regional instability.
- **Diplomatic Breakdown:** Could derail ongoing or future **diplomatic negotiations**, including attempts to revive the **Joint Comprehensive Plan of Action (JCPOA)**.
- **Dangerous Precedent:** Encourages other countries to **reject international monitoring**, weakening the global non-proliferation architecture.

5. Critical Reflections and Scholarly Insights

- **Hedley Bull's theory of International Society** stresses that international order relies on **shared norms and institutional legitimacy**—both of which are eroding.
- **Joseph Nye's concept of soft power** becomes ineffective when institutions lose credibility and are viewed as extensions of powerful states.
- UN Secretary-General **António Guterres** has repeatedly warned of a **"crisis of multilateralism"**, calling for **networked and inclusive global governance**.

6. Conclusion: Reimagining Global Governance

- Iran's disengagement from IAEA oversight is not merely a bilateral issue but a **symptom of deeper structural decay in global institutional frameworks**.
- To arrest this erosion, the world needs to:
    - **Reform international institutions** to make them more representative and transparent.
    - Ensure **equitable enforcement mechanisms** that uphold the rule of law without geopolitical bias.
    - Rebuild **trust and credibility** through consistent, depoliticized functioning of global bodies.

Unless the legitimacy of multilateralism is restored, such acts of non-compliance will proliferate, weakening the rules-based global order that underpins peace and cooperation.

SECURITY & DEFENCE

Fortifying Digital Banking

📌 **Syllabus Mapping:**
✅ **GS Paper 3 – Security (Cyber Security), Economy (Banking, Financial Institutions)**
✅ **GS Paper 2 – Governance (e-Governance, Regulatory Bodies, Role of RBI)**
✅ **GS Paper 3 – Science & Tech (IT & Cyber Tech in Governance)**

1. Background: Strengthening the Digital Trust Architecture

- On **3rd July 2025**, the **Reserve Bank of India (RBI)** issued a directive mandating all:
    - **Scheduled Commercial Banks (SCBs)**
    - **Small Finance Banks**
    - **Payment Banks**
    - **Co-operative Banks**

    to **integrate the Financial Fraud Risk Indicator (FRI)** into their core systems.

- The move is aimed at strengthening the **real-time capability** of banks to detect and prevent **cyber and financial frauds**.

2. What Is the Financial Fraud Risk Indicator (FRI)?

Aspect	Details
Launched By	**Department of Telecommunications (DoT)** in **May 2025**
Implemented Through	**Digital Intelligence Unit (DIU)**
Function	A **risk-based metric** that classifies a mobile number based on its **association with financial fraud**
Risk Levels	Categorised into **Medium**, **High**, and **Very High** risk
Data Sources	Based on reports from:

- **Indian Cyber Crime Coordination Centre (I4C)** via the **National Cybercrime Reporting Portal (NCRP)**
- **DoT's Chakshu Platform**
- **Banks and financial institutions' inputs**
- **Law enforcement intelligence** |

3. How Does FRI Function?

- **Real-Time Integration**: The FRI is embedded into banking platforms via **API-based integration** with the **Digital Intelligence Platform (DIP)**—a secure online system managed by DoT.
- **Digital Intelligence Platform (DIP)**:
  - Enables **seamless data sharing** between financial institutions and telecom authorities.
  - Helps track mobile numbers involved in fraudulent activities.
- **Mobile Number Revocation List (MNRL)**:
  - Issued periodically by DIU.
  - Contains numbers **disconnected or flagged** for cybercrime involvement, failed KYC, or impersonation attempts.

4. Benefits for Banks & Financial Institutions

- **Proactive Risk Mitigation**: Enables banks to **flag or block transactions** linked to high-risk numbers in **real time**.
- **Customer Alerts**: Banks can **issue warnings** to account holders interacting with fraud-prone numbers.
- **Transaction Declines**: Suspicious transactions originating from high-risk mobile numbers can be **automatically declined**.
- **Enhanced Cybersecurity Compliance**: Aligns with RBI's **Digital Payment Security Control Guidelines** and the broader **National Cyber Security Policy**.

5. Broader Context: Digital Fraud Landscape in India

- India saw **over 2.5 lakh cybercrime complaints** registered in **2024 alone**, according to **NCRP** data.
- Increasing use of **social engineering**, **SIM swap frauds**, **remote access scams**, and **UPI impersonation frauds** has challenged traditional fraud detection mechanisms.
- The **National Cyber Security Strategy (pending final release)** also advocates for **integrated threat intelligence platforms** across banking, telecom, and e-governance sectors.

6. Way Forward: Integrated Risk Governance

- **Unified Surveillance**: Enhance cross-sector collaboration between **DoT, RBI, Ministry of Home Affairs**, and **IT intermediaries**.
- **Strengthening I4C Coordination**: Expand the **cybercrime reporting footprint** and harmonise data with banks.
- **AI-Powered Fraud Detection**: Encourage **AI/ML models** for real-time fraud pattern recognition using FRI and MNRL datasets.
- **Customer Awareness Campaigns**: Educate users about telecom-related cyber fraud and safe digital practices.

Conclusion: Digital Vigilance Is the New Compliance

The introduction of **FRI by DoT and its mandatory integration by RBI** marks a significant shift from **reactive fraud reporting to predictive fraud intelligence**. As India's digital financial ecosystem grows, such innovations ensure that **cyber trust remains intact**, banking operations stay resilient, and consumer protection is prioritized.

QUAD Sea Ship Observer Mission

📌 **Syllabus Mapping:**
✅ **GS Paper 2 – International Relations: Regional Groupings and Agreements involving India**
✅ **GS Paper 3 – Security: Maritime Security, Role of External State and Non-State Actors**

1. Context: QUAD Launches First-Ever Sea Ship Observer Mission

- In a significant move to bolster **maritime security** and **interoperability**, **India, Japan, the US, and Australia** have jointly initiated the **'QUAD at Sea Ship Observer Mission'** under the **Wilmington Declaration** (QUAD Leaders' Summit 2024).

2. What is the Sea Ship Observer Mission?

- It is a **multilateral maritime cooperation initiative** enabling **cross-embarkation of observer-level officers** on each other's **coast guard vessels**.
- The initiative is symbolic of **mutual trust and operational alignment** among the QUAD nations.

3. Participating Nations and Agencies

Country	Coast Guard/Agency
India	Indian Coast Guard (ICG)
Japan	Japan Coast Guard (JCG)
United States	US Coast Guard (USCG)
Australia	Australian Border Force (ABF)

4. Key Objectives of the Mission

- **Enhance Maritime Interoperability**
  - Facilitate joint preparedness and real-time response capabilities.
- **Strengthen Maritime Domain Awareness (MDA)**
  - Improve collective surveillance of **Indo-Pacific sea lanes**, vital for trade and energy security.
- **Support Rules-Based Maritime Order**
  - Reinforce adherence to **UNCLOS** and promote peaceful resolution of maritime disputes.
- **Promote Gender Inclusion**
  - Notably includes **women officers** from each participating nation, encouraging diversity in maritime roles.
- **Institutionalize QUAD Coast Guard Synergy**
  - Paves way for structured cooperation such as a **QUAD Coast Guard Handshake** in future.

5. Key Features of the Mission

Feature	Details
Cross-Deployment of Officers	Officers observe real-time operations on partner nations' ships
Focus Areas	Humanitarian Assistance and Disaster Relief (HADR), capacity building, and MDA
Strategic Alignment with India's Vision	Supports **SAGAR** (Security and Growth for All in the Region) and **Indo-Pacific Oceans Initiative (IPOI)**
Regional Significance	Enhances QUAD's role in ensuring **freedom of navigation**, deterring illegal fishing, piracy, and promoting maritime stability

6. Strategic Significance

- **Geostrategic Assertion**
  - Reinforces QUAD's stance against unilateral maritime aggression, especially in **South China Sea** and **East China Sea**.
- **Support for Rules-Based Order**
  - Strengthens India's and QUAD's commitment to **UNCLOS** and a **free, open, and inclusive Indo-Pacific**.
- **Maritime Diplomacy**
  - Enhances India's image as a **net security provider** in the region.
- **Women-Led Diplomacy**
  - Inclusion of women symbolizes progressive defence cooperation, aligned with **India's Nari Shakti vision**.

7. Conclusion

The **Sea Ship Observer Mission** marks a **paradigm shift in QUAD's maritime engagement**, going beyond dialogue to real-world operational synergy. With growing maritime threats and increasing geopolitical competition in the Indo-Pacific, such initiatives not only strengthen **collective preparedness** but also support **India's Act East Policy**, **SAGAR vision**, and **multilateral maritime cooperation** frameworks.

Sevilla Commitment 2025: A Renewed Global Push for SDG Financing

📌 **Syllabus Mapping:**
✅ **GS Paper 2 – International Institutions, Development Financing**
✅ **GS Paper 3 – Mobilization of Resources, Inclusive Growth and Sustainable Development**

1. Context: 4th International Conference on Financing for Development (FFD4), Sevilla

- The **4th International Conference on Financing for Development (FFD4)** was held in **Sevilla, Spain**, under the aegis of the **United Nations** in July 2025.
- A historic outcome of the summit was the **adoption of the "Sevilla Commitment"**, a **renewed intergovernmentally agreed framework** to bridge the **$4 trillion annual SDG financing gap** in developing and least developed countries (LDCs).

2. Key Outcome: The Sevilla Commitment (2025)

- **Significance:** First global financing framework for development since the **Addis Ababa Action Agenda (2015)**.
- **Continuity with Past Frameworks:**
  - **Monterrey Consensus (2002)**
  - **Doha Declaration (2008)**
  - **Addis Ababa Action Agenda (2015)**
  - **UN Pact for the Future (2024)**
- **Focus:**
  - **Mobilise large-scale private and public capital**
  - **Accelerate progress toward the 2030 Agenda for Sustainable Development**
  - Address systemic issues related to **debt, inequality, taxation**, and **climate finance**

3. Major Initiatives and Commitments under Sevilla Platform

Initiative	Purpose and Action
Global SDG Investment Compact	Leverages both **public and private investments** to fund critical sectors—health, education, clean energy.
Sevilla Platform for Action	A mechanism to **fast-track voluntary actions** by governments, international bodies, and private sector towards SDG financing.
Global Wealth Registry Proposal	Championed by **Spain and Brazil**, aims to **increase transparency** and tax compliance of HNIs and the super-rich.
Health Tax Campaign	WHO's "3 by 35" Initiative launched to mobilise **$1 trillion via health taxes** (tobacco, alcohol, sugary drinks) over 10 years.
Private Capital Mobilisation Strategy	Proposed by India to attract global investments through institutional reforms, blended finance, and green bonds.
UN Convention on Tax Negotiation	Renewed call for a **legally binding international tax convention** to tackle tax evasion and improve revenue in the Global South.

4. Broader Goals of the Sevilla Commitment

- **Tackle Inequality:** Address the disproportionate concentration of wealth (Top 1% owns more than 95% of global population's wealth).
- **Promote Fiscal Justice:** Develop **progressive tax systems**, crack down on illicit financial flows and tax havens.
- **Enhance Multilateral Cooperation:** Reinvigorate institutions like **UN ECOSOC, IMF, WB**, and promote **South–South and Triangular Cooperation**.
- **Strengthen Development Finance Institutions (DFIs):** Greater role for **MDBs, sovereign wealth funds**, and **blended finance platforms**.
- **Climate-SDG Synergy:** Emphasize **climate-resilient infrastructure**, energy transition, and natural capital accounting.

5. Conclusion: A Global Reset in Development Finance

The **Sevilla Commitment marks a turning point** in global developmental diplomacy—reviving momentum lost due to geopolitical tensions, COVID-19 aftermath, and sluggish capital flows. For countries like India, the commitment offers an opportunity to shape **inclusive, transparent, and equitable financial systems**, ensuring that the **Global South** plays a leading role in realising the **SDG 2030 agenda**.

