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GIST OF YOJANA

Topic : Towards Viksit Bharat

PM MUDRA YOJANA : A DECADE OF HOPE, OPPORTUNITY AND INCLUSIVITY

Pradhan Mantri Mudra Yojana (PMMY) was launched in April 2015 to address the severe credit gap in the MSME sector, particularly micro-entrepreneurs. It provides initial credit support and more importantly, builds credit history for further formal financing.

Impact and Achievements

- Over 10 years, the scheme enabled micro and small enterprises to access formal credit, thus boosting employment and economic growth.
- As of 31 March, 2025, ₹ 33.32 lakh crore was disbursed under 52.73 crore loan accounts.
- PMMY seeded a culture of entrepreneurship, especially in underserved areas.

MSME Sector : Cornerstone of India's Economic Resilience & Growth

- MSMEs play a pivotal role in production, exports and inclusive growth.
- The government's framework focuses on : 1. Banking the unbanked; 2. Securing the unsecured; and 3. Funding the unfunded.

Loan Categories

- Shishu (up to ₹ 50,000)
- Kishore (₹ 50,000–₹ 5 lakh)
- Tarun (₹ 5–₹ 10 lakh)
- Tarun Plus (enhanced to ₹ 20 lakh)

Factors Behind the Popularity of PMMY

- **Zero Collateral** : Loans are unsecured, making them attractive to first-time entrepreneurs with no assets to pledge.
- **Competitive Rates** : Interest rates are kept affordable for small businesses.
- **Flexible Repayment** : Allows businesses to repay in line with their cash flows.
- **Digital Accessibility** : Online application via JanSamarth and wide banking network.
- **Extensive Lender Participation** : Includes public/private banks, RRBs, SFBs, MFIs and NBFCs.

Performance Metrics – PMMY

- Sanctioned amount (FY25) : ₹ 34.09 lakh crore.
- Disbursed amount (FY25) : ₹ 33.32 lakh crore.
- Sanctioned & disbursed in FY25 : ₹ 5.20 lakh crore & ₹ 5.09 lakh crore respectively.

Popular Across States – Ensuring Credit Flow to Informal Sector

- **Top 5 States** : Tamil Nadu, Uttar Pradesh, Karnataka, West Bengal, Bihar (46.3% of total disbursements)

- These States also lead in Udyam Assist Platform (UAP) IME registrations.

Category Spread – Increasing Kishore and Tarun Loans Possibly Indicates Increasing Enterprise Activities

- **Shishu** : 80% of accounts, 38% of disbursements
- **Kishore** : 18% of accounts, 30.2% of disbursements (FY25)
- **Tarun** : 2% of accounts, 30.2% of disbursements (FY25)
- **Tarun Plus** : 0.8% (newly started)
Average loan size increased from ₹ 39,405 in FY16 to ₹ 1.06 lakh in FY25

Transformative Impact of PMMY : Inclusivity and Empowerment

- **Financial Inclusion** : PMMY provided 10.97 crore new accounts, ₹ 10.56 lakh crore sanctions, helping unserved entrepreneurs gain formal credit. Around 31% of sanctions are from these new accounts.
- **Empowerment of Small Entrepreneurs** : PMMY empowered grassroots entrepreneurs by enabling them to start and expand sustainable businesses, especially women and first-time borrowers.
- **Promotion of Informal Micro-Enterprises** : The scheme played a key role in formalising informal businesses through Udyam Assist Platform, helping them transition into the formal economy.
- **Job Creation** : The credit support enabled entrepreneurs to scale operations, generating self-employment and local jobs, especially in underserved regions.
- **Easier Access to Credit** : By eliminating collateral requirements and enabling digital applications, PMMY made credit more accessible to micro-enterprises.

Challenges for PMMY

- Over-dependence on Shishu loans, indicating limited graduation to higher credit tiers.
- Low repayment capacity in some sectors leads to asset quality concerns.
- Need for financial literacy and handholding support for first-time borrowers.

Role of MUDRA–SIDBI's Subsidiary

- MUDRA Ltd., set up by SIDBI, is the implementing agency of PMMY.
- It refinances micro-finance institutions, facilitates credit guarantee structures, and promotes last-mile credit delivery.

REIMAGINING ENTREPRENEURIAL SKILLS

1. Background and Evolution of RSETIs

- The first Rural Development and Self Employment Training Institute (RUDSETI) was set up in 1982 in Ujire, Karnataka.
- The Government of India adopted this model in 2007-08, launching the Rural Self-Employment Training Institutes (RSETIs) programme.
- RSETIs offer short-term training (6 to 60 days) with long-term handholding (up to 2 years) to promote rural entrepreneurship.

2. Impact of RSETIs

- Over 600 RSETIs established across India.
- Trained 55.53 lakh rural youth, with a 73% settlement rate (40.27 lakh started or strengthened enterprises).
- Ensured bank linkage for 20.40 lakh candidates.
- Youth trained under RSETIs become job creators instead of job seekers, contributing to rural economic growth.

3. Challenges in the Present Ecosystem

- The entrepreneurial ecosystem is evolving rapidly due to AI, data analytics, digital platforms (e.g., GeM).
- Only 4.7% of India's workforce has undergone formal skill training.
- **RSETI limitations include :** Limited course offerings (only 60 outdated courses). Low

candidate intake per district (~750–1000). Poor mobilisation of marginalised groups (women, tribals, PwDs). Lack of re-skilling/up-skilling opportunities. Faraway training centres make access difficult.

4. Recommendations for Reimagining Skilling

- Shift from top-down to bottom-up approach, considering district-level needs.
- Skill at the doorstep through localised training using CLFs, CMTCs and DAY-NRLM networks.
- Narrow down training focus to 4–5 high-potential areas per district based on local industry.
- Prioritise self-employment sectors with better returns (e.g., CCTV repair, plumbing, welding, banana fibre-based products).
- Develop Centres of Excellence (CoEs) in specific sectors to provide specialised training and innovation.

Conclusion

India must act swiftly to skill its young population to avoid an estimated GDP loss of USD 1.97 trillion by 2028. RSETIs have laid a strong foundation, but reforms, customisation, community participation and modernisation are essential to realise the vision of making India a developed nation by 2047.

ROLE OF MIDDLE-CLASS LEADING IN INDIA'S PROSPERITY

Middle-Class as Growth Engine

Middle-class is pivotal to India's goal of becoming a Viksit Bharat by 2047. The term 'middle class' was first used by James Bradshaw in 1745. Today, India's economic and democratic vibrancy cannot be discussed without considering the middle class.

Who is Middle-Class ?

- No official definition, but NCAER & PRICE define it as household earnings between ₹ 5–30 lakh/year (FY 2020-21 prices).
- Daily income : ~\$4.11–\$23.56/person.
- Population share : 2020-21 : 43.2 crore (31%); Projected for 2046-47 : Over 101 crore (61%)

Key Role in Economy and Democracy

- Major contributor to direct & indirect taxes.
- Fuels consumption, savings and investment.
- Essential in ensuring democratic stability (as noted by Lester Thurow).

Government Measures Empowering Middle-Class (2014–2025)

1. Income Tax Reforms : Tax reliefs and restructuring under both old and new regimes :

- Standard deduction raised to ₹ 75,000 (FY 2025-26).
- Nil tax up to ₹ 12 lakh income in the new regime.
- Benefits : ₹ 12 lakh income → ₹ 80,000 tax savings. ₹ 25 lakh income → ₹ 1.1 lakh tax savings.
- Compliance Ease : Faceless, jurisdictionless assessment system. Pre-filled ITRs, updated return facility. Expanded TDS/TCS to widen tax base.

2. Controlled Inflation & Interest Rates :

- Inflation reduced from 8.2% (2004–14) to 5% (2015–25).
- Retail inflation (June 2025) : 2.82% – a 75-month low.

- Policy repo rate cut from 8% to 5.5%, boosting consumption.

3. Pension Reforms : Unified Pension Scheme (UPS) introduced in 2025 :

- Assured 50% pension (last 12-month average basic pay).
- Minimum pension : ₹ 10,000/month.
- Benefits over 23 lakh Central Government employees.