ECONOMY

India's 7-Point Blueprint for Sustainable Development Finance

📌 **Syllabus Mapping:**
✅ **GS Paper 3 – Economy: Mobilization of Resources, Infrastructure, Investment Models**
✅ **GS Paper 2 – International Relations: India and Global Development Partnerships**
✅ **GS Paper 3 – Sustainable Development, Inclusive Growth, Financial Inclusion**

1. Context: India Leads at Global Forum on Development Finance

- At the **4th International Conference on Financing for Development (FFD4)** hosted by the **United Nations in Seville, Spain**, India's **Finance Minister Nirmala Sitharaman** presented a **Seven-Point Strategy** to catalyse **private investment** for meeting global and national sustainable development goals.
- The strategy aims to bridge the **development financing gap** in **emerging and developing economies** while aligning financial flows with **climate, equity, and growth objectives**.

2. Rationale: Why Mobilising Private Capital is Critical

- According to **UNCTAD**, developing countries face an **annual SDG investment gap of US$2.5 trillion**, especially in:
  - **Health**
  - **Education**
  - **Clean energy**
  - **Climate resilience**
- **Private capital** plays a **catalytic role** in:
  - **Accelerating innovation**
  - **Boosting productivity**
  - **Expanding financial inclusion**
  - **Reducing dependence on public debt and ODA**

3. Seven-Point Strategy: Framework to Unlock Private Investment

1☐ Strengthening Domestic Financial Markets

- Build **resilient banking infrastructure**
- Deepen **bond and equity markets** to finance:
    - Long-term **infrastructure projects**
    - **Industrial growth** and technology transformation

2☐ Institutional Reform to Address Risk Perception

- Improve **ease of doing business** through:
    - **Independent and credible regulators**
    - Transparent **public procurement and bidding processes**
    - Stable **policy environment**

3☐ Create Scale in Investment Opportunities

- Develop an **investment-ready, de-risked pipeline** of national projects
- Emphasise **climate-smart and resilient infrastructure**
- Promote platforms like **National Infrastructure Pipeline (NIP)** and **PM Gati Shakti**

4☐ Scaling Up Blended Finance

- Leverage **public funds**, **multilateral grants**, and **concessional finance** to:
    - **De-risk private investments**
    - Attract institutional investors and sovereign funds
- Examples include:
    - **Sovereign Green Bonds**
    - **Impact investing frameworks**
    - **Viability Gap Funding (VGF)** for climate-friendly ventures

5☐ Role of Multilateral Development Banks (MDBs) and DFIs

- Push for **reformed mandates and higher capitalisation** of MDBs
- Use MDBs as **risk-mitigators** and **mobilisers of private capital**
- Align DFIs (Development Finance Institutions) with SDG-based project structuring

6☐ Reform of International Credit Rating Methodologies

- Advocate for **credit rating agencies** to account for:
    - **Long-term resilience of emerging markets**
    - **Sustainability and macroeconomic fundamentals**
- Address bias that restricts **private capital flow into the Global South**

7☐ Unlocking Capital at the Grassroots

- Facilitate **credit access to MSMEs**, especially:
    - **Women-led enterprises**
    - **Start-ups in rural and semi-urban areas**
- Use platforms like **Open Credit Enablement Network (OCEN)** and **Jan Samarth portal**

4. Significance of the Strategy

a) Bridging the SDG Financing Gap

- Aligns with global commitments under:
    - **UN 2030 Agenda for Sustainable Development**
    - **Addis Ababa Action Agenda on Financing for Development**

b) Promoting Financial Inclusion

- Prioritises finance for **underserved communities**, rural innovators, and **small entrepreneurs**

c) Resilience-Oriented Investment

- Shifts focus from short-term returns to **long-term environmental and economic resilience**

d) India's Global Positioning

- Showcases India's leadership in **SDG financing discourse**, complementing initiatives like:
    - **International Solar Alliance (ISA)**
    - **Coalition for Disaster Resilient Infrastructure (CDRI)**
    - **G20 Sustainable Finance Working Group (under India's presidency)**

5. Way Forward

- **Institutional Coordination**: Align ministries, regulators, and financial institutions for harmonised implementation
- **Public–Private Dialogue**: Involve private sector in **policy design, risk assessment, and project development**
- **Capacity Building**: Equip local governments and MSMEs with knowledge on blended finance, ESG norms
- **Data Transparency**: Create a **centralised dashboard** on SDG-aligned private investments
- **Global Collaboration**: Work with MDBs and credit rating agencies to reshape norms for fairer capital access

6. Conclusion: Private Capital as a Lever for Equitable Growth

- The **Seven-Point Strategy** sets the tone for a **development-centric financial architecture** that puts **climate justice, grassroots equity, and investor trust** at its core.
- India's vision reflects a **holistic approach** to global development challenges—**leveraging markets without compromising inclusion**.
- If implemented effectively, this framework can make India a **model for sustainable capital mobilisation** in the Global South.

India's Chemical Industry: A Strategic Push Towards Global Leadership

📌 **Syllabus Mapping:**
✅ *GS Paper 3 – Indian Economy (Industries, Infrastructure, GVCs)*
✅ *GS Paper 2 – Government Policies and Interventions*
✅ *GS Paper 3 – Science and Technology (R&D and Innovation)*

1. Context

The **NITI Aayog** has released a visionary report titled **"Chemical Industry: Powering India's Participation in Global Value Chains"**, laying out a roadmap for transforming India into a **$1 trillion chemical powerhouse by 2040** with a **12% global value chain (GVC) share**.

2. Current Landscape of India's Chemical Industry

Parameter	Status
Global Ranking	6th largest producer globally, 3rd in Asia
GDP Contribution	Over **7% to manufacturing GDP**
Employment	2+ million direct & indirect jobs
Sector Composition	Dominated by **MSMEs**, fragmented value chains
Major States	Gujarat, Maharashtra, Tamil Nadu
Trade Deficit	**$31 billion** (2023), mostly in feedstocks and specialty chemicals

3. Key Challenges Identified

a. Structural Challenges

- **Fragmentation**: Lack of integrated chemical hubs.
- **Legacy Infrastructure**: Outdated clusters, poor waste management, and safety systems.

b. Economic & Trade Deficits

- **Low GVC Share**: Only **3.5%**, despite significant output.
- **High Import Dependency**: 60% of APIs and many specialty chemicals imported from **China & Gulf**.

c. Innovation & R&D

- **Low R&D Spend**: Just **0.7% of revenue**, global average ~2.3%.
- **Weak Academia-Industry Link**: Limited patent filing and innovation.

d. Regulatory Delays

- **Environmental Clearance Delays**: 12–18 months in some cases.
- **Complex Compliance Framework**: No single-window mechanism.

e. Skill Deficits

- **30% Shortfall** in skilled workforce in **green chemistry**, process safety, etc.

f. Logistics Bottlenecks

- **High Freight Cost**: 2–3 times global average.

4. Opportunities for India's Chemical Sector

Opportunity	Strategic Importance
Green Chemistry	Aligns with **SDG 12** and global sustainability mandates
China+1 Strategy	Major economies seeking **diversification from China**
FTAs	Leverage **India-UAE, India-EU, and ASEAN** FTAs for tariff-free access
PLI Schemes & PCPIRs	Government support through **Make in India** initiatives
Job Creation	**7 lakh jobs** possible by 2030, especially in **R&D and logistics**

5. NITI Aayog's Key Recommendations

A. Infrastructure & Cluster Development

- **Mega Clusters**: Develop hubs in **Dahej, Paradeep, Vizag**.
- **Chemical Fund**: To support logistics, safety upgrades, and waste management.

B. Fiscal and Policy Support

- **Opex-Based Subsidies**: For import substitution and export-oriented production.
- **FTA Clauses**: Include chemical-specific terms and simplified documentation.

C. Technology and Innovation

- **Interface Body under DST**: To promote **industry-academia collaboration**.
- **Technology Transfer Facilitation**: Engage with global MNCs for cutting-edge tech.

D. Regulatory Simplification

- **Fast-Track Environmental Clearances**: Through **DPIIT audit committee**.
- **Single-Window System**: For clearances and compliance.

E. Skill Development

- **Curriculum Redesign**: Specialized training in **polymer science**, **process safety**, etc.
- **Expand ITIs and Skill Centres**: Focus on green and digital chemistry.

6. Significance of the Report

- **Economic Multiplier**: The chemical sector supports pharma, textiles, agriculture, and manufacturing.
- **GVC Participation**: Enhancing value-added exports will improve **trade balance**.
- **Sustainability Push**: Green chemistry aligns with **Paris Climate Commitments** and **India's Net-Zero targets**.
- **Geostrategic Independence**: Reducing reliance on China boosts **supply chain sovereignty**.

✅ Conclusion

The **NITI Aayog report** offers a transformative blueprint for India's chemical industry. While the sector faces **structural and policy bottlenecks**, the combination of **strategic investment, institutional reform, and global integration** can elevate India to a **chemical superpower** by 2040. This sector holds the potential to be both a **growth engine and a geopolitical asset** in India's industrial rise.

Variable Rate Reverse Repo (VRRR): A Dynamic Liquidity Management Tool

📌 **Syllabus Mapping:**
✅ *GS Paper 3 – Indian Economy: Monetary Policy, Banking Sector, RBI Tools*

1. Context

The **Reserve Bank of India (RBI)** recently conducted a ₹1 lakh crore **7-day VRRR auction** to absorb surplus liquidity, which had reached a high of ₹3.75 lakh crore, signalling proactive liquidity management amidst evolving financial conditions.

2. What is VRRR?

- **VRRR (Variable Rate Reverse Repo)** is a **monetary policy instrument** used by RBI to **absorb excess liquidity** from the banking system.
- Unlike the **fixed reverse repo rate**, the VRRR **interest rate is determined via auction**, making it more **market-responsive**.
- It is a part of the **Liquidity Adjustment Facility (LAF)** framework.

3. Objective of VRRR

- **Manage surplus liquidity** without distorting market interest rates.
- **Enhance monetary transmission** by aligning short-term market rates with policy stance.
- Facilitate **better price discovery** through competitive bidding.

4. How VRRR Works

Step	Description
1. RBI Announcement	RBI announces a VRRR auction with specified **amount** and **tenor** (e.g., 7, 14, 28 days).
2. Bank Participation	Banks submit **competitive bids**, quoting the amount and rate at which they wish to lend money to RBI.
3. Rate Discovery	RBI determines the **cut-off rate** based on the bids received. Only bids **equal to or above** this rate are accepted.
4. Liquidity Absorption	Funds are absorbed for the specified tenor, and **interest is paid at the market-discovered rate**.

5. Key Features of VRRR

- **Auction-based Pricing:** Rates are determined by **market demand and supply**, not fixed by RBI.
- **Term Instruments:** Longer than overnight—typically **7, 14, or 28 days**.
- **Flexible Operation:** RBI can adjust the frequency and tenor based on **market liquidity**.
- **Cap on Rates:** VRRR rate **cannot exceed the Repo Rate**.
- **Liquidity Neutrality:** Temporary absorption without affecting long-term money supply.

6. Comparison: Fixed Reverse Repo vs. VRRR

Feature	Fixed Reverse Repo	Variable Rate Reverse Repo (VRRR)
Rate Type	Fixed by RBI	Determined via auction
Tenor	Overnight	7 to 28 days
Purpose	General liquidity absorption	Active liquidity management during surplus
Market Role	Passive tool	Proactive, dynamic tool

7. Implications of VRRR Auctions

A. For Money Markets

- Tightens liquidity conditions.
- Increases short-term interest rates like **call money**, **TREPS**, and **CBLO**.

B. For Bond Markets

- Can push **short-term bond yields** higher.
- Affects **government and corporate borrowing costs**.

C. For Banks

- Provides **higher return** on idle funds.
- Temporarily **reduces funds available** for loans and investments.

8. Why Is VRRR Significant Now?

- **High Surplus Liquidity:** Often arises from **capital inflows**, **government spending**, or **low credit offtake**.
- **Inflation Management:** Liquidity tightening through VRRR helps in **controlling inflationary pressures**.
- **Aligning Short-Term Rates:** Brings money market rates closer to **policy repo rate**, ensuring **monetary policy effectiveness**.

✅ Conclusion

The **Variable Rate Reverse Repo** is a **key liquidity management tool** in RBI's arsenal, enabling **dynamic, market-driven interventions**. By fine-tuning money supply and short-term interest rates, VRRR reinforces the **credibility, flexibility, and responsiveness** of India's **monetary policy framework**, especially during times of **liquidity surplus** and **monetary tightening**.

AGRICULTURE

Simplifying Tree Farming

📌 **Syllabus Mapping:**
✅ **GS Paper 3 – Agriculture (Agroforestry, Agricultural Reforms)**
✅ **GS Paper 3 – Environment (Conservation, Climate Change)**
✅ **GS Paper 2 – Governance (Policy Interventions)**

1. Context

The **Ministry of Environment, Forest and Climate Change (MoEFCC)** has notified the **Model Rules for Felling Trees in Agricultural Lands (2025)** to streamline regulations on tree felling and timber transport from **non-forest private lands**, aimed at promoting **agroforestry** and easing compliance burdens on farmers.

2. Background: Need for Reform

- India's **National Agroforestry Policy (2014)** envisioned integrating trees with crops to enhance resilience and income.
- However, **complex felling and transit rules**, varying across states, discouraged farmers from growing trees.
- India **imports ~$2 billion worth of timber annually**, despite vast potential for domestic cultivation.
- These rules align with:
    - **India's SDG goals** (SDG 13: Climate Action, SDG 15: Life on Land)
    - **Nationally Determined Contributions (NDCs)** under the **Paris Agreement** (carbon sink enhancement)

3. Key Features of the Model Rules (2025)

🌿 **A. NTMS Portal Integration**

- **National Timber Management System (NTMS)** will be the single digital platform for:
    - Registration of plantations
    - Felling and transit requests
    - Digital traceability of timber

🌳 **B. Simplified Felling Process**

No. of Trees	Process
≤10	Photo upload + Auto-generated **No Objection Certificate (NOC)**
>10	Online application → Field verification → **Permit issuance**

🏛 **C. State-Level Committee (SLC)**

- Composed of forestry, revenue, and agriculture officials
- Mandated to:
    - Promote agroforestry
    - Monitor tree felling activities
    - Facilitate coordination among stakeholders

🔍 **D. Third-Party Verification**

- Empanelled forestry experts or agencies assess:
    - Tree species
    - Age and growth
    - Eligibility for felling

📇 **E. Farmer-Centric Record-Keeping**

- Farmers must update:
    - **Tree counts**
    - **Geotagged photos**
    - **Height and girth measurements**
- Ensures transparency and digital accountability

🦅 **F. Tech-Enabled Monitoring**

- Use of:
  - **GPS mapping**
  - **Google Earth imaging**
  - **Geospatial tools** for tracking and projections

🪨 **G. Linkage to Industry**

- Promotes connections with:
  - **Wood-based industries**
  - **Furniture markets**
  - **Green construction sectors**

4. Environmental and Economic Significance

Dimension	Impact
Climate Action	Enhances **carbon sequestration** and soil health
Water Conservation	Agroforestry promotes **moisture retention** and prevents soil erosion
Livelihood Support	Offers **income diversification** to farmers through tree cultivation
Import Substitution	Reduces **timber import dependency** by strengthening domestic supply
Sustainable Farming	Integrates **resilience and biodiversity** in cropping systems

5. Associated Challenges

Challenge	Explanation
Portal Development Delay	NTMS is under development; early-stage delays could hinder rollout
Low Digital Literacy	Farmers, especially smallholders, may struggle with online procedures
Inconsistent State Adoption	These are **model rules**, and adoption is **non-binding**
Regulatory Misuse Risk	**Powerful timber lobbies** may exploit the relaxed norms for commercial gains

6. Way Forward

Solution	Recommended Actions
Capacity Building	Digital literacy training for farmers; awareness on agroforestry benefits
Robust Grievance Redressal	Timely redressal of farmer complaints through SLCs or state agroforestry boards
State-Level Customisation	States should tailor rules to local conditions but maintain **national coherence**
Technology Partnerships	Collaborate with agri-tech startups for satellite imagery and remote monitoring
Data Transparency and Audits	Publish periodic reports on registered plantations, felling approvals, and market linkages

✅ Conclusion

The **Model Rules for Felling Trees in Agricultural Lands (2025)** represent a **progressive policy tool** to mainstream **agroforestry**, boost **rural incomes**, and reinforce **climate resilience**. However, successful implementation will depend on **capacity enhancement**, **digital outreach**, and **state cooperation**, making it a critical pillar for **Viksit Bharat @2047** and a **sustainable agrarian economy**.

Agroforestry Reform: New Rules to Ease Tree Felling on Farmlands

📌 **Syllabus Mapping:**
✅ **GS Paper 3 – Environment: Conservation, Agriculture, Natural Resources, Agroforestry**
✅ **GS Paper 2 – Governance: Government Policies & Interventions**
✅ **GS Paper 3 – Sustainable Development, Climate Change Commitments**

1. Introduction: Agroforestry in Focus

- To accelerate the integration of **trees with agricultural practices**, the government has notified **Model Guidelines for Tree Felling in Agricultural Lands**.
- The aim is to **simplify regulatory frameworks** and **enable farmers to grow and harvest trees** without cumbersome procedures.

2. Overview of the Model Rules

a) Institutional Framework: Role of State-Level Committee (SLC)

- The **State-Level Committee (SLC)**, constituted under the **2016 Wood-Based Industries Guidelines**, will oversee the implementation.
- Functions of the SLC:
  - Advise on **agroforestry promotion**
  - Coordinate with timber industries
  - **Ease felling and transit restrictions** for farmers

b) Registration on National Timber Management System

- **Farmers or landowners** must register their **agricultural lands** (with ownership details) on the **National Timber Management System (NTMS)**.
- This enables **transparent tracking** of timber resources and reduces **informal timber trade**.

c) Simplified Tree Felling Norms

- **For more than 10 trees**: A **Felling Permit** will be required.
- **For 10 or fewer trees**: A simple **No Objection Certificate (NOC)** will suffice.
- This bifurcation aims to balance **ease of doing agroforestry** and **environmental oversight**.

3. What is Agroforestry?

- **Agroforestry** is the **deliberate integration of trees with crops and/or livestock** on the same land management unit.
- It supports **synergistic land use**, improving both productivity and sustainability.

Types of Agroforestry Systems

Type	Components
Agrisilviculture	Agricultural crops + trees
Silvopastoral	Trees + livestock/pasture
Agrosilvopastoral	Trees + crops + animals
Hortisilviculture	Fruit trees + forest trees
Boundary planting	Trees planted along field boundaries

Agroforestry in India

- Covers **28.42 million hectares** or **8.65%** of India's total geographical area
- Official classification requires **10% or more tree cover** on agricultural land

4. Multi-Dimensional Benefits of Agroforestry

a) Environmental Gains

- Increases **tree cover outside forest areas**
- Mitigates **climate change** by sequestering carbon
- Supports **land degradation neutrality** and **biodiversity conservation**
- Contributes to **India's Nationally Determined Contributions (NDCs)** under the Paris Agreement

b) Economic Contributions

- Improves **farmers' income** through sale of timber, fruits, fodder, and fuelwood
- Enhances **soil fertility**, reduces input costs
- Supports **climate-resilient agriculture**

c) Social and Livelihood Impact

- Generates **sustainable rural employment**
- Reduces **distress migration**
- Empowers **marginal and small farmers**

5. Government Initiatives to Promote Agroforestry

a) National Agroforestry Policy (2014)

- First of its kind globally
- Aims to integrate agroforestry into **policy, research, and extension services**
- Encourages **public-private partnerships** and **institutional coordination**

b) Sub-Mission on Agroforestry (SMAF)

- Component under the **National Mission for Sustainable Agriculture (NMSA)**
- Supports:
  - **Capacity building**
  - **Nursery development**
  - **Plantation on private and community lands**

c) GROW Initiative (Green Revolution on Wastelands) – by NITI Aayog

- Focused on **rejuvenating India's wastelands** using agroforestry
- Aims to **convert 30 million hectares** of degraded land into productive agroforestry zones

d) Forest Act Amendment, 2017

- **Redefined bamboo** as a **grass** instead of a tree
- This allowed **farmers to harvest and transport bamboo** without permits, boosting bamboo-based agroforestry

6. Additional Enriching Insights

Parameter	Status
Agroforestry Coverage in India	28.42 million ha (8.65%)
Goal under NAPCC & NDCs	33% green cover
Bamboo Economy Potential	₹50,000 crore market by 2030 (according to INBAR)

- Agroforestry is also aligned with:
  - **SDG 2**: Zero Hunger
  - **SDG 13**: Climate Action
  - **SDG 15**: Life on Land
- **National Adaptation Fund for Climate Change (NAFCC)** supports agroforestry projects in climate-vulnerable regions

7. Challenges Ahead

- **Lack of harmonisation** in tree-felling regulations across states
- **Inadequate market linkages** for agroforestry products
- **Land tenure issues** and absence of tree rights for tenants
- **Limited awareness and extension support** for farmers

8. Conclusion: Unlocking the Potential of Trees Outside Forests (ToF)

- The **Model Rules for Tree Felling** are a progressive step to unlock the **economic and ecological value of trees** on farms.
- By easing compliance and **creating an enabling environment**, the initiative supports:
  - **Farmers' income diversification**
  - **Climate-smart agriculture**
  - **Sustainable rural development**
- Agroforestry, when scaled effectively, can act as a **triple-win solution**—ensuring **productivity, sustainability, and resilience** in India's agri-ecosystems.

National Turmeric Board Launched in Telangana

📌 **Syllabus Mapping:**
✅ **GS Paper 2 – Government Policies and Interventions for Development in Various Sectors**
✅ **GS Paper 3 – Agriculture: Crops, Marketing, and Export Promotion**
✅ **GS Paper 3 – Economy: Growth, Employment and Infrastructure, Food Processing, and MSMEs**

1. Context: Strengthening the Turmeric Ecosystem

- In a move to **institutionalize and coordinate turmeric sector development**, the Government of India has established the **National Turmeric Board (NTB)**, with its **headquarters inaugurated in January 2025** at **Nizamabad, Telangana**.
- The Board was **notified in October 2023** and is expected to be a **central nodal agency** for turmeric policy, export promotion, and value chain development.

2. Objective of the National Turmeric Board

- To act as a **dedicated platform for leadership, coordination, and promotion** of the turmeric sector.
- To align efforts across **ministries, farmer groups, research bodies, and exporters** to enhance:
  - **Productivity**
  - **Value addition**
  - **Research & Development (R&D)**
  - **Export competitiveness**

3. Institutional Structure of the Board

- **Ministry:** Operates under the **Ministry of Commerce and Industry**
- **Chairperson:** Appointed by the **Central Government**
- **Members include:**
  - Representatives from:
    - **Ministry of AYUSH**
    - **Department of Pharmaceuticals**
    - **Department of Agriculture & Farmers Welfare**
  - Senior officials from **three state governments** (rotational representation)
  - Experts from **research institutes**, turmeric **farmers**, and **exporters**
- **Secretary:** Appointed by the **Department of Commerce**

4. Key Functions and Mandate

- **Promotion of Research & Innovation**: Focus on **genetic improvement**, **disease resistance**, and **sustainable farming practices**
- **Enhancing Value Addition**: Development of **turmeric-based products** including nutraceuticals, cosmetics, and pharmaceuticals
- **Supply Chain Strengthening**: Supporting **logistics, cold storage, and post-harvest processing**
- **Farmer Awareness and Training**: Dissemination of **best practices**, **quality standards**, and **export readiness**
- **Global Market Expansion**: Increase India's share in **turmeric trade** through branding, GI tagging, and diplomacy

5. Turmeric Production Profile in India

a) Global Leadership

- India is the **world's largest producer, consumer, and exporter** of turmeric
- Contributes **around 70%** to global production
- Holds **over 62% share in world turmeric exports**

b) Major Producing States

- Turmeric is grown in **over 20 states**
- **Telangana, Maharashtra, Andhra Pradesh, and Tamil Nadu** together contribute **63.4%** of national output

c) Export Markets

- Top export destinations:
  - **Bangladesh**
  - **United Arab Emirates (UAE)**
  - **United States of America (USA)**
  - **Malaysia**

d) GI-Tagged Turmeric Varieties

Variety	State
Sangli Turmeric	Maharashtra
Waigaon Turmeric	Maharashtra
Erode Manjal	Tamil Nadu
Lakadong Turmeric	Meghalaya