4. Housing & Solar Energy : PM Awas Yojana (Urban) :

- Over 1.16 crore houses sanctioned (2015–2025). ₹ 1.97 lakh crore allocated.
- PM Surya Ghar : Muft Bijli Yojana : Subsidy up to 60% for 2kW rooftop solar. Conces-

sional loan at 6.75% for up to ₹ 2 lakh.

5. Connectivity Boost : Metro Rail :

- From 248 km (2014) to 1,013 km (2025).
- Ridership up from 28 lakh to 1.12 crore daily.
- UDAN Scheme : 88 airports, 625 routes, 1.49 crore passengers. Airport count doubled from 74 (2014) to 160 (2025).

Conclusion : The middle class is central to India's prosperity and democratic stability. Empowerment through tax reliefs, affordable housing, stable prices, pension reforms and infrastructure has significantly improved their quality of life. A strong, empowered middle class is key to achieving Viksit Bharat by 2047.

PANCHAYATI RAJ INSTITUTIONS : EMPOWERING RURAL WOMEN

Mahatma Gandhi envisioned *true democracy* through Panchayati Raj, where even the humblest citizen has a say in governance. Women's participation in Panchayati Raj Institutions (PRIs) is fulfilling that dream by promoting inclusive grassroots governance.

Status of Women Globally and Need for Empowerment

- Women comprise ~50% of the global population, but have only 1/10th of global income; Ownership of 1/100th of means of production; 70% live below the poverty line; 2/3rd lack access to basic education.
- Empowering women is essential for socio-economic development.

Panchayati Raj Act and Provisions for Women

- 73rd Constitutional Amendment Act, 1992 introduced a three-tier system of Panchayati Raj.
- Came into effect on 24 April, 1993.
- Mandated one-third reservation for women (including SCs/STs/OBCs) in total seats in PRIs, Offices of chairpersons at each level.
- The reservation is rotational.

Participation of Women in Panchayats

- Initiated with the 1992 Amendments, aiming to empower women through direct participation.
- Currently, 14 States have 50-58% representation of women in PRIs.
- Jharkhand (59%), Rajasthan, and Uttarakhand lead.
- As of 2015 : Out of 29,17,334 Elected Representatives (ERs), 46% (13,41,773) are women. Uttar Pradesh has the highest

number of women sarpanches (19,992), but only 34% share. Odisha has 58% women sarpanches. Manipur has the lowest (2%).

Impact of Women's Participation

- Increased active participation in development, policymaking and administration.
- Reduced corruption, domestic violence and upper-caste dominance.
- Shift from representative democracy to participatory democracy.
- Women raising voices against atrocities and promoting social justice.
- Emergence of many women as political leaders and change-makers.

Difficulties Faced by Women Elected Representatives in PRIs

- Political intervention and proxy representation by male relatives.
- Lack of political awareness, education and training.
- Negative stereotypes about women's leadership.
- Dominance of male panchayat members.
- Politically motivated violence.

Suggestions for Effective Participation of Women in Panchayati Raj System

- Conduct free and fair elections.
- Increase political awareness through education and outreach.
- Organize special training/refresher courses at block and district levels.
- Provide special powers and incentives for women representatives.
- Recognize exemplary work through rewards and honours.

- Extend rotation period for reserved seats to at least 10 years to ensure continuity.

Conclusion

The 73rd Amendment was a historic step in women's empowerment. It has led to :

- Increased visibility and leadership of women in rural governance.

ADVANCING WOMEN-LED DEVELOPMENT THROUGH EQUITY AND CAPABILITY BUILDING

Gender budgeting is a transformative approach that integrates gender perspectives into public financial management, aiming to address persistent gender disparities and empower women as agents of economic and social change.

Gender Budgeting : Building a Strategic Framework for Women-Led Growth

- Gender budgeting in India evolved from welfare-based approaches to structural empowerment, beginning formally with the 2001 Working Group report.
- The Gender Budget Statement (GBS) introduced in 2005-06 reflects this shift.
- In Union Budget 2025-26, gender budget allocation reached ₹ 4.49 lakh crore, 8.6% of total expenditure and 1.9% of GDP, showing strong political commitment.
- Gender Budget has three components : Part A (100% women-specific) – 39% share; Part B (30–99%) – 61% share (e.g., MGNREGS, Samagra Shiksha); Part C (<30%) – 3.75% share (partial gender targeting in health, skill development).

New Momentum for Nari Shakti Prioritising Health

- Sex ratio at Birth at national level has improved from 918 (2014-15) to 930 (2023-24).
- 77 crore+ sanitary pads ensured at ₹ 1 at Jan Aushadhi Kendras.
- 24,533 AWC+ transformed into Saksham Anganwadis.
- ₹ 18,593 crore disbursed to 3.98 crore pregnant and lactating women.
- 6 crore free antenatal check-ups under PM Surakshit Matritva Abhiyan.
- Universal Immunization Programme reaches approximately 2.9 crore pregnant women annually.
- Janani Shishu Suraksha Karyakram benefitted 16.60 crore+ beneficiaries, significantly reducing out of pocket expenditure for families.

- Formation of Self-Help Groups and participation in schemes like MGNREGA.
- A platform for women to combat social evils and participate in economic activities.

Despite challenges, PRIs have enabled rural women to emerge as strong leaders and continued support is essential for realising the true potential of this transformation.

- Janani Suraksha Yojana supported 11.07 crore beneficiaries by March 2025.

Gender Budgeting 2025-26 : Advancing Gender-Equitable Development

Employment, Skilling and Entrepreneurship :

- MGNREGS allocation increased to ₹ 40,000 crore; women comprise 57.8% of person-days.
- Term Loan Scheme : Up to ₹ 2 crore for first-time women/SC/ST entrepreneurs.
- MUDRA Yojana : Collateral-free loans up to ₹ 20 lakh.
- Lakhpati Didi Initiative : Aims for 1 crore women earning ₹ 1 lakh annually through SHGs.

Key Government Interventions Promoting Women's Employment, Skilling and Entrepreneurship (2025-26) :

Scheme	Target Group	Support	Objective
New Entrepreneurship Scheme	Women, SCs, STs	₹ 2 crore loan	Inclusive entrepreneurship
Stand-Up India	Women, SCs, STs	Credit & training	New business promotion
MUDRA Yojana	Women	₹ 20 lakh loan	MSME expansion
Lakhpati Didi	Rural Women	Livelihood support	₹ 1 lakh annual income

Education and Digital Infrastructure : Enablers of Equity :

- School Education Budget : ₹ 78,572 crore (↑16.3%)
- Samagra Shiksha Abhiyan : ₹ 41,250 crore (↑₹ 4,240 crore)
- PM POSHAN : ₹ 12,500 crore (↑25%)
- PM SHRI schools : ₹ 7,500 crore (↑66%)
- BharatNet Project : Broadband to schools and PHCs.
- 50,000 Atal Tinkering Labs to foster digital innovation.

- NMEICT (100% women scheme) : ₹ 229.25 crore for digital skilling.

Asset Ownership and Housing Security :

- PMAY-G Budget : ₹ 54,832 crore (↑69%)
- 74% of houses under PMAY-G are solely/jointly owned by women.
- This enhances access to credit and decision-making power.
- MWCD Budget : ₹ 26,890 crore (↑16%)
- Mission Shakti : ₹ 3,150 crore
- Samarthya sub-scheme : ₹ 2,521 crore for PMMVY, Creche Scheme, Hostels, etc.

Financial and Digital Empowerment

1. Term Loan Scheme : ₹ 2 crore for 5 lakh women/SC/ST entrepreneurs.
2. Customised Credit Cards : ₹ 5 lakh limit for 10 lakh micro-enterprises.
3. Dedicated Funding : ₹ 5,000 crore for women-led enterprises.
4. Digital Infrastructure : Cross-sectoral integration to support digital empowerment, tie-up to BharatNet and skilling initiatives.

A SILENT STORM : WHY INDIA MUST ACT ON NITROGEN POLLUTION AND CLIMATE CHANGE ?