6. Agro-Climatic Requirements for Turmeric Cultivation

- **Botanical Nature**: It is a **rhizome (underground stem)** from the ginger family, often called the **"Golden Spice"**
- **Climatic Suitability**:
  - Grows best in **tropical climates**
  - **Temperature**: 20–30°C
  - **Rainfall**: Minimum of 1500 mm annually
- **Soil Type**:
  - Prefers **well-drained sandy loam or clay loam soils**
  - Requires good organic content and **neutral pH levels**

7. Health and Economic Significance

- **Medicinal Value**:
  - Rich in **curcumin**, a bioactive compound with:
    - **Antioxidant**

- ▪ **Anti-inflammatory**
- ▪ **Antiseptic** and **immunity-boosting** properties
- **Global Demand**:
  - o Increasing use in **alternative medicine**, **nutraceuticals**, and **functional foods**
  - o High demand in **wellness markets** across Europe, North America, and Asia-Pacific

8. Related Government Initiatives

- **Spices Board India**: Regulates export and quality of spices; coordinates with NTB for turmeric
- **Operation Greens**: May be extended to turmeric for price stabilization
- **Agricultural Export Policy (2018)**: Promotes export-oriented production and GI marketing
- **PM Formalisation of Micro Food Processing Enterprises (PM-FME)**: Supports **turmeric-based MSMEs** through branding and infrastructure
- **Cluster Development Programme**: Turmeric clusters in Telangana and Maharashtra identified for targeted intervention

9. Challenges in the Turmeric Sector

- **Price Volatility** and absence of **Minimum Support Price (MSP)**
- **Fragmented supply chains** and lack of **processing facilities**
- **Limited access to global markets** due to poor branding
- **Post-harvest losses and quality issues**

10. Conclusion: A Strategic Step for India's Golden Spice Economy

- The creation of the **National Turmeric Board** is a **critical policy innovation** aimed at strengthening India's leadership in the turmeric value chain.
- If backed with **farmer-oriented schemes**, **market intelligence**, and **infrastructure support**, it could transform turmeric into a **major agri-export commodity**, while **empowering small farmers** and **enhancing rural incomes**.
- This initiative also aligns with the broader goals of **Doubling Farmers' Income**, **Make in India**, and the **Atmanirbhar Bharat Abhiyan**.

ETHICS, SOCIETY

Loneliness as a Public Health Crisis

📌 **Syllabus Mapping:**
✅ **GS Paper II – Governance, Issues Relating to Health, Vulnerable Sections**
✅ **GS Paper IV – Ethics, Empathy, Emotional Intelligence in Administration**

1. Introduction: Recognizing Loneliness as a Global Health Challenge

- In **July 2025**, the **World Health Organization (WHO) Commission on Social Connection** released a pivotal report titled **"From Loneliness to Social Connection: Charting a Path to Healthier Societies"**.
- It redefines **social connection** as a **global public health priority**, focusing on the **health, psychological, and socio-economic consequences** of **loneliness and social isolation**.

2. Understanding Social Connection vs Disconnection

🔷 **What is Social Connection?**

- Refers to the **diverse ways people relate to others**—including **family, friends, co-workers, classmates, and neighbours**.
- It involves **frequency of contact**, **emotional support**, and **quality of interaction**.

🔶 **What Constitutes Social Disconnection?**

- Arises due to:
  - o **Insufficient social contact**
  - o **Lack of emotional support**
  - o **Strained or negative relationships**

◆ **Forms of Disconnection:**

Term	Definition
Loneliness	A **subjective feeling** of lacking desired social connection
Social Isolation	An **objective state** of having **few or no social relationships**

3. Key Findings from the WHO Report

◆ **Prevalence of Disconnection**

- **1 in 6 people worldwide** reported feeling lonely during **2014–2023**.
- **Young population (13–29 years)** experiences the **highest levels of loneliness**.
- **1 in 3 elderly persons** (1990–2022) and **1 in 4 teenagers** (2003–2018) experienced **social isolation**.

◆ **Geographical Disparities**

- **Low-income countries**: ~**24%** reported loneliness
- **High-income nations**: ~**11%** reported feeling lonely
- Indicates a **correlation between economic inequality and social vulnerability**

4. Consequences of Social Disconnection

📄 **Health Impacts**

- Linked to **~871,000 global deaths (2014–2019)**.
- Increases risk of **depression, anxiety disorders, dementia**, and **cardiovascular diseases**.

📄 **Socio-Economic Consequences**

- **Reduced academic performance**, especially among adolescents.
- **Workplace productivity losses** and **increased absenteeism**.

Insight: WHO equates **loneliness to smoking 15 cigarettes a day** in terms of health risk—a powerful metaphor reflecting urgency.

5. WHO's 5-Pillar Roadmap for Building Socially Connected Societies

1☐ **Policy Framework**

- At least **8 countries** (e.g., **Denmark, Finland, Germany**) have adopted **national policies** to promote social connection.

2☐ **Research Capacity**

- Call for building **global and national research ecosystems**.
- Launch of "**Grand Challenges in Social Connection**" for evidence-based policymaking.

3☐ **Targeted Interventions**

- Establishment of **intervention accelerators**.
- Investments in **social infrastructure** like **community centers**, **libraries**, and **safe public spaces**.

4☐ **Improved Metrics**

- Proposal to develop a **Global Social Connection Index** for benchmarking and global comparison.

5☐ **Public Engagement and Social Prescribing**

- Emphasis on **public campaigns**, **community activities**, and **group engagement**.
- Promotes **social prescribing**: Doctors suggesting patients participate in **social or communal activities**.

6. Critical Reflections and Indian Context

✅ **Why This Matters for India?**

- India has a large population of **elderly, urban migrants**, and **youth in transition**, all **vulnerable to disconnection**.
- **COVID-19** amplified emotional isolation in metros and rural areas alike.

Ethical Dimensions

- **Empathy**, **community participation**, and **emotional intelligence** are integral to **public service delivery**.
- Loneliness, as per **Amartya Sen's Capability Approach**, limits one's **ability to live a life of value**.

⬅ Conclusion: Rehumanizing Public Health through Social Cohesion

- WHO's 2025 report is a **wake-up call** for governments and civil society to **treat loneliness as a structural issue**, not a personal failing.
- Rebuilding **social capital**, especially in **urbanizing and ageing societies**, is essential for **inclusive health systems**.
- India must adopt a **comprehensive loneliness strategy**, linking **urban planning, education, healthcare**, and **community welfare**—aligning health with **social justice** and **emotional dignity**.

GEOGRAPHY AND DISASTER

Roll Cloud: A Rare Mesoscale Weather Phenomenon

📌 **Syllabus Mapping:**
✅ *GS Paper 1 – Physical Geography (Climatology)*
✅ *GS Paper 3 – Environment & Climate Change (Weather anomalies and atmospheric dynamics)*
✅ *Prelims – Geography (Cloud types, Atmospheric phenomena)*

1. Context

- A **rare roll cloud** was recently spotted over **Portugal's coastline** during an **intense European heatwave**, caused by the **collision of cool Atlantic air with hot continental air**.
- This event drew significant attention from **meteorologists and climate scientists** for its **meso-scale atmospheric dynamics**.

2. What is a Roll Cloud?

- A **roll cloud** is a **low-level, horizontal, tube-shaped cloud** that appears to **roll about its horizontal axis** as it moves.
- Unlike funnel clouds or wall clouds, **roll clouds are not connected to a thunderstorm base** or rotating vortex.

3. Characteristics of Roll Clouds

Feature	Description
Shape & Structure	Long, **cylindrical and detached** from other cloud systems
Altitude	Low-level, close to the Earth's surface
Length	Can **stretch hundreds of kilometers**
Movement	Appears to **rotate horizontally** like a rolling pin
Timing	Commonly observed in the **early morning hours**; often referred to as "**Morning Glory**" clouds
Type	**Arcus-type** cloud, but unique due to its **detached and rolling structure**

4. Formation Mechanism

- **Contrasting Air Masses**:
  - Occurs when **cool, moist maritime air** meets **hot, dry continental air** (coastal boundary zones).
- **Thermal Inversion**:
  - **Cool air is trapped below warm air**, inhibiting vertical convection.
- **Atmospheric Gravity Waves**:
  - **Dense cool air undercuts warm air**, producing oscillating **gravity waves** in the troposphere.
- **Adiabatic Processes**:
  - The **rising limb** of the wave **cools adiabatically**, causing **condensation** and cloud formation.
  - The **sinking limb** remains **dry**, creating a distinct rolling effect.

5. Common Locations

- **Gulf of Carpentaria (Australia)** – Most famous Morning Glory sightings
- **US Great Plains** – Due to frequent frontal systems and land-sea interactions
- **Atlantic Coastlines of Europe** – e.g., Portugal (as seen recently)

6. Atmospheric Significance

- **Meteorological Indicator**:
  - Reflects **instability in the lower atmosphere** and **temperature gradients**.
- **Visual Evidence**:
  - Indicates **interactions between land-sea breezes** and **gravity wave dynamics**.
- **Climate Symbolism**:
  - Symbolic of **increasing weather variability**, possibly tied to **climate change-driven thermal anomalies**.
- **Storm Precursor**:
  - While generally **not dangerous**, roll clouds may **precede storm fronts** in some regions.

7. Relevance to India and UPSC

- India has **coastal thermal contrasts**, especially along the **eastern coast during pre-monsoon season**, which may theoretically support roll cloud formation, although rarely observed or documented.
- Understanding roll clouds helps decode **mesoscale meteorology**, useful for:
  - **Weather forecasting**
  - **Aviation safety**
  - **Climatology research**

✅ Conclusion

Roll clouds are **aesthetic yet scientifically valuable meteorological phenomena** that offer deep insight into **mesoscale atmospheric interactions**. While not directly hazardous, their occurrence indicates **thermal inversions, gravity wave activity**, and **changing climate dynamics**, especially in **coastal transition zones**.

Delhi Experiments with Skies: First Artificial Rain Project to Tackle Pollution

📌 **Syllabus Mapping:**
✅ **GS Paper 1 – Geography: Weather and Climate Phenomena**
✅ **GS Paper 3 – Environment: Pollution, Technology for Environmental Management**
✅ **GS Paper 2 – Government Initiatives and Policies**

1. Context: Delhi Turns to the Skies to Fight Pollution

- The **Delhi Government**, in collaboration with **IIT Kanpur**, is preparing to conduct its **first artificial rainfall operation** via **cloud seeding**.
- The initiative is seen as a potential intervention to **curb hazardous air pollution levels**, especially during winter months when **PM2.5 levels peak** due to stubble burning, industrial emissions, and vehicular pollution.

2. What is Artificial Rain?

a) Definition and Concept

- **Artificial rain** refers to the process of **inducing rainfall** from clouds using **weather modification technology**.
- Also known as **cloud seeding**, this technique attempts to **enhance natural precipitation** by introducing artificial particles into clouds.

b) Mechanism

- Aircraft or helicopters release **chemical agents** such as:
  - **Silver iodide (AgI)**
  - **Potassium iodide (KI)**
  - **Dry ice (solid CO_2)**
- These agents serve as **condensation or ice nuclei**, around which **water vapour condenses or freezes**, forming raindrops that eventually fall to the ground.

c) Types of Cloud Seeding Techniques

Type	Description
Hygroscopic Seeding	Releases salts into **warm liquid clouds** to promote droplet coalescence
Glaciogenic Seeding	Induces **ice crystal formation** in **supercooled clouds**, triggering snow or rain

3. Why Cloud Seeding for Delhi?

- **Severe Air Pollution**: Delhi experiences **high AQI levels (>400)** during post-monsoon and winter due to a mix of **stubble burning, low wind speed, and urban emissions**.

- **Lack of Wind and Rainfall**: Natural dispersal mechanisms are often insufficient to cleanse the air.
- **Artificial rain** can help:
  - **Settle suspended pollutants**
  - Temporarily **cleanse the atmosphere**
  - Improve **respiratory health outcomes**

4. National and Global Experiences

- **India**:
  - **Maharashtra**, **Karnataka**, and **Andhra Pradesh** have conducted cloud seeding to tackle **drought**.
  - In **2018**, Karnataka used cloud seeding in drought-hit districts under the **Varshadhari Project**.
- **China**:
  - World's largest cloud seeding programme; used extensively before the **Beijing Olympics 2008** and for drought mitigation.
- **United States**:
  - Used in **California and Texas** to boost rainfall and snowpack levels during dry spells.

5. Scientific and Regulatory Considerations

- **Efficacy**: Varies with **cloud type**, **humidity**, **wind**, and **atmospheric stability**. Not all clouds respond to seeding.
- **Environmental Safety**: While silver iodide is used in small quantities, **long-term ecological effects** are under study.
- **Cost Concerns**: Cloud seeding operations can be **expensive** (₹10–15 crore per operation), raising **cost–benefit questions**.
- **Regulatory Gap**: India currently lacks a **dedicated legal or institutional framework** to regulate cloud seeding activities.

6. The Way Forward

- **Scientific Validation**:
  - Projects must be **data-driven**, with **meteorological support** and post-operation analysis to assess rainfall impact.
- **Policy Framework**:
  - Need for a **national-level policy** on cloud seeding with environmental and ethical safeguards.
- **Integrated Approach**:
  - Artificial rain should **complement**, not replace, long-term solutions:
    - **Pollution control laws**
    - **Air quality monitoring**
    - **Green energy transitions**
    - **Crop residue management**

7. Conclusion: A Skilful Use of Skies, But With Caution

- The **Delhi artificial rain experiment** represents an innovative intersection of **climate technology and governance**.
- While it shows promise as a **short-term intervention** against air pollution and water stress, it must be part of a **holistic environmental strategy**.
- The success of this operation could pave the way for **regulated, science-backed deployment** of weather modification technologies in India's **climate adaptation toolbox**.

C-FLOOD

📌 **Syllabus Mapping:**
✅ **GS Paper 1 – Geography (Disaster and Floods)**
✅ **GS Paper 3 – Disaster Management, ICT, Infrastructure**
✅ **GS Paper 2 – Government Policies & Interventions**

1. Introduction: A Step Towards Smarter Flood Management

- The **Union Minister of Jal Shakti** has inaugurated **C-FLOOD**, a **Unified Inundation Forecasting System** designed to transform India's flood forecasting and preparedness mechanism.
- The initiative comes in the wake of India being one of the most flood-prone nations, with **over 40 million hectares** (~12% of geographical area) categorized as **flood-prone**.

2. What is C-FLOOD?

Feature	Details
Platform Type	**Web-based, real-time tool** for 2-day advance flood inundation forecasts
Forecast Granularity	**Village-level**, enabling localized disaster management
Technology	Uses **advanced 2-D hydrodynamic flood models** for accurate simulation of scenarios
Output	Flood **inundation maps**, **water level predictions**, and **decision support dashboards**

3. Key Institutions Behind C-FLOOD

Organisation	Role
C-DAC, Pune	Lead developer of platform architecture
Central Water Commission (CWC)	**Nodal agency** for flood forecasting and early warnings
Department of Water Resources, River Development & Ganga Rejuvenation	Coordination and implementation
National Remote Sensing Centre (NRSC)	**Satellite data integration and GIS mapping**
National Supercomputing Mission (NSM)	Computational support with high-speed modeling simulations

4. Technological Foundation: Backed by the National Supercomputing Mission (NSM)

- **NSM (launched in 2015)** is a joint initiative of **MeitY** and the **Department of Science & Technology (DST)** to **strengthen India's supercomputing ecosystem**.
- C-FLOOD utilizes NSM's **high-performance computing resources** to process large-scale hydrological and satellite data, making it a **cutting-edge AI-driven disaster management tool**.

5. Present and Future Coverage

River Basins Covered   Future Expansion

Mahanadi, **Godavari**, **Tapi** All **major Indian river basins** to be integrated in a phased manner

- The system's predictions will be **linked with the National Disaster Management Emergency Response Portal (NDEM)**, enabling **quick emergency response and resource mobilization**.

6. Significance of C-FLOOD

a) Improved Disaster Preparedness

- Helps local administration and **disaster response teams plan evacuations** and relief operations efficiently.
- Real-time data aids in issuing **location-specific early warnings**.

b) Localized Impact Mitigation

- Forecasting at the **village level** bridges the gap between **national alerts** and **community-level action**.

c) Data-Driven Governance

- Integrates **remote sensing, supercomputing, hydrological data**, and **machine learning** to enable **evidence-based decision-making**.

d) Alignment with SDGs

- Supports **SDG 11 (Sustainable Cities and Communities)** and **SDG 13 (Climate Action)** by building **resilience to climate-induced disasters**.

7. Flood Scenario in India: A Background

Indicator	Data
Total Geographical Area	329 million hectares (mha)
Flood-Prone Area	Over **40 mha** (~12%)
Annual Losses	₹5,000–6,000 crore (on average), thousands of lives displaced or lost
States Most Affected	Bihar, Assam, Uttar Pradesh, West Bengal, Odisha, Kerala

8. Conclusion: Building Resilience Through Integration and Innovation

C-FLOOD represents **a paradigm shift in flood risk management**, combining **scientific modelling**, **institutional collaboration**, and **technological integration**. It empowers **India's disaster management framework** with **advance preparedness**, **precision forecasts**, and **proactive response**, especially crucial in the face of **climate change-induced extreme weather events**.

INDIAN HERITAGE , CULTURE & HISTORY

Kolhapuri Chappal Misuse Highlights GI Protection Gaps

📌 **Syllabus Mapping:**
✅ **GS Paper 3 – Intellectual Property Rights, Indian Economy (Artisans & Industries)**
✅ **GS Paper 1 – Indian Heritage and Culture**

1. Context: Prada's Use of Kolhapuri Chappal Design in Milan Fashion Week

- **Luxury brand Prada**, in its **Spring/Summer 2026 collection**, showcased footwear bearing strong resemblance to **GI-tagged Kolhapuri chappals**, sparking concerns of **cultural misappropriation**.
- The incident exposes the **limitations of territorial GI protection** and the growing need for **global enforcement mechanisms**.

2. Geographical Indication (GI) – Key Concepts

Feature	Description
Legal Basis in India	*Geographical Indications of Goods (Registration and Protection) Act, 1999* (came into effect in 2003)
International Obligation	*TRIPS Agreement*, WTO, 1994
Nature of Right	*Collective right*, owned by communities or associations, not individuals
Protection Validity	10 years, **renewable indefinitely**
Examples	Kolhapuri Chappal, Darjeeling Tea, Pochampally Ikat, Channapatna Toys

3. About Kolhapuri Chappals

- **Origin States**: Maharashtra and Karnataka (GI tag in 2019)
- **Distinct Features**: Handcrafted leather sandals, intricate traditional designs, centuries-old artisanal skill
- **Producer Community**: Largely rural artisans and leather workers with cultural and livelihood dependency

4. GI Protection: Territorial Limitation & Global Gaps

Challenge	Explanation
No Automatic International Protection	GI protection is **territory-specific**; India's GI tags are not enforceable abroad unless registered in that country.
Absence of Global GI Law	No single international law akin to WIPO's patent or copyright treaties to protect GIs worldwide.
Weak Cross-Border Enforcement	Limited ability to pursue infringers in foreign jurisdictions. E.g., **Prada** or earlier **Basmati, Turmeric,** and **Neem** cases.
Lack of Awareness Among Producers	Many GI-holding communities **lack legal or institutional support** to monitor and act against infringement.
Inadequate Global Database	Brands and designers abroad may unintentionally or knowingly use GI products due to lack of accessible GI data.

5. Notable Past Cases of Cultural Misappropriation

Case	Outcome
Basmati Rice (1997)	US firm *Ricetec* attempted to patent Basmati lines; India successfully contested the claim.
Turmeric Patent (1995)	US patent revoked after CSIR proved traditional medicinal use in India.
Neem Patent (2000)	European patent on neem-based fungicide cancelled after evidence of prior traditional knowledge.

6. Significance of GI Protection

- **Cultural Preservation**: Safeguards **intangible heritage** and community craftsmanship.
- **Economic Empowerment**: Enables **premium pricing**, enhances **rural livelihoods**, especially for **tribal and artisanal communities**.
- **Consumer Trust**: Promotes **authenticity**, prevents **counterfeits** and **fake labelling**.
- **Export and Tourism Boost**: GIs like **Darjeeling Tea**, **Pashmina**, and **Mysore Silk** serve as soft power symbols.
- **Self-Reliance**: Aligns with *Aatmanirbhar Bharat* by empowering **local production systems**.

7. Way Forward: Strengthening the GI Ecosystem

Measure	Details
Multilateral GI Treaty	Advocate for a **WTO-level GI treaty** under TRIPS+ for **automatic mutual recognition**.
Bilateral Agreements	Push for **mutual GI recognition clauses** in Free Trade Agreements (FTAs).
Global GI Database	Create an **accessible international database** through **WIPO** or WTO.
Capacity Building for Artisans	Enhance **legal literacy** among GI producer communities; provide **legal aid** to enforce GI rights.
Marketing and Branding Support	Assist communities in **global branding, certification, and e-commerce integration**.

8. Conclusion: Protecting Heritage in a Globalised World

GI tags are not merely economic tools but are **cultural anchors** that reflect India's **rich artisanal and ecological traditions**. Misuse by global brands like Prada reveals the **inadequacies in current GI enforcement**, especially beyond national borders. There is an urgent need to push for **a robust global GI framework**, supported by **domestic empowerment of producer communities**, to truly safeguard India's intangible heritage in an increasingly **globalised and competitive marketplace**.

Santhal Rebellion (Hul): Tribal Resistance Against Colonial Exploitation

📌 **Syllabus Mapping:**
✅ **GS Paper 1 – Modern Indian History: Uprisings against Colonial Rule, Tribal Revolts**
✅ **GS Paper 2 – Governance: Tribal Rights & Administration**
✅ **GS Paper 3 – Internal Security: Role of Tribals in Border & Forest Governance**

1. Context

On the occasion of the **170th anniversary** of the **Santhal Rebellion (1855–1856)**, also known as **'Hul'**, the **Jharkhand government observed 'Hul Diwas'** to commemorate the bravery and sacrifice of the **Santhal tribal community** against **British imperialism**, **zamindari oppression**, and **moneylender exploitation**.

2. What Was the Santhal Rebellion?

- **Definition**: **'Hul'** in the **Santhali language** means **'revolution'** or **'rebellion'**.
- It was **one of the earliest organized tribal uprisings** against British colonialism and its **collaborators**—zamindars, moneylenders, and revenue officials.

3. Timeline and Key Leaders

Year	Event/Leader
1855–1856	Uprising in **Damin-i-Koh** region, Rajmahal Hills
Leaders	**Sidhu Murmu, Kanhu Murmu, Chand Murmu, Bhairav Murmu**
Women Warriors	**Phulo Murmu, Jhano Murmu**
Initial Mobilisation	Over **10,000 Santhals** rallied for autonomy
Declaration Site	**Bhognadih village** (now in Jharkhand)

4. Causes of the Rebellion

🔹 **a. Land Alienation: Permanent Settlement (1793)** handed control to **zamindars**, who dispossessed Santhals of **communal lands**.

🔹 **b. Economic Exploitation: Usurious moneylending** practices trapped Santhals in a **cycle of debt and bonded labour**.

🔹 **c. Forced Labour Systems:** Systems like **kamioti** and **harwahi** turned Santhals into unpaid/underpaid serfs.

🔹 **d. Disruption of Traditional Livelihoods: Deforestation**, **commercial farming**, and **British land tenure laws** eroded **subsistence agriculture** and hunting traditions.