Nitrogen, while essential for life and agriculture, is causing widespread environmental damage in India due to its inefficient and excessive use—especially in the form of nitrogen fertilizers—contributing significantly to climate change, water and air pollution, and soil degradation.

The Bigger Crisis

- Nitrogen pollution is linked to the triple planetary crisis: pollution, biodiversity loss and climate change.
- Reactive Nitrogen (Nr) forms like NH_3 , NO_3^- , N_2O and NO_x are accumulating at dangerous levels.
- N_2O is 300x more potent than CO_2 as a greenhouse gas.
- South Asia, particularly India, is facing nitrogen overload due to high-input farming and poor waste management.

India's Nitrogen Hotspots

- India has low Nitrogen Use Efficiency (NUE) – only 33% of nitrogen applied is used by crops.
- Massive surpluses of nitrogen in Punjab (234 kg N/ha/yr) and Haryana (276 kg N/ha/yr).
- States like Bihar, Telangana, Andhra Pradesh and West Bengal also show high

Advancing Gender-Responsive Governance and Institutional Accountability

- Continued use of Gender Budget Statement for 20+ years.
- Need for stronger institutional accountability to link intent and outcomes.
- Integration with SDG 5 (Gender Equality) and SDG 8 (Decent Work) needed.
- Call for data-driven monitoring, intersectional analysis and outcome-oriented governance.

Conclusion

India's Gender Budget 2025-26 marks a strategic shift from welfare to capability-building and structural empowerment. By investing in education, digital access, asset ownership and entrepreneurial support, it fosters women as key drivers of inclusive and resilient development. However, the real impact will depend on effective implementation, monitoring and ensuring that policy reaches grassroots levels.

nitrogen surpluses.

- Agricultural trade concentrates nitrogen in producing zones; 70% of rice/wheat-related N_2O emissions come from 4 States (Haryana, Punjab, Chhattisgarh, Andhra Pradesh).

Consequences

- Nitrate contamination of groundwater (e.g., Haryana wells have 99.5 mg/L vs WHO limit of 50 mg/L).
- Health risks, reduced soil fertility, biodiversity loss.
- Contributes significantly to climate change via N_2O emissions.

Promoting Sustainable Farming	Benefits of Organic Farming
● Paramparagat Krishi Vikas Yojana	● Improves soil health
● Per Drop More Crop	● Minimises soil erosion
● Soil Health Card (SHC)	● Maintain water quality
● National Bamboo Mission	● Improves food's nutritional content
● Mission Organic Value Chain Development in the North Eastern Region	● Decreases environmental pollution by eliminating toxic chemicals

Government Interventions So Far

- Soil Health Cards, Neem-coated urea, 4R Nutrient Stewardship.
- Emission regulations (e.g., BS-VI norms), CEMS for industries, and water missions like AMRUT and Namami Gange.
- However, integrated nitrogen policy is still lacking.

Actionable Strategies Suggested

1. **Strengthen Agriculture Partnerships** : Use ICAR, KVKs to scale best practices (e.g., precision farming, neem-coated urea).
2. **One Water Approach** : Integrated water-nutrient management, especially in tribal and rural areas.
3. **Legal Standards for Nitrates** : Enforce numeric limits, empower SPCBs.
4. **National Nitrogen Mission** : Coordinate ministries, set NUE and N₂O targets.
5. **Include Nitrogen in India's NDCs** : Capture full climate impact and unlock climate finance.

6. **Reform Fertiliser Subsidies** : Shift to DBT, promote slow-release and organic fertilisers.
7. **Hotspot Regulation** : Impose N-caps in polluted zones like Punjab and western UP.
8. **Integrated Soil Health Strategy** : Geo-tagged maps, AI apps, and promotion of legumes and crop rotation.
9. **Awareness and Market Incentives** : Certification schemes (e.g., 'Low Nitrate Vegetables'), e-commerce linkage.
10. **Research and Indigenous Knowledge** : Invest in climate-smart crops, indigenous practices and real-time N-tracking tools.

Conclusion

Nitrogen is a double-edged sword—vital yet dangerous if misused. India has the groundwork (laws, subsidies, institutions) to lead a global example in sustainable nitrogen management. A National Nitrogen Mission, climate-aligned policies, and smart subsidies can transform this silent crisis into an opportunity for greener agriculture, climate action, and healthier ecosystems.

INDIA'S DIGITAL DECADE

India's digital journey over the past decade has not only transformed services and governance but also laid the groundwork for strong economic growth. Digital industries have been growing at a faster pace than traditional sectors, showing how technology is becoming a key driver of progress. By 2030, the digital economy is expected to make up nearly one-fifth of the country's total economy.

India's Digital Transformation : A Decade of Progress

- India has emerged as a digitally empowered society and knowledge economy, with digital platforms bridging the urban-rural divide.
- The digital economy's share in GDP rose from 11.74% in 2022-23 to a projected 13.42% by 2024-25, driven by AI, cloud computing and digital infrastructure.

Connectivity and Infrastructure

- Telephone connections grew from 93.3 crore (2014) to 120+ crore (2025); rural connections rose from 37.7 crore to 52.7 crore.
- Internet connections rose by 285.53%, from 25.15 crore (2014) to 96.96 crore (2024).
- Broadband users increased by 1452%, reaching 94.92 crore in 2024.
- 4G reaches 6.15 lakh+ villages; 5G covers 99.6% districts with 4.74 lakh BTSs installed in just 22 months.

- Data cost dropped from ₹ 308/GB (2014) to ₹ 9.34/GB (2022).

BharatNet : Digital Inclusion for Rural India

- Connected 2.18 lakh Gram Panchayats with 6.92 lakh km of optical fibre laid as of January 2025.

Digital Finance and Inclusion

- UPI handled 1,867.7 crore transactions worth ₹ 24.77 lakh crore in April 2025; used by 460 million users and 65 million merchants.
- India leads in real-time payments (49% of global share in 2023).
- UPI live in 7+ countries, strengthening India's global fintech presence.

Aadhaar and DBT : Tech-Enabled Welfare

- 141.88 crore Aadhaar IDs issued.
- DBT saved ₹ 3.48 lakh crore; over ₹ 44 lakh crore transferred by May 2025.
- 5.87 crore fake ration cards and 4.23 crore LPG connections removed.

ONDC and GeM : Democratizing Digital Commerce

- ONDC has 7.64 lakh+ sellers across 616+ cities (as of January 2025).
- GeM recorded a GMV of ₹ 4.09 lakh crore in just 10 months of FY 2024-25; over 1.6 lakh buyers and 22.5 lakh sellers.

E-Governance and Citizen Services

- **Karmayogi Bharat + iGOT** : 1.07 crore civil servants onboarded, 3.24 crore learning certificates issued.
- **DigiLocker** : 51.6 cr users by April 2025; over 9.42 cr signups in Jan–June 2025.
- **UMANG** : 8.21 crore users, 597 crore transactions; 2,300 services in 23 languages.

Digital Literacy and Skill Development

- **PMGDISHA** : Trained 6.39 crore, certified 4.77 cr rural citizens; world's largest digital literacy mission.
- **NIELIT Deemed University** : Target to train 37 lakh candidates in 5 years.
- **ESDM Skill Schemes** : 4.93 lakh trained; 1.37 lakh placed.
- **Future Skills Prime** : 22+ lakh signed up; 5.3 lakh completed training.
- **ISEA Project** : Trained 95,206; conducted 31 awareness drives.
- **Chips to Startup** : Supported 113 institutions, developed 58,652 professionals, 26 patents.
- **Visvesvaraya Ph.D. Scheme** : Supported 2,039 Ph.D. candidates.

Bhashini – Language Inclusion in Digital India

- **BHASHINI** under NLTm enables digital access in multiple Indian languages, breaking language barriers using AI and NLP.

National Quantum Mission : Leading the Next Tech Frontier

- Aims to build quantum computing, secure quantum communication and advanced quantum sensing capabilities.
- DRDO's Quantum Technology Research Centre in Delhi is boosting defence applications in the quantum domain.