🔹 **e. Colonial Legal & Revenue Oppression:** British **courts favoured landlords**, making it **impossible for tribals to seek justice**.

5. Course of the Rebellion

- **June 30, 1855**: Sidhu and Kanhu declared rebellion and established a **de facto Santhal Raj**.
- **Targets**: Moneylenders (mahajans), zamindars, police, and British officials.
- **Guerrilla Warfare**: Santhals used forests for cover and traditional weapons (bows, axes).
- **British Response**:
    - **Martial law imposed**.
    - Use of **firearms**, **elephants**, and **repression**.
- **By 1856**: The movement was **crushed**, and both **Sidhu and Kanhu were martyred**.

6. Outcomes and Legacy

✅ **a. Administrative Reforms**

- **Creation of Santhal Parganas (1856)** as a **separate administrative division**.
- **Santhal Parganas Tenancy Act, 1876**: Protected tribal land from non-tribal transfer.

✅ **b. Political Impact**

- Inspired future **tribal uprisings** like **Birsa Munda's Ulgulan (1899–1900)** and other **Adivasi resistance**.

✅ **c. Cultural Legacy**

- **Hul Diwas** is celebrated across tribal regions.
- Santhal leaders are immortalized in **folk songs**, **murals**, and **modern tribal literature**.

✅ **d. Constitutional Significance**

- Influenced **Fifth Schedule provisions** for **tribal self-governance** under Article 244.
- Supported the demand for **Scheduled Tribe status and land protection laws** post-Independence.

7. Contemporary Relevance

Issue	Link to Hul Rebellion
Tribal Land Alienation	Ongoing concern in tribal belts; **land acquisition protests** persist.
Cultural Assertion	Rise in **Adivasi identity movements** draws inspiration from Hul.
Forest Rights Act (2006)	Attempt to restore traditional rights over forest lands.
Education & Awareness	Need to include tribal heroes like **Sidhu-Kanhu** in mainstream history.

✅ Conclusion

The **Santhal Rebellion (Hul)** stands as a **landmark in India's tribal and anti-colonial resistance**. It was not just a revolt but a **vision for autonomous governance** rooted in **tribal identity, justice, and land rights**. Its legacy lives on through **tribal rights legislation**, **cultural consciousness**, and the **socio-political assertion of India's indigenous communities**.

ENVIRONMENT & ECOLOGY

India's Carbon Credit Rules to Reshape Industrial Accountability

📌 **Syllabus Mapping:**
✅ **GS Paper 3 – Environment: Conservation, Pollution Control, Climate Change**
✅ **GS Paper 3 – Economy: Infrastructure – Energy and Industry Regulation**
✅ **GS Paper 2 – Governance: Acts, Policies, and Institutions related to Environment**

1. Context: Draft Rules to Operationalize India's Carbon Market

- The **Ministry of Environment, Forest and Climate Change (MoEFCC)** has released the **Draft Greenhouse Gas Emission Intensity Target Rules, 2025**.
- These rules form part of the **compliance framework** under India's newly operationalised **Carbon Credit Trading Scheme (CCTS)**.
- The draft mandates **legally binding emission targets** for large industries to accelerate the country's low-carbon transition.

2. Highlights of the Draft GHG Emission Intensity (GEI) Rules, 2025

a) Definition and Scope

- **GHG Emission Intensity (GEI)**: Defined as the **quantity of CO_2-equivalent emitted per unit of product or industrial output**.
- The rules apply to **over 400 industrial units** across energy-intensive sectors.

b) Key Features

- **Sectors Covered**:
  - **Aluminium**

- o **Iron and Steel**
- o **Petroleum refining**
- o **Petrochemicals**
- o **Textiles**
- **Target Setting Agency**: The **Bureau of Energy Efficiency (BEE)** will be responsible for setting **plant-wise emission reduction targets**.
- **Enforcement Mechanism**:
  - o **Non-compliance** will attract **financial penalties** under the **Environment (Protection) Act, 1986 (EPA 1986)**.

3. About the Carbon Credit Trading Scheme (CCTS)

a) Objective

- CCTS aims to **lower GHG emissions** across key sectors through **carbon pricing instruments**, ensuring emissions carry a **monetary cost**.
- It promotes **market-based mechanisms** for industries to **trade carbon credits**.

b) Legal Foundation

- Backed by the **Energy Conservation (Amendment) Act, 2022**, which empowers the **Central Government**, in consultation with BEE, to implement carbon trading frameworks.

4. Institutional Framework of CCTS

Role	Institution
Administrator	**Bureau of Energy Efficiency (BEE)**
Regulator	**Central Electricity Regulatory Commission (CERC)**
Technical Advisory	**Ministry of Power and MoEFCC**

5. Components of CCTS

a) Compliance Mechanism

- Applies to **obligated entities** (large industries)
- Entities that **emit less than their allotted GEI target** will receive **Carbon Credit Certificates (CCCs)**
- These certificates can be **traded** or **banked for future use**

b) Voluntary Offset Mechanism

- Open to **non-obligated sectors**, such as agriculture, forestry, and MSMEs
- Projects that **reduce, avoid, or remove GHG emissions** can apply to earn **Carbon Credit Certificates**
- Encourages **climate innovation and low-carbon entrepreneurship**

6. Significance of the Draft Rules and CCTS

- **Operationalises India's Domestic Carbon Market (ICM)**: A step towards creating a structured **carbon trading ecosystem** similar to the **EU-ETS** and **China's national carbon market**
- **Aligns with Global Climate Commitments**:
  - o Supports India's **Nationally Determined Contributions (NDCs)** under the **Paris Agreement**
  - o Contributes to achieving **net-zero emissions by 2070**
- **Recognized Internationally**:
  - o The **World Bank's "State and Trends of Carbon Pricing 2025"** has acknowledged India's growing role in **climate finance** and **carbon pricing innovations**

7. Challenges and the Road Ahead

Challenges	Suggested Solutions
Lack of real-time emissions data	Mandate **digital MRV (Monitoring, Reporting, Verification)** systems
Risk of greenwashing in voluntary markets	Develop stringent **verification and accreditation norms**
Need for inter-agency coordination	Create a **National Carbon Market Oversight Authority**
Low private participation in offsets	Offer **incentives and ease-of-registration** for MSMEs

8. Conclusion: A Market-Driven Climate Governance Approach

- The **Draft GEI Target Rules**, under the umbrella of CCTS, signify a **paradigm shift** in India's climate policy—from **command-control** to **market-based mechanisms**.
- With robust implementation and oversight, India can:
  - o **Decarbonize its industrial base**
  - o Mobilize **climate finance**
  - o Position itself as a **leader in carbon governance** in the Global South
- This move lays the foundation for a **transparent, scalable, and credible carbon trading platform**, aligning both economic and ecological goals.

50 Years of CITES: Strengthening Global Wildlife Trade Governance

📌 **Syllabus Mapping:**
✅ **GS Paper 3 – Environment: Biodiversity Conservation, International Environmental Agreements**
✅ **GS Paper 2 – International Institutions and Treaties**
✅ **GS Paper 3 – Species Protection and Illegal Wildlife Trade**

1. Context: CITES Completes 50 Years of Wildlife Trade Regulation

- The year **2025** marks the **50th anniversary** of the **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**—a landmark treaty that laid the foundation for **regulating global wildlife trade**.
- Originally conceptualized in **1963** during an **IUCN meeting**, CITES officially entered into force in **1975**, becoming the **first multilateral agreement** focused on **biodiversity conservation through trade controls**.

2. What is CITES?

a) Purpose and Legal Nature

- **CITES is a voluntary international agreement** aimed at ensuring that **international trade in wild animal and plant species** does **not endanger their survival**.
- Although **legally binding**, it does **not override national laws**; instead, **each signatory implements the treaty through domestic legislation**.

b) Key Features

Parameter	Details
Secretariat	**UN Environment Programme (UNEP)**, Geneva, Switzerland
Parties	**185** members including **India (since 1976)**
Scientific Support	Provided by the **International Union for Conservation of Nature (IUCN)**
Legal Mechanism	Operates through a **licensing and permit system** for imports, exports, and re-exports

3. Governance and Institutional Structure

a) Conference of the Parties (CoP)

- The **highest decision-making body**
- **CoP3 was hosted by India** in **New Delhi, 1981**
- Reviews implementation, adopts new resolutions, and updates species listings under three appendices

b) CITES Trade Database

- Managed by the **UNEP-World Conservation Monitoring Centre (WCMC)**
- Tracks global trade volumes, patterns, and compliance

4. Appendices Under CITES

Appendix	Description	Example
Appendix I	Species threatened with extinction; trade permitted only in exceptional circumstances	Tiger, Asian elephant
Appendix II	Species not necessarily threatened, but may become so unless trade is regulated	Indian star tortoise, Agarwood
Appendix III	Species protected in at least one country that has asked other parties for assistance in controlling trade	Walrus (requested by Canada)

5. Conservation Impact and Achievements

- **Protects over 40,900 species**, including:
  - **6,610 animal species**
  - **34,310 plant species**
- **Instrumental in reducing trafficking**, promoting **sustainable trade**, and facilitating **international cooperation**

6. Major Initiatives Under CITES

a) Monitoring the Illegal Killing of Elephants (MIKE) Programme – *Established at CoP10 (Harare, 1997)*

- A **site-based system** to assess **illegal poaching trends**
- Covers **both African and Asian elephant ranges**
- Generates data for **policy actions and enforcement strategies**

b) International Consortium on Combating Wildlife Crime (ICCWC) – *Launched in 2010*

- Collaborative platform of:
    - **CITES Secretariat**
    - **INTERPOL**
    - **UNODC**
    - **World Bank**
    - **WCO**
- Aims to **strengthen criminal justice responses** to wildlife crimes

c) CITES Tree Species Programme (2024)

- Focuses on **sustainable trade and conservation of timber species**
- Enhances **traceability and certification mechanisms** for commercial tree species like rosewood and agarwood

7. India's Role in CITES Implementation

- **Legislative Framework**:
    - **Wildlife (Protection) Act, 1972**
    - **Customs Act, 1962** (for border enforcement)
- **Nodal Authority**: **Directorate of Wildlife Preservation**, Ministry of Environment, Forest and Climate Change (MoEFCC)
- Actively participates in **CoP meetings**, contributes to species listing and trade negotiations

8. Challenges Ahead

- **Illegal trade continues**, driven by high demand for exotic pets, ivory, skins, and medicinal plants
- **Lack of uniform enforcement** among parties leads to **weak links in trade control**
- **Climate change** and **habitat loss** add further stress to already endangered species
- Rising trends in **online wildlife trafficking**, requiring **digital surveillance capabilities**

9. Way Forward

- Strengthen **inter-agency coordination** (forests, customs, judiciary)
- Invest in **technology-enabled enforcement** (AI, drones, DNA barcoding)
- Promote **community-based conservation** and **livelihood alternatives**
- Support **capacity-building in biodiversity-rich developing countries**
- Enhance **global financing** through biodiversity credits and debt-for-nature swaps

10. Conclusion: 50 Years of Global Conservation Through Trade Regulation

- Over five decades, **CITES has evolved** from a trade treaty to a **cornerstone of global biodiversity conservation**.
- As ecological threats mount, it remains central to:
    - **Preventing species extinction**
    - **Promoting sustainable trade**
    - **Fostering international cooperation**
- Moving forward, **stronger enforcement, digital tools**, and **climate-integrated approaches** will be key to strengthening the **next 50 years of CITES**.

Invisible Threats: Secondary Pollutants and Their Role in India's PM2.5 Crisis

📌 **Syllabus Mapping:**
✅ **GS Paper 3 – Environment: Pollution, Air Quality, Environmental Degradation**
✅ **GS Paper 1 – Geography: Atmospheric Composition and Interactions**
✅ **GS Paper 3 – Science & Tech: Chemistry in Everyday Life**

1. Context: Secondary Pollutants in the Spotlight

- A recent analysis by the **Centre for Research on Energy and Clean Air (CREA)** has revealed that **secondary pollutants contribute nearly one-third** of India's PM2.5 concentrations, underscoring their **critical role in air quality deterioration**.
- This finding shifts attention from **visible emissions** to **chemically reactive pollutants** that form after emissions are released into the atmosphere.

2. What Are Secondary Pollutants?

a) Definition and Formation

- **Secondary pollutants** are **not emitted directly** into the atmosphere.
- Instead, they are **formed through chemical or physical interactions** involving:
    - **Primary pollutants**
    - **Sunlight (solar radiation)**
    - **Other atmospheric compounds**
- These pollutants emerge through complex **photochemical reactions**, often **hours or days after primary emissions** occur.

b) Key Inputs for Their Formation

- **Primary pollutants** like SO_2, NO_x, VOCs (Volatile Organic Compounds), and ammonia
- **Solar energy** as a catalyst
- **Moisture, temperature, and pressure** influence reaction rates

3. Major Examples of Secondary Pollutants

Pollutant	How It Forms	Impact
Ozone (O_3)	Reaction between NO_x and VOCs in sunlight	Respiratory and cardiovascular issues
Sulfuric Acid (H_2SO_4)	From oxidation of SO_2 in moist air	Component of acid rain and PM2.5
Nitric Acid (HNO_3)	Produced from NO_2 + OH radicals	Acid rain, eye irritation
Secondary PM2.5	Reaction of NH_3 with SO_2/NO_x, forming sulfates/nitrates	Deep lung penetration, chronic illness

4. India's PM2.5 Pollution and Secondary Contribution

- **PM2.5** (particulate matter ≤2.5 microns in diameter) is **extremely hazardous**, penetrating deep into the lungs and bloodstream.
- As per **CREA's study**:
    - **Nearly 33%** of PM2.5 in India originates from **secondary aerosols**.
    - These include **ammonium nitrate, ammonium sulfate**, and **organic aerosols**, formed from chemical reactions involving emissions from:
        - **Power plants**
        - **Vehicular exhaust**
        - **Fertilizer usage**
        - **Crop residue burning**

5. Why Secondary Pollutants are Harder to Control

- **Invisible Formation**: Their creation happens over distances and time, making **source attribution difficult**.
- **Transboundary Spread**: Secondary pollutants can **travel across state and national borders**, complicating regulation.
- **Delayed Impact**: Their formation depends on **meteorological and seasonal factors**, making **prediction and mitigation** more complex.

6. Policy and Scientific Implications

- **Air quality models** must integrate **secondary pollutant dynamics** for accurate forecasting.
- **Emission standards** for SO_2, NO_x, and NH_3 must be tightened across:
    - **Thermal power plants**
    - **Vehicles (BS-VI norms)**
    - **Agricultural practices (fertilizer use)**
- Need for **regional cooperation** under:
    - **National Clean Air Programme (NCAP)**
    - **Commission for Air Quality Management (CAQM)**
    - **State Pollution Control Boards (SPCBs)**

7. Global Learning and India's Path Forward

- **United States**: Implemented NO_x **Budget Program** and **Acid Rain Program**, which significantly reduced secondary pollutants.
- **China**: Achieved major reductions in PM2.5 by targeting both **primary emissions and atmospheric chemistry**.
- **India's Opportunity**:
    - Invest in **real-time chemical composition monitoring**
    - Promote **ammonia-free fertilizers**
    - Strengthen **regional air shed-level governance**

8. Conclusion: Tackling the Unseen Side of Air Pollution

- Addressing **secondary pollutants** is crucial for **long-term and sustainable air quality improvements**.

- As CREA's report shows, the problem is not just **what we emit**, but also **what it becomes in the atmosphere**.
- Combating PM2.5 effectively requires a **chemistry-aware pollution control strategy** involving **multi-sectoral coordination, scientific precision, and regulatory foresight**.

Bioenergy Boost: MNRE's Revised Guidelines for a Cleaner Future

📌 **Syllabus Mapping:**
✅ **GS Paper 3 – Environment: Renewable Energy, Waste Management, Energy Infrastructure, Technology Missions**
✅ **GS Paper 2 – Government Policies and Interventions**

1. Overview of the National Bioenergy Drive

- The **Ministry of New and Renewable Energy (MNRE)** has released **updated guidelines** under the **National Bioenergy Programme**, specifically for:
  - **Waste to Energy (WtE) Programme**
  - **Biomass Programme**
- These revisions aim to improve **project efficiency**, enhance **rural income**, and promote **cleaner fuel options** across India.

2. What is Bioenergy?

- **Bioenergy** is a form of **renewable energy** derived from **organic sources** such as:
  - **Agricultural residues** (straw, husk, etc.)
  - **Domestic organic waste**
  - **Forestry byproducts**
- It is generated through:
  - **Combustion** of biomass
  - **Anaerobic digestion** (biogas)
  - **Fermentation and gasification** (to produce BioCNG or Syngas)

3. National Bioenergy Programme: Key Features

- **Launched:** 2022
- **Phase-I Duration:** 2021–22 to 2025–26
- **Total Budget Allocation:** ₹1,715 Crore
- **Phases:** Two phases, with the first currently underway

4. Objectives of the Programme

- **Utilisation of surplus biomass** for energy production
- **Income diversification** for rural households
- **Promotion of waste-to-energy entrepreneurship**
- **Reduction in fossil fuel dependency**
- **Support for climate mitigation and circular economy**

5. Central Financial Assistance (CFA): Targeted Support

- **CFA** to be extended to developers based on project type and scale
- **20% additional CFA** for:
  - **North-Eastern States**
  - **Hilly Regions**
  - **SC/ST beneficiaries**
  - **Women-led and community-level initiatives**

6. Three Main Components of the Programme

a) Waste to Energy Programme

- Supports generation of energy using:
  - **Urban municipal waste**
  - **Industrial residues**
  - **Agricultural waste**
- End products include:
  - **Biogas**
  - **BioCNG**
  - **Electricity**

- o **Syngas**

b) Biomass Programme

- Promotes:
  - o **Biomass briquette/pellet manufacturing units**
  - o **Non-bagasse based cogeneration** (especially in agro-industries)
- Benefits:
  - o Reduces **stubble burning**
  - o Encourages **sustainable biomass markets**

c) Biogas Programme

- Focuses on:
  - o **Household and community biogas plants**
  - o Promotes **clean cooking solutions**
  - o Contributes to **women empowerment and sanitation**
- **Composition of Biogas:**
  - o **Methane (CH_4):** ~55–65%
  - o **Carbon dioxide (CO_2):** ~30–45%
  - o **Traces of:** H_2S, N_2, H_2, and O_2

7. Enrichment with Data and Global Comparisons

- **India's Biomass Potential:**
  - o Generates ~**750 million tonnes** of biomass annually
  - o Can contribute up to **20 GW** to India's clean energy capacity
- **Global Practices:**
  - o **Germany:** Over 9,500 biogas plants in use
  - o **Sweden:** Uses **Bio-CNG buses** in public transport networks
- **Related Government Missions:**
  - o **National Mission on Sustainable Agriculture (NMSA)**
  - o **Swachh Bharat Mission** (urban-rural waste segregation synergy)
  - o **National Policy on Biofuels (2018)** – provides long-term policy framework
- **Reports to Refer:**
  - o **IEA Bioenergy Reports**
  - o **FAO's Global Bioenergy Partnership (GBEP) Indicators**
  - o **India Energy Outlook 2021** (by IEA)

8. Major Challenges

- **Inefficient biomass collection and supply chains**
- **Lack of waste segregation at source**
- **High capital costs** for WtE infrastructure
- **Low awareness and skilled manpower** in rural areas
- **Limited private investment** due to viability concerns

9. Conclusion: A Green Pathway Forward

- The revised guidelines reflect India's **commitment to renewable energy and inclusive development**.
- By combining **climate action**, **rural empowerment**, and **sustainable waste management**, the programme offers:
  - o A **decentralised energy solution**
  - o **Carbon emission reduction**
  - o **Job creation in rural and semi-urban India**
- It is a **critical step** toward meeting India's **Net Zero 2070 target**, aligning with SDGs 7 (Affordable and Clean Energy), 11 (Sustainable Cities), and 13 (Climate Action).

Invisible Threats: Secondary Pollutants and Their Role in India's PM2.5 Crisis

📌 **Syllabus Mapping:**
✅ **GS Paper 3 – Environment: Pollution, Air Quality, Environmental Degradation**
✅ **GS Paper 1 – Geography: Atmospheric Composition and Interactions**
✅ **GS Paper 3 – Science & Tech: Chemistry in Everyday Life**

1. Context: Secondary Pollutants in the Spotlight

- A recent analysis by the **Centre for Research on Energy and Clean Air (CREA)** has revealed that **secondary pollutants contribute nearly one-third** of **India's PM2.5 concentrations**, underscoring their **critical role in air quality deterioration**.
- This finding shifts attention from **visible emissions** to **chemically reactive pollutants** that form after emissions are released into the atmosphere.

2. What Are Secondary Pollutants?

a) Definition and Formation

- **Secondary pollutants** are **not emitted directly** into the atmosphere.
- Instead, they are **formed through chemical or physical interactions** involving:
    - **Primary pollutants**
    - **Sunlight (solar radiation)**
    - **Other atmospheric compounds**
- These pollutants emerge through complex **photochemical reactions**, often **hours or days after primary emissions** occur.

b) Key Inputs for Their Formation

- **Primary pollutants** like SO_2, NO_x, VOCs (Volatile Organic Compounds), and ammonia
- **Solar energy** as a catalyst
- **Moisture, temperature, and pressure** influence reaction rates

3. Major Examples of Secondary Pollutants

Pollutant	How It Forms	Impact
Ozone (O_3)	Reaction between NO_x **and VOCs** in sunlight	Respiratory and cardiovascular issues
Sulfuric Acid (H_2SO_4)	From oxidation of SO_2 in moist air	Component of acid rain and PM2.5
Nitric Acid (HNO_3)	Produced from NO_2 **+ OH radicals**	Acid rain, eye irritation
Secondary PM2.5	Reaction of NH_3 **with** SO_2/NO_x, forming sulfates/nitrates	Deep lung penetration, chronic illness

4. India's PM2.5 Pollution and Secondary Contribution

- **PM2.5** (particulate matter ≤2.5 microns in diameter) is **extremely hazardous**, penetrating deep into the lungs and bloodstream.
- As per **CREA's study**:
    - **Nearly 33%** of PM2.5 in India originates from **secondary aerosols**.
    - These include **ammonium nitrate, ammonium sulfate**, and **organic aerosols**, formed from chemical reactions involving emissions from:
        - **Power plants**
        - **Vehicular exhaust**
        - **Fertilizer usage**
        - **Crop residue burning**

5. Why Secondary Pollutants are Harder to Control

- **Invisible Formation**: Their creation happens over distances and time, making **source attribution difficult**.
- **Transboundary Spread**: Secondary pollutants can **travel across state and national borders**, complicating regulation.
- **Delayed Impact**: Their formation depends on **meteorological and seasonal factors**, making **prediction and mitigation** more complex.

6. Policy and Scientific Implications

- **Air quality models** must integrate **secondary pollutant dynamics** for accurate forecasting.
- **Emission standards** for SO_2, NO_x, and NH_3 must be tightened across:
    - **Thermal power plants**
    - **Vehicles (BS-VI norms)**
    - **Agricultural practices (fertilizer use)**
- Need for **regional cooperation** under:
    - **National Clean Air Programme (NCAP)**
    - **Commission for Air Quality Management (CAQM)**
    - **State Pollution Control Boards (SPCBs)**

7. Global Learning and India's Path Forward

- **United States**: Implemented NO_x **Budget Program** and **Acid Rain Program**, which significantly reduced secondary pollutants.

- **China**: Achieved major reductions in PM2.5 by targeting both **primary emissions and atmospheric chemistry**.
- **India's Opportunity**:
    o Invest in **real-time chemical composition monitoring**
    o Promote **ammonia-free fertilizers**
    o Strengthen **regional air shed-level governance**

8. Conclusion: Tackling the Unseen Side of Air Pollution

- Addressing **secondary pollutants** is crucial for **long-term and sustainable air quality improvements**.
- As CREA's report shows, the problem is not just **what we emit**, but also **what it becomes in the atmosphere**.
- Combating PM2.5 effectively requires a **chemistry-aware pollution control strategy** involving **multi-sectoral coordination, scientific precision, and regulatory foresight**.