Advancing Strategic Tech : AI and Semiconductors

- **IndiaAI Mission** launched in March 2024 with ₹ 10,371.92 crore outlay over 5 years. Focus: Compute, Innovation, Data, Startups, Trusted AI.
- Compute power crossed 34,000 GPUs.
- **India Semiconductor Mission** (₹ 76,000 crore) : Approved 6 manufacturing projects, ₹ 1.55 lakh crore investment.
- Latest unit : HCL-Foxconn chip plant near Jewar Airport.

Conclusion

India's digital journey has redefined its economic and governance landscape, with digital sectors outpacing traditional industries. The expanding digital ecosystem is fostering inclusion, innovation, and global leadership. With a strong foundation, India is poised to become a \$1 trillion digital economy by the end of the decade—a true digital decade for India.

JULY
2025

GIST OF KURUKSHETRA

Topic : Cooperatives : Towards New Heights

COOPERATIVES : REALIZING DREAM OF VIKSIT BHARAT@2047

1. Vision and Strategic Importance

- India@2047 aims to transform the nation into a developed, self-reliant and inclusive economy.
- Cooperatives are central to this vision, aligned with the theme 'Sahkar Se Samridhhi' (Prosperity through Cooperation).
- India is celebrating International Year of Cooperatives (2025) under the UN's theme "Cooperatives Build a Better World".



2. Ministry of Cooperation : A Game Changer

- Established in July 2021 to exclusively handle cooperative matters (previously under Ministry of Agriculture).
- Empowered to provide legal, administrative and policy support.
- Focus on economic inclusion, rural empowerment and social equity.

3. Key Reforms & Initiatives

- **PACS Reforms** : Model Bye-laws to transform PACS (Primary Agricultural Credit

Societies) into multi-functional rural service hubs. Introduction of digital ERP systems, regional language integration and digitization of legacy records.

- **New Multipurpose Cooperative Societies** : Dairy, fisheries, warehousing, retail, etc.
- **Flagship Schemes** : White Revolution 2.0 – Dairy infrastructure and women's cooperatives. World's Largest Grain Storage Scheme – Decentralized warehousing to reduce post-harvest losses.
- **Common Service Integration** : PACS to operate Jan Aushadhi Kendras, Petrol Pumps, LPG outlets, etc.

4. Digitization and Planning

- **National Cooperative Database (NCD)** : Real-time tracking, transparency, fund allocation and planning.
- **CLFs & CMTs** : CLFs – Cluster Level Federations. CMTs – Cooperative Monitoring Teams.
- **Multi-State Cooperative Societies Act (Amendment), 2023** : Enhances governance and professional management.

5. Outcomes and Future Roadmap

- Empowerment of 8-40 lakh cooperatives and 29 crore members.
- Greater youth participation, enhanced financial inclusion, rural job creation and gender empowerment.
- Vision to transform cooperatives into engines of rural transformation and support a \$ 30 trillion economy by 2047.

Conclusion

Cooperatives are being reimaged as inclusive, transparent and tech-enabled institutions. With focused reforms, India aims to create a participatory development model that ensures last-mile service delivery and uplifts rural India, fulfilling the Viksit Bharat@2047 goal.

RISING IN UNISON : REALIZING SAHKAR SE SAMRIDDHI

1. Vision of Sahkar Se Samridhhi

- Cooperation (Sah + Karya) rooted in Indian ethos is vital for community-led development.
- Urgent need to reposition cooperatives as dynamic, democratic, multi-sectoral entities.
- Emphasis on unified, time-bound efforts by all stakeholders for inclusive socio-economic development.

2. Core Principles of Cooperation

As per International Cooperative Alliance, seven key principles guide cooperatives :

1. Voluntary & Open Membership
2. Democratic Member Control
3. Member Economic Participation
4. Autonomy & Independence
5. Education, Training and Information

- 6. Cooperation Among Cooperatives
- 7. Concern for Community

3. Historical & Cultural Roots

- Mention of Rigveda, Arthashastra and Mahatma Gandhi's advocacy for voluntary cooperation.
- The 1904 Cooperative Societies Act and later amendments extended cooperative scope to various sectors.

4. Cooperative Movement – A Snapshot

- India has 814,575 cooperatives with 29 crore members.
- Primary Cooperatives : 8-10 lakh
- Present in 98% of villages.
- Prominent cooperative brand : Amul – exemplifies Sahjeevan, Swadesh, Swarozgar, etc.

5. Recent Government Initiatives

- Dedicated Ministry of Cooperation set up in July 2021.
- Emphasis on cooperative values : equity, transparency, community-driven.

6. PACS Reforms & Expansion

- Model byelaws created for PACS to diversify into 25+ business areas like dairy, fisheries, solar energy, warehouses, CSCs.

- PACS as Service Dispensing Centres – Aadhaar, banking, insurance, legal services, etc.

7. Promoting FPOs & FFPOs

- 730 cooperative-based FPOs formed till March 2025.
- 70 FFPOs launched; NCDC aims for 1,100.
- Promotes rural transformation & diversified income.

8. New Frontiers

- PACS now allowed in Oil & Energy business (e.g., petrol/diesel dealerships).
- Use of solar pumps, photovoltaic modules encouraged.
- Focus on credit structure reforms (StCB → DCCB → PACS) with computerization push.

9. Strengthening Cooperative Education

- Tribhuvan Sahkari University established.
- Aim : structured education & capacity building.

Conclusion

The cooperative movement, rooted deeply in Indian values, is now being restructured to meet modern socio-economic challenges. With government support and community ownership, cooperatives are poised to drive inclusive, equitable and sustainable rural development under the vision of 'Sahkar Se Samridhi'.

FOSTERING COLLECTIVE PROSPERITY : EMPOWERING PACS THROUGH COMPUTERISATION

The PACS Computerisation Project is a key step towards building a digitally empowered and cooperative-driven rural India. It aims to enhance transparency, efficiency and financial inclusion by equipping PACS with modern IT infrastructure.

India's Cooperative Movement and Need for Transformation

India's cooperative sector has been pivotal in rural economic growth. With the digital revolution and the Viksit Bharat 2047 vision, PACS are now undergoing a transformation to become modern, digitally integrated institutions.

Context and Initiative

Manual record-keeping caused errors, delays and lack of transparency. The Computerisation Project was launched by PM Narendra Modi on 24th February, 2024 to modernize all functional PACS using a common ERP software developed by NABARD. The government has allocated ₹ 2,516 crore for the project.

Project Architecture

Funding Pattern : 1. Govt of India : ₹ 1,528 crore (60-73%); 2. State Govts : ₹ 736 crore (29-25%); 3. NABARD : ₹ 252 crore (10-02%); 4. Cost-sharing varies by geography; NE & hilly states get 90:10 support.

5 Key Components : 1. Software : Cyber-secure ERP with data storage; 2. Data Capture Tool (DCT) : Cleanses and reconciles legacy data; 3. ERP Implementation : Common software for real-time PACS operations; 4. Go-live : Live transaction processing on ERP; 5. EPACS Only : Full transition from legacy to digital systems.

Project Process Steps

- **Phase 1 :** FHR & FVR collected
- **Phase 2 :** DCT used for digitizing legacy data
- **Phase 3 :** Data migrated to ERP; trial entries
- **Phase 4 :** Daily entries and system freeze
- **Phase 5 :** Audit and reconciliation completed

Implementing Mechanism

- **Lead Agency** : NABARD under MoC guidance.
- **Central & State PMUs** : Manage and track implementation.
- **NLPSV** : Develops & customizes ERP software.
- **System Integrators (SIs)** : Support data migration, ERP training and problem resolution

Monitoring Mechanism

- **Committees at Multiple Levels** : NLMIC, SLMIC, DLMIC oversee progress.
- **Dashboards & Online Reviews** : Enable real-time monitoring.
- **Monthly and Quarterly Reviews** : Conducted by MoC and RCS offices for feedback and progress tracking.

Progress So Far

- **Proposals Approved** : 67,930 PACS
- **ERP Onboarding** : 54,922 PACS
- **Operational** : 44,421 PACS
- **Go-Live Achieved** : 43,658 PACS
- **Funds Released** : ₹ 758.24 crore to states, ₹ 165.92 crore to NABARD.

New Initiatives

- **Peer Learning** : Cross-state knowledge sharing
- **Integration with UIDAI & CSC** : For seamless member verification and service delivery
- **Mobile App** : Real-time account access
- **Geo-tagging** : 66,000+ PACS located
- **Document Archival** : 5,000+ legacy docs digitized (25GB)

Vision for the Future

- PACS as multi-functional entities (CSC, PMKSK, PDS, etc.)
- Expansion to other rural cooperatives like dairy, fisheries, etc.
- Growth in revenue, membership, and services
- Creation of a Co-op Grid for better integration
- Farmer-centric innovations (QR codes, e-comm, soil testing)
- Implementation of DBT through e-PACS
- Better governance, HR, and personalized services
- Establishment of best practices and knowledge networks
- Move towards self-sustainability via pay-per-use model

Transformative Journey of Cooperatives in Different Regions

- **Maharashtra-Kharsai Society** : Digital adoption led to higher accuracy, faster services, and efficient operations at Kharsai Vividha Karyakari Society.
- **Tamil Nadu-Arakandanallur PACS** : Despite flood damage, cloud-based digital systems enabled fast recovery and uninterrupted service delivery.

Conclusion

Computerisation of PACS is a structural reform that boosts transparency, efficiency, and farmer trust. It aligns with the vision of 'Sahkar Se Samridhhi' and will position PACS as key pillars in a financially robust and inclusive rural India. Through real-time integration, faster loan disbursement, and stronger governance, this project will revitalize India's cooperative credit institutions amidst rising rural competition.

PACS as Common Service Centres

The transformation of Primary Agricultural Credit Societies (PACS) into Common Service Centers (CSCs) marks a major shift in rural service delivery. These digital hubs go beyond agricultural credit, offering over 300 services including banking, healthcare, education, e-commerce and government schemes—bringing all essential services under one roof for rural citizens.

New Vision for Rural Development : Reimagining PACS as CSCs enables them to become one-stop centers for multiple services—Aadhaar, PAN, passports, welfare scheme registrations, telemedicine and e-commerce. These centers also support online education and skill

training, ensuring comprehensive access to critical services within rural communities.

Empowering Farmers Beyond Credit : Farmers benefit by directly accessing markets, government schemes, and real-time information on agriculture practices, weather, and subsidies. This reduces dependency on intermediaries, enhances incomes, and promotes adoption of modern technologies through training.

Fostering Rural Entrepreneurship : PACS-CSCs promote entrepreneurship by offering financial and technical support, market linkages, and digital platforms for rural artisans and businesses. These centers help generate employ-

ment, especially empowering women and youth through skill development and microloans.

Strengthening Rural Infrastructure through PACS-CSCs : Successful transformation requires upgraded physical infrastructure, reliable internet, modern IT systems and trained personnel. This not only improves service delivery but also creates jobs in IT, construction and telecom, contributing to local economic development.

Financial Inclusion : PACS-CSCs bridge the financial gap in rural India by providing banking services (account opening, deposits, withdrawals), access to government subsidies and financial literacy. They foster financial security and reduce vulnerabilities among rural households.

Aligning with National Objectives : The initiative supports flagship schemes like Digital India, Make in India, and Atmanirbhar Bharat. By boosting digital infrastructure, rural industries and local employment, PACS-CSCs promote inclusive and self-reliant growth in line with national development goals.

NCDC : POWERING INDIA'S COOPERATIVE REVOLUTION

The National Cooperative Development Corporation (NCDC), a statutory body under the Ministry of Cooperation, plays a pivotal role in boosting rural economic activities by supporting cooperative sugar mills, Farmer Producer Organizations (FPOs), Fish Farmer Producer Organizations (FFPOs) and marine fishing cooperatives.

Statutory Role and Origins

NCDC was established in March 1963 under the NCDC Act, 1962 and operates as a public financial institution since May 2003. It provides financial and technical assistance to cooperatives in agriculture and allied sectors, especially benefiting farmers and the weaker sections.

Strong Financial Performance

- **FY 2024-25 :** Sanctioned ₹ 1,30,377-60 crore, disbursed ₹ 95,175-71 crore
- **Benefitted :** 2-76 lakh cooperatives & 1-27 crore members
- **Net NPA :** Zero, Recovery rate : 99-76%, Net profit : ₹ 750 crore
- **Cumulative disbursement up to March 2025 :** ₹ 4,08,376-68 crore
- **Maintained ~33% CAGR since 2015-16**

Future Target

NCDC has set a ₹ 80,000 crore disbursement target for FY 2025-26, aiming to offer accessible

Overcoming Challenges : Key challenges include low digital literacy, poor infrastructure in remote areas, and resistance to change among traditional PACS staff. These can be overcome through public awareness, training and targeted infrastructure support via multi-stakeholder collaboration.

Key Achievement and Progress

As of 30th April, 2025 :

- 45,319 PACS across 33 States/UTs are delivering CSC services.
- Transactions worth ₹ 85-70 crore have been carried out.
- CSC linkage with national PACS software is underway.
- NCCT is organizing training to equip PACS with capabilities to deliver all 300+ services.

This initiative is not just expanding access to essential services but also diversifying PACS business models, enhancing revenue, ensuring sustainability and generating rural employment.

credit and strengthen cooperative structures across India.

Strengthening Cooperative Sugar Mills (CSMs)

- ₹ 1,000 crore one-time grant received from the Ministry of Cooperation
- ₹ 10,000 crore sanctioned to 56 cooperative sugar mills
- Focus : Establishing ethanol and cogeneration plants and improving working capital

Formation of FPOs

- 1,863 FPO cooperatives formed, including 1,100 additional FPOs under the 10,000 FPOs scheme.
- ₹ 165-37 crore disbursed to FPOs and CBBOs.
- Helps in strengthening PACS and boosting rural income generation.

Boosting Fish Farmers Producer Organizations (FFPOs)

- Under PM Matsya Sampada Yojana (PMMSY) : 70 FFPOs set up; 1,000 fisheries cooperatives converted to FFPOs; ₹ 77-07 crore disbursed up to March 2025.
- Under new scheme PM Matsya Kisan Samridhi Sah-Yojana (PMKSSY) : Target to convert 2,348 fisheries cooperatives into FFPOs.

Deep-Sea Trawlers Initiative

- **Maharashtra** : ₹ 11-55 crore sanctioned for 14 trawlers and ₹ 2-89 crore released
- **Mumbai** : ₹ 37-39 crore sanctioned, ₹ 9-35 crore released for a seafood processing unit
- **Gujarat** : ₹ 18 crore sanctioned for 30 trawlers
- **Kerala** : ₹ 32-69 crore sanctioned, ₹ 20-83 crore released under Integrated Fisheries Development Project (IFDP)

Conclusion

NCDC stands as a cornerstone of India's cooperative development, delivering financial aid, technical assistance, and strategic planning across diverse cooperative sectors. With robust fiscal health and a clear roadmap for inclusive growth, NCDC continues to empower co-operatives, driving self-reliant and sustainable rural development aligned with national priorities.

NATIONAL COOPERATIVE EXPORTS LIMITED : EMPOWERING INDIA'S AGRICULTURAL EXPORTS

- **NCEL's Role** : National Cooperative Exports Limited (NCEL) is a multi-state cooperative society functioning as a nodal agency to promote and facilitate agriculture and allied exports from India's cooperative sector.
- **Establishment** : Established on 25 January 2023 under the Multi-State Cooperative Societies Act, 2002, based on a vision by Union Minister Amit Shah, to boost co-operative-led exports and achieve *Sahkar Se Samriddhi* (Prosperity through Cooperation).
- **Membership Drive** : Over 10,346 cooperative societies applied for membership; 9,425 were issued share certificates. FPOs, FPCs, and SHGs are also eligible for nominal membership.
- **Promoting Global Market Access** : NCEL provides services like procurement, storage, processing, certification, packaging, branding, and export facilitation, ensuring fair international prices for farmer produce.
- **Key Promoters** : Includes GCMMF (Amul), IFFCO, KRIBHCO, NAFED and NCDC, bringing long-standing cooperative expertise.
- **Strategic Tie-Ups** : Signed MoUs with :
 - ❑ Indian states (UP, Gujarat, Maharashtra, AP)
 - ❑ National Cooperative Organics Ltd. (NCOL)
 - ❑ MPEDA
 - ❑ International partners like Senegal (for rice) and Indonesia (for 5 Agri-products worth USD 2 billion/year)
- **Export Performance & Milestones** : 2024-25 turnover : ₹ 4,283 crore; Cumulative turnover : ₹ 5,396 crore; Exported 13-09 LMT of

rice, wheat, maize, sugar, onion, cumin; Became one of India's top rice exporters; 20% dividend distributed to members in the first year; MoU signed with Senegal for long-term partnership and opening NCEL office in Dakar

- **Roles & Functions** : Procurement from cooperatives and FPOs; Modern storage & processing (cold storage, dry warehousing); Branding & international marketing; Export logistics & compliance; Farmer education (training on quality standards and practices); Policy advocacy to align export frameworks with cooperative growth.
- **Vision & Mission** : Make India a global agri-export leader; Empower farmers through cooperatives, ensuring fair income; Promote branding, sustainability, quality assurance, competitiveness.
- **Key Challenges** : Infrastructure gaps; Market access barriers (tariffs, non-tariff measures); Lack of awareness among farmers; Global competition and supply chain coordination issues.
- **Upcoming Campaigns for IYC 2025** : Commodity seminars; Nukkad Nataks; Sahkarita Mandap at Maha Kumbh Mela 2025; Tree plantation drives and International Cooperative Day celebrations

Conclusion

NCEL is strengthening India's cooperative exports, linking grassroots producers to global markets. It plays a pivotal role in achieving the vision of inclusive development through a cooperative-led export ecosystem, ensuring that benefits of globalization reach the last-mile farmer.

NATIONAL UNIVERSITY FOR COOPERATIVES : A LONG OVERDUE INITIATIVE

Tribhuvan Sahkari University (TSU) was established through the TSU Bill 2025 during the Budget Session, with IRMA (Anand) designated as the university's campus. TSU aims to integrate, standardize, and disseminate cooperative education, training and research in India.

What are Cooperatives ?

- Cooperatives are hybrid organizations serving both economic (business) and social (service to members) purposes.
- The International Cooperative Alliance defines them as democratically controlled enterprises meeting members' common needs.
- Amul is a successful example, ensuring value for consumers and fair returns for over 36 lakh dairy farmers.
- Cooperatives promote collective action, equity, and inclusion, helping vulnerable farmers and marginalized communities.
- Recognized by ILO as tools for dignity, equity and sustainability.

Why a University for the Cooperative Sector ?

- Despite a rich legacy, India lacked a dedicated university for cooperative education.
- India has over 8.5 lakh cooperatives with 30 crore members in varied sectors.
- Cooperatives contribute significantly : e.g., 1/3rd of sugar, 1/5th of agri-credit, and 1/10th of milk production.
- IRMA was a pioneer but insufficient alone; TSU will address the capacity building, professionalization, and research needs across cooperatives.

MSCS (AMENDMENT) ACT & RULES, 2023 : STRENGTHENING GOVERNANCE AND TRANSPARENCY

The Multi-State Cooperative Societies (Amendment) Act, 2023, notified in August 2023, aims to reform and modernize the MSCS Act, 2002, aligning it with the 97th Constitutional Amendment and enhancing transparency, governance, accountability and electoral reforms in multi-state cooperatives.

Renewed Emphasis on Cooperatives by the National Government

- Ministry of Cooperation was formed in July 2021 to boost the sector.
- A 10% national increase in cooperatives; 150% rise in J&K alone.
- Maximum cooperatives: Maharashtra (27%), followed by Gujarat (10%). Top sectors: housing (23%), dairy (18%), PACS (12%).
- PACS reforms included CSC roles and computerization; over 60 initiatives launched; tax on cooperatives reduced from 12% to 7%.
- **Aim** : every Indian village to be covered by at least one cooperative in five years.

Agenda of TSU

- Named after Tribhuvandas Patel, founder of Amul and pioneer of cooperative movement.
- TSU to strengthen the rural economy, promote self-employment and build modern cooperative leadership.
- **Will offer** : Degree/diploma/Ph.D. programs; Flexible entry-exit aligned with NEP 2020; Short-term upskilling courses; Online and classroom modes.
- TSU to act as a think tank, advising policies, conducting research and fostering innovation.
- Expected to train 8 lakh candidates annually through a hub-and-spoke model across India.

Conclusion

Tribhuvan Sahkari University is a visionary step to professionalize India's vast cooperative sector. It will foster equitable, inclusive, sustainable development under the spirit of 'Sahkar Se Samridhi'. The university will position India as a global leader in cooperative education and governance, empowering millions for a resilient future.

Key Reforms Introduced :

1. Cooperative Election Authority (CEA)

- A new statutory body to ensure timely, fair, and transparent elections.
- Achievements (as of April 2025) : 146 election programs issued; 113 elections conducted; 33 under process.

- Proactive outreach to MSCS for timely elections.

2. Transparency Measures

- **Cooperative Ombudsman** : A quasi-judicial authority to handle member grievances.
- **Cooperative Information Officers (CIOs)** : Act as liaison for information dissemination and grievance redressal.
- CIOs trained in compliance, governance, and sustainability.

3. Digital Reforms

- Online submissions for applications, documents, returns and digital issuance of certificates.
- Registration time reduced from 4 to 3 months, with a 2-month extension option.

4. Inclusion and Representation

- Mandated representation in MSCS Boards : 1 SC/ST member; 2 women members (As per Article 243ZJ of the Constitution)

5. Financial Reforms and Audit Transparency

- Concurrent Audit (Sec. 70A) introduced for societies above a specified turnover or deposit.
- Audit reports of Apex MSCS to be laid before Parliament.
- Central Government empowered to set accounting and auditing standards.

- Prudential norms for credit societies to maintain financial health.

6. Strengthening Governance

- Stricter disqualification criteria for directors and longer expulsion period for misconduct (from 1 to 3 years).
- Updates to investment norms, removing colonial-era instruments.
- Establishment of : Audit and Ethics Committee; Prevention of Sexual Harassment Committee.

7. Professionalization of Leadership

- Defined eligibility criteria for appointment of CEOs to ensure competent leadership.

8. Enhanced Regulatory Oversight

- Central Registrar empowered to inquire into suspected fraudulent or illegal operations of MSCS.

Conclusion

The MSCS (Amendment) Act & Rules, 2023 are a major step in empowering the cooperative sector by ensuring clean elections, responsive grievance redressal, transparent finance, digital governance, and inclusive representation. These reforms aim to build trust, professionalism, and sustainable growth in India's cooperative ecosystem, in line with the government's vision of 'Sahkar Se Samridhi'.

NCOL : TOWARDS DEVELOPMENT OF ORGANIC AGRICULTURE

National Cooperative Organics Limited (NCOL) is a transformative initiative aimed at strengthening India's organic farming landscape by promoting sustainable practices, improving market access, and supporting certified organic farmers under the 'Bharat Organics' brand.

Role of International Organizations

- IFOAM (1974) leads global organic efforts in collaboration with FAO, UNCTAD, EU, and others.
- Global organic farming expanded to 98.9 million hectares in 2023.
- Retail sales of organic food surpassed ₹ 12.3 lakh crore.
- India leads in number of organic producers (2.36 million).

Organic Agriculture in India

- India has a rich tradition of natural farming.
- Major initiatives : NPOP (2001), PKVY, MOVCNDR, PGS certification.
- Proposed creation of 10,000 Bio-input Resource Centres (BRCs) under NMNF.

- Emphasis on reducing chemical fertilizers, promoting climate-resilient and waste-to-wealth models.

NCOL : Revolutionizing India's Organic Farming

- NCOL offers full-spectrum support: aggregation, certification, procurement, processing, branding, marketing.
- Aims to empower farmers and improve soil health by promoting chemical-free farming.
- Encourages collaboration through PACS/ FPOs to ensure inclusive growth.

Background

- Formed with ₹ 100 crore capital by NDDB, AMUL, NAFED, NCCF, NCDC.
- Markets 'Bharat Organics' via Safal, e-commerce, metro stations, and general trade.
- 100% product testing & traceability to ensure authenticity.

Vision and Mission

- **Vision :** 'Sahkar Se Samriddhi' – Cooperatives as engines of prosperity.
- **Mission :** Ensure aggregation to marketing of organic produce and promote sustainable, high-quality production across sectors including agriculture, dairy, and forest produce.

Membership : A Collaborative Ecosystem

- Open to cooperative societies and FPOs under cooperative acts.
- Focus on inclusion and collective voice of farmers.

Roles and Responsibilities

- Build knowledge repositories, promote certification, provide market access, financial support, branding ('Bharat Organics'), and infrastructure.

Society's Objectives

- Provide institutional support for the entire organic value chain.
- Identify untapped organic clusters and mentor cooperatives for wider market access.
- Disseminate organic farming technologies and practices.

Key Challenges

- Price competition with conventional farming.
- Limited credit and logistical constraints.
- Certification complexity and market access issues.
- Premium pricing deters demand in low-income segments.

Key Progress

- 5,184 cooperatives joined NCOL.

- Marketed 21 organic products, worth ₹ 167.1 lakh.
- MoUs with 8 states, NDDB, MRIDA, Mother Dairy, and NCEL.
- Introduced QR code traceability and expanded presence on platforms like Amul, Flipkart, BigBasket.

Future Directions and Vision of NCOL

1. Diversify product range under Bharat Organics.
2. Expand international market presence.
3. Offer robust financial and technical support via PACS.
4. Promote sustainability and climate-resilient practices.
5. Increase retail and online sales visibility.
6. Invest in infrastructure like cold storage and logistics.
7. Envisions to become India's largest organic food player by 2035.
8. Targets ₹ 1 lakh crore turnover including exports through NCEL by 2035.

Relevant Insights

- NCOL aligns with global sustainability goals and boosts local economies.
- Growing demand for organic products enhances both farmer income and public health.

Conclusion

NCOL stands as a pivotal force in India's organic farming revolution by offering end-to-end support to farmers, building consumer trust and promoting sustainable practices. Through strategic collaborations, robust branding and farmer empowerment, NCOL is set to shape India's leadership in the global organic agriculture sector.

WHITE REVOLUTION 2.0 : TRANSFORMING INDIA'S DAIRY SECTOR

White Revolution 2.0 is a strategic initiative launched under the guidance of the Ministry of Cooperation to modernize and strengthen India's dairy sector. It addresses issues like low productivity, unorganized milk supply chain, climate challenges and poor global competitiveness. The initiative is backed by NDDB and the proposed National Programme for Dairy Development (NPDD) 2.0.

Background

- White Revolution 1.0 (Operation Flood) under Dr. Verghese Kurien made India the world's largest milk producer.

- Today, India produces 25% of global milk, with 239.3 MMT in 2023-24, and employs 8 crore farmers.

Objectives of White Revolution 2.0

- 50% increase in cooperative milk procurement by 2028-29.
- Strengthen and expand dairy cooperatives including PACS and M-DCS.
- Empower women through leadership roles in dairy cooperatives.
- Ensure fair pricing for farmers.
- Promote sustainable and climate-resilient dairy farming.

- Boost value-added product output and export competitiveness.

Key Challenges Addressed

- Low animal productivity (6 kg/day vs 18-20 kg/day globally).
- Unorganized sector dominance (68% of milk marketing).
- Poor value addition, global trade share (<1%), and environmental sustainability.
- Lack of infrastructure, traceability and food safety in the unorganized sector.

Strategy and Implementation

- Establish 75,000 new dairy cooperative societies (DCS, M-DCS, M-PACS).
- Strengthen 46,000 existing cooperatives with modern equipment and milk collection tools.
- Annual 9% milk procurement growth targeted (vs current 6%).
- Initial funding : ₹ 40,000 per PACS/M-DCS to 1,000 societies from NDDB.
- Future funding under NPDD 2.0 through convergence of central schemes.

Empowering Women

- Women perform 60–80% of dairy-related work but remain undervalued.
- White Revolution 2.0 aims to increase women's participation, credit access, training, and leadership opportunities.

Progress So Far

- SOP launched on 19 September, 2024.
- Official launch on 25 December, 2024 with 6,600 new dairy cooperatives.
- 9,568 M-DCS registered across 28 States/UTs.

Expected Outcomes

- Enhanced market access and fair prices for farmers.
- Boosted milk production and quality.
- Strengthened organized sector presence.
- Improved women's empowerment, food safety and export potential.

Conclusion

White Revolution 2.0 is a transformative movement for India's dairy sector. It integrates technology, cooperatives, sustainability, and gender equity to ensure rural prosperity and global competitiveness.

JULY
2025

GIST **OF** **DOWN TO EARTH**

Topic : Farm to Fuel (16-30 June)
Weight of Debt (1-15 July)

MAY MAYHEM : UNPRECEDENTED EARLY MONSOON IN 2025

1. Earliest Onset in Decades

- The 2025 monsoon arrived unusually early, starting in Kerala on May 24 (a week early).
- It reached Mumbai by May 26—the earliest in 25 years, advancing from Kerala to Mumbai in just two days (normally 10–11).
- Simultaneously, Mizoram and several parts of the Northeast received rains 10–12 days earlier than usual.

2. Torrential Unseasonal Rains in May

- Even before the official monsoon began, May witnessed unusually high rainfall due to 5–7 Western Disturbances (vs. usual 1–2).
- Half of India's districts had large excess rainfall (>60% above normal) in the first week of May; rose to 61% by month's end.
- Delhi recorded its wettest May since 1901; Latur had a 2,000% rainfall surplus after starting the month in deficit.

3. Forecasting Failures

- IMD regional forecasts failed to predict extreme events (e.g., Latur receiving 264.5 mm on May 27).
- Traditional forecasts focus on daily totals, but recent events occur in short bursts (sub-daily heavy rainfall) not well predicted yet.
- Experts link this shift to global warming, which increases the atmosphere's moisture-holding capacity (7% per 1°C).

4. Scientific Explanations for the Anomaly

- Multiple overlapping factors caused the early and intense monsoon : High sea and land temperatures increased moisture levels. Frequent Western Disturbances brought moisture and instability. Equatorial Rossby waves and upper-level troughs over Arabian Sea and Bay of Bengal aided moisture transport inland. Early northward shift of the Intertropical Convergence Zone (ITCZ) indicated early monsoon onset. Dry soils in the Northeast (from pre-monsoon drought) created stronger convective activity when moisture arrived.

5. Need for Forecasting Reform

- Sub-daily rainfall events are increasing, requiring new forecasting models and early warning systems.
- Recent studies suggest the frequency of short-duration extreme rainfall events is rising, especially in central and coastal India.

Conclusion

The 2025 monsoon has rewritten the climate playbook—combining early arrival, intense rainfall and unusual weather patterns. It highlights the need for improved sub-daily forecasting models and deeper understanding of how climate change is altering monsoon dynamics in India.

RELUCTANT TO SHARE : STATES STILL WITHHOLD POWER FROM PANCHAYATS

1. Ground Reality in Villages

- Ghasera village (Nuh, Haryana) lacks basic amenities like water, sanitation and proper roads.
- Government-installed taps (2021) remain non-functional due to incomplete pipeline work.
- The village panchayat exists in name only, with no building, just 7 sanitation workers for 15,000+ people.
- Despite Gandhi's 1947 visit and promise of service, little progress is visible on the ground.

2. Constitutional Backing of Panchayats

- 73rd and 74th Amendments (1992-93) granted constitutional status to panchayats.

- States were expected to devolve powers, authority and responsibilities to panchayats as local governments.

3. Findings of the 2025 Devolution Report

- Report : "Status of Devolution to Panchayats in States" (by Indian Institute of Public Administration).
- Only 43.9% of targeted devolution achieved (up from 39.9% in 2013–14).
- Karnataka ranked highest overall, followed by Kerala and Tamil Nadu.

4. Six Dimensions of Devolution Assessed

Dimension	Top Performers	Focus
Framework	Kerala, Maharashtra, Karnataka	Legal structures : elections, reservations, SEC & SFC

Functions	Tamil Nadu, Karnataka, Odisha	Delegation of 29 subjects (like sanitation, water)
Finances (<i>most crucial</i>)	Karnataka, Kerala, Tamil Nadu	Grants, revenue powers, SFC activity
Functionaries	Gujarat, Tamil Nadu, Kerala	Infrastructure, staffing, digital connectivity
Capacity Enhancement	Telangana, Tamil Nadu, Gujarat	Training and skill-building of panchayat members
Accountability	Karnataka, Kerala, Maharashtra	Audits, transparency, citizen oversight

5. Key Challenges Highlighted

- **Low finances** : Ghasehra's panchayat has an annual income of just ₹ 50,000.

- **Inadequate training** : Most states lack regular training for elected representatives.
- **Weak accountability** : Few measures to ensure fair and efficient panchayat functioning.

6. Key Recommendations

- Recruit senior staff via State Public Service Commissions.
- Form separate commission for panchayat staff.
- Link panchayat employees to state cadre for promotions and better management.

Conclusion

Despite constitutional backing and decades of existence, Indian panchayats remain weak and underpowered, primarily due to state governments' reluctance to share authority and resources. To strengthen grassroots democracy, comprehensive reforms in staffing, funding, training, and accountability are essential.

LOOPHOLE PLUGGED : SUPREME COURT BANS RETROSPECTIVE ENVIRONMENTAL CLEARANCES

Background

On May 16, 2025, the Supreme Court struck down two key instruments issued by the Union Ministry of Environment, Forest and Climate Change (MOEFCC) that allowed *ex post facto* (retrospective) environmental clearances (ECs).

- The case stemmed from a petition by Vanashakti, a Mumbai-based NGO.
- The two quashed instruments : A 2017 notification; A 2021 Office Memorandum (OM).

What are Ex Post Facto ECs ?

- These allow projects to begin construction or operation *before* securing mandatory environmental clearance.
- This practice violates core environmental laws and legal principles.

Key Legal Findings

- EC must be preventive, not remedial. Damage done before clearance cannot be undone.
- The EIA Notification 2006, under the Environment Protection Act, 1986, mandates ECs prior to project initiation.
- Court reaffirmed precautionary principle — environmental risks must be anticipated and avoided.
- Violators (including large corporations and PSUs) knowingly broke the law and cannot be legitimized post-facto.

Past Judicial Precedents

- In *Alembic Pharmaceuticals Vs. Rohit Prajapati* (2020) and *Common Cause Vs. Union of India* (2017), Supreme Court held retrospective ECs are 'anathema' to Indian environmental jurisprudence.

MOEFCC's Questionable Conduct

- Despite previous court rulings, MOEFCC continued issuing backdoor clearances via OM.
- Draft EIA 2020 attempted to formalize retrospective clearances through Clauses 22 & 23, drawing widespread criticism.
- During the COVID-19 pandemic, MOEFCC quietly revived these clauses in the 2021 OM.
- A 2022 study by Vidhi Centre for Legal Policy found : One-third of MOEFCC's instruments from 2020–2022 diluted or reinterpreted environmental protections. Many lacked legislative authority and bypassed public consultation norms.

Constitutional Significance

- **Article 21** : Fundamental right to a pollution-free environment.
- **Article 51A(g)** : Duty of citizens and the State to protect the environment.
- Supreme Court emphasized that environmental protection is a constitutional duty of the State, not just a procedural formality.

Implications & Way Forward

- The Court barred the government from issuing any new version of the quashed instruments.
- However, it did not cancel clearances already granted under those instruments.
- The judgement restores environmental rule of law, ensuring that economic convenience doesn't override ecological justice.

- It urges MOEFCC to withdraw all vague and questionable OMs/notifications.
- Activists, lawyers and civil society must continue the fight to uphold environmental democracy.

Conclusion

This judgement is a landmark step in reasserting environmental governance and the state's constitutional responsibility. It sends a strong message that violators cannot be rewarded, and legal processes must be respected.

ANNADATA SE URJADATA : INDIA'S ETHANOL PUSH AND ITS COMPLEX TRADE-OFFS

I. From Food Provider to Energy Provider

- India is rebranding farmers from food producers to energy drivers under its ethanol blending programme.
- Political leaders and government messaging emphasize ethanol as a lifeline for farmers.
- In Shravasti (UP), farmers like Budh Sagar Maurya are shifting from wheat to maize cultivation due to better prices and subsidies under the Rapid Maize Development Programme.

II. National Ethanol Strategy and Targets

- National Policy on Biofuels (2018) targets 20% ethanol blending in petrol by 2025-26, advancing from the earlier 2030 deadline.
- Ethanol production has expanded from C-heavy molasses to now include B-heavy molasses, sugarcane juice, rice and maize.
- India's ethanol blending rate increased from 1.53% in 2013-14 to 15% in 2024, saving ₹ 1.06 lakh crore in foreign exchange and reducing CO₂ emissions by 54.4 million tonnes.

III. Rising Maize Dependency and Food Security Concerns

- Ethanol from maize surged to 42.74% of production in 2023-24 (2.86 billion litres), compared to zero before 2022.
- This caused a maize shortage, leading to 0.9 million tonnes of imports in 2024 and making India a net maize importer.
- Poultry and feed sectors suffered due to maize diversion, leading to food inflation—broiler chicken and egg prices rose significantly.

IV. Impact on Food Availability and Trade

- To meet blending targets, India would need 286.6 million tonnes of sugarcane, rice and

maize—requiring 7.1 million ha, nearly equal to all of Bihar or Andhra Pradesh.

- This raises ethical concerns in a country where over 55% people can't afford a healthy diet (UN, 2024).
- Sugar prices and exports have also been affected; multiple bans imposed due to ethanol diversion.

V. Policy Instability and Climate Risks

- Frequent policy flip-flops (e.g., bans on rice/sugar for ethanol, lifted later) reflect climate-related yield shocks and planning issues.
- A 2023 Arcus Policy Research study says India can sustainably maintain only 18% blending, not 20%, unless subsidized rice from FCI continues.
- Climate change is causing crop yield volatility, e.g., 2022 heatwave (wheat), 2023 low rains (sugarcane).

VI. Resource Competition and Hidden Subsidies

- Farmers are increasingly choosing maize and sugarcane over other crucial crops like soybean, affecting oilseed and protein availability.
- Paddy cultivated for ethanol is indirectly subsidized, increasing the food subsidy bill (e.g., paddy given to distilleries at ₹ 22.50/kg vs actual cost ₹ 39.8/kg).

Conclusion : A Tricky Trade-Off

India's ethanol blending ambition is environmentally progressive and economically impactful, but risks compromising food security, inflating food prices, and overburdening natural resources. The success of second-generation (2G) biofuels is critical, but the technology is still nascent and costly. A careful, strategic roadmap balancing food, energy and environment is essential in the climate-challenged future.

FLOOD FIX : SPONGE PARKS IN CHENNAI

Chennai, facing recurring urban floods, shrinking wetlands and erratic rainfall due to climate change, is implementing 'sponge parks' to improve stormwater management and flood resilience.

What are Sponge Parks ?

- Green spaces designed to absorb rainwater and stormwater.
- Water is either percolated into the ground or diverted to recharge aquifers/rejuvenate waterbodies.
- Similar to rainwater harvesting, but with integrated design and infrastructure.

Implementation in Chennai

- 57 sponge parks built in 2023–24, 30 more planned in 2024–25.
- Supported under central schemes : *Scheme for Special Assistance to States for Capital Investment (2022–23)*; *Jal Jeevan Mission (Urban)*, 2021–22.
- ₹ 88 crore allocated in Tamil Nadu Budget 2025–26 for 7 more parks.
- Example : RA Puram Park, includes permeable pavements, eco-block drains and filtration systems.

Challenges & Environmental Concerns

- **Soil suitability** : Chennai's clay soil limits deep percolation.
- **Stormwater quality** : Risk of microplastic

pollution if plastic-based materials are used.

- **High cost** : Setup and maintenance are expensive.
- Local conditions must be prioritized—models can't be blindly replicated