HEALTH

WHO's "3 by 35" Initiative

📌 **Syllabus Mapping:**
✅ **GS Paper II – Governance, Health Policies**
✅ **GS Paper III – Economy, Taxation, Inclusive Growth, Public Health Economics**

1. Introduction: Fiscal Levers for Healthier Populations

- The **World Health Organization (WHO)** has launched a new initiative named **"3 by 35"**, aimed at **increasing health taxes** on **tobacco, alcohol, and sugary beverages**.
- The goal is to raise their **prices by at least 50% within a decade**, thereby promoting better health and generating substantial **public revenue**.

2. Key Features of the "3 by 35" Initiative

- Seeks to **increase prices of harmful products** by **50% or more** over the next **10 years** through **health-oriented taxation**.
- Envisions raising **US$ 1 trillion in global public revenue** by 2035.
- Operates as a **global alliance** comprising **national governments, civil society, academia, and development partners**.
- Advocates for **evidence-based tax reform** as a strategy for tackling **non-communicable diseases (NCDs)** and fiscal sustainability.

3. What Are Health Taxes?

- Defined as **taxes levied on products with adverse health effects**, such as:
    o **Tobacco and alcohol**
    o **Sugar-sweetened beverages (SSBs)**
    o **Ultra-processed and high-fat foods**
- Recommended by WHO as one of the **most cost-effective measures** to reduce the incidence of **obesity**, **diabetes**, **cancers**, and **cardiovascular diseases**.

4. Rationale Behind Health Taxation

Health-Related Justification

- Products like **tobacco, alcohol, and sugary drinks** significantly contribute to the **global NCD burden**, responsible for **over 75% of global deaths**.
- These substances also fuel **lifestyle-related morbidity**, especially in low- and middle-income populations.

Economic Justification

- **Negative externalities**: These products impose **public health costs** borne by the state and society.
- **Internalities**: Consumers underestimate long-term health consequences, leading to **irrational consumption**.
- **Tobacco consumption alone** cost the global economy **US$ 1.4 trillion (2012)** in healthcare and productivity losses.

Revenue Potential

- A **50% tax hike** could yield:
    o **US$ 3.7 trillion globally** within 5 years

- US$ 740 billion annually, nearly **0.75% of global GDP**
- These funds can be channeled to **healthcare infrastructure**, **public health campaigns**, and **nutrition programs**.

Equity Considerations

- Lower-income groups bear a **disproportionate burden of NCDs**.
- Health taxes serve as **preventive tools** to protect vulnerable sections while generating **progressive revenue**.

5. India's Domestic Measures on Unhealthy Products

Fiscal Policies

- **Aerated beverages**:
    - Taxed at **28% GST + 12% compensation cess**
- **High-Fat Sugar Salt (HFSS) foods**:
    - Attract a **12% GST**

Regulatory Interventions

- **FSSAI cap**: Restriction of **Trans Fatty Acids (TFA)** in food to **2% of total oil/fat content**.
- Campaigns promoting **Front-of-Pack Labelling (FOPL)** and **nutrition awareness** are under consideration.

6. International Success Stories

Country	Policy Action	Impact
Colombia (2016)	Raised cigarette taxes	**34% decline** in consumption
Saudi Arabia	Imposed **50% SSB tax**	**19% fall** in sugary beverage consumption

- These cases show that **well-calibrated fiscal policies** can **discourage unhealthy consumption** and **improve public health** within a short span.

7. Critical Analysis

Strengths

- **Dual benefits**: Simultaneously improves public health and generates government revenue.
- **Evidence-backed**: Multiple global studies show taxation reduces consumption of harmful products.
- **Alignment with SDGs**: Directly supports **Goal 3** (Good Health and Well-Being) and **Goal 10** (Reducing Inequality).

Challenges

- **Political economy resistance**: Industry lobbying and public opposition can derail implementation.
- **Regressive perception**: Unless offset by targeted subsidies, poor consumers may bear a higher burden.
- **Enforcement and classification**: Difficulty in defining and categorizing HFSS foods for taxation.

Conclusion: Health Taxation as a Win-Win for Public Welfare

- WHO's **"3 by 35" initiative** marks a **progressive step** toward achieving **health equity and sustainable public finance**.
- For India, this offers a timely opportunity to:
    - Expand **sin taxes** under GST
    - Link revenues to **Ayushman Bharat**, **nutrition missions**, and **public health infrastructure**
- Fiscal tools, when used wisely, can help build a **healthier, economically productive, and socially equitable society**.

SCIENCE & TECHNOLOGY

Powering Innovation

📌 **Syllabus Mapping:**
✅ GS Paper 3 – Science & Technology: Research, Innovation, and Emerging Technologies
✅ GS Paper 3 – Indian Economy: Investment Models, Infrastructure, Startups
✅ GS Paper 2 – Governance: Government Schemes and Policy Interventions

1. Context: A Major Leap for Innovation-Led Development

- The **Union Cabinet** has approved the **Research Development and Innovation (RDI) Scheme** with an ambitious outlay of **₹1 lakh crore**.
- The scheme aims to **mobilise private investment in R&D**, especially in **sunrise sectors** and **strategic areas** vital for **economic security and self-reliance**.

2. Vision and Objectives of the RDI Scheme

a) Core Purpose

- Stimulate **cutting-edge research** and promote **industrial R&D ecosystems** in India
- Accelerate the transition from **basic research** to **commercialisation** and **technology deployment**

b) Key Objectives

- **Finance high-impact, late-stage research projects** with **Technology Readiness Levels (TRL) 6 to 9**
- Enable **acquisition of critical and strategic technologies**, especially in defence, space, and energy
- Set up a dedicated **Deep-Tech Fund of Funds** to support **high-risk, high-return innovations**

3. Financial Structure: Two-Tiered Funding Model

a) Special Purpose Fund (SPF) – Tier I

- Operates under the **Anusandhan National Research Foundation (ANRF)**, created by the **ANRF Act, 2023**
- Acts as the **primary custodian** of public funds allocated for strategic R&D
- **Science and Engineering Research Board (SERB)** has now been merged into ANRF to streamline funding and oversight

b) Second Level Fund Managers – Tier II

- SPF channels funds to professional **fund managers**, who disburse it through:
    - **Long-tenure concessional loans**
    - **Equity infusions** for R&D-led startups
- Designed to **mitigate financing risks** and **incentivise private capital participation**

4. Strategic Governance Architecture

Component	Details
Nodal Department	Department of Science and Technology (DST)
Strategic Oversight	Governing Board of ANRF, **chaired by the Prime Minister**
Implementation Interface	Coordination with academia, startups, private firms, and government labs

5. Focus on Sunrise and Strategic Sectors

a) What are Sunrise Sectors?

- Sectors identified as having **high growth potential** and **disruptive impact on the economy**
- They represent **India's technology frontier and future competitiveness**

b) Key Sunrise Areas Targeted

- **Electronics and Semiconductors**
- **Electric Mobility and Battery Storage**
- **Green Hydrogen and Renewable Energy**
- **Healthcare and Biopharmaceuticals**

- **Agro-Tech and Food Processing**
- **Quantum Computing, AI, and Cybersecurity**

6. Significance of the RDI Scheme

- **Bridges the "Valley of Death"** in innovation — the gap between **research and market deployment**
- Attracts **institutional investors** and **venture capital** into **deep-tech and R&D-focused enterprises**
- Supports **Atmanirbhar Bharat** by enhancing **indigenous technological capacity**
- Positions India to compete in **global technology supply chains**
- Encourages academia–industry collaboration and **public–private partnerships (PPPs)** in innovation

7. Global Relevance and India's Competitiveness

- Countries like **USA (DARPA)** and **China (Made in China 2025)** invest heavily in late-stage R&D
- India's R&D spending is **below 1% of GDP**; this scheme seeks to **reverse that trend**
- Helps India meet ambitions under:
  - **G20 Startup20 Agenda**
  - **Global Innovation Index (GII) Goals**
  - **SDG Goal 9 – Industry, Innovation and Infrastructure**

8. Conclusion: Innovation as India's Strategic Currency

- The **RDI Scheme** is a bold policy shift towards **mission-oriented innovation financing**.
- With robust **institutional architecture**, **financial incentives**, and **sectoral focus**, the scheme has the potential to:
  - **Transform India's research landscape**
  - Enable **economic resilience and strategic autonomy**
  - Make India a **global hub for high-tech innovation and IP generation**

GOSAT-GW: Japan's Climate Monitoring Leap and End of H-2A Era

📌 **Syllabus Mapping:**
✅ **GS Paper 3 – Science & Technology:** Space Technology, International Cooperation in Science
✅ **GS Paper 3 – Environment:** Climate Change, Conservation, Environmental Pollution

1. Context: Japan's Climate Monitoring and Technological Milestone

- Onboard its **50th and final H-2A mission**, Japan successfully launched the **GOSAT-GW (Global Observing Satellite for Greenhouse Gases and Water Cycle)**.
- The mission marks the **transition from the H-2A launcher to the next-generation H3 launcher**, with a continued focus on **climate monitoring and global environmental cooperation**.

2. What is GOSAT-GW?

- **GOSAT-GW** is the **third satellite** in Japan's **GOSAT series**.
- Developed by the **Japan Aerospace Exploration Agency (JAXA)** in collaboration with **Mitsubishi Heavy Industries (MHI)**.
- Launch vehicle: **H-2A Rocket** (liquid-fuel core + solid boosters), from **Tanegashima Space Centre**.

3. Key Objectives

Focus Area	Purpose
Greenhouse Gas Monitoring	Track CO_2, **methane (CH_4)**, and other GHGs for climate research.
Water Cycle Study	Monitor **cloud cover**, **precipitation**, **sea surface temperature** trends.
Global Climate Policy Support	Provide scientific evidence to global climate agencies (e.g., NOAA) and aid the **Paris Agreement**.

4. Key Features

- **High-Resolution Observations**: Offers **enhanced spatial and temporal granularity** of climate variables.
- **Simultaneous Data Collection**: Captures **both atmospheric greenhouse gases and hydrological parameters**, a **dual-focus** capability.
- **International Data Access**: Open access to data for **global research communities** and policymakers.
- **Real-Time Monitoring**: Full-scale data sharing expected to begin **within one year of deployment**.

5. Significance and Strategic Implications

A. For Climate Science

- Strengthens **Earth observation systems** amid increasing climate variability and extreme weather events.
- Enhances **climate modelling and mitigation strategies** through reliable satellite datasets.

B. For Global Cooperation

- Advances **scientific diplomacy** by supporting multilateral frameworks like:
  - **Paris Agreement**
  - **IPCC climate assessments**
  - **UNFCCC goals**

C. For Space Technology and Security

- **Legacy Milestone**: Marks the **end of H-2A rocket's** highly successful career (success rate ~98%).
- **Transition to H3**: Paves the way for Japan's **next-gen, low-cost, high-capacity** launch platform.
- **National Security**: Strengthens **Japan's space autonomy** in environmental surveillance and disaster monitoring.

D. Commercial Relevance

- Demonstrates Japan's ability to offer **reliable launch services** and **advanced Earth observation** to global clients.
- Enhances competitiveness in **commercial satellite launches**.

6. India's Relevance and Comparison

India	Japan
INSAT, RISAT, Oceansat series	GOSAT-GW Series
ISRO – PSLV, GSLV, LVM-3	JAXA – H-2A, H3 Rockets
Focus on regional & global applications	Focus on global GHG & water monitoring

India and Japan are also partners under frameworks such as **G20, Quad**, and **Global Climate Initiatives**, making such technological exchanges highly significant.

7. Conclusion

The launch of **GOSAT-GW** is a significant stride in **climate satellite technology**, promoting **global transparency, environmental governance, and multilateral climate cooperation**. It also marks a pivotal point in Japan's **space evolution** as it retires the H-2A rocket and embraces a more **efficient H3 future**. For developing countries like India, such missions serve as models for enhancing **climate resilience through space-based observations**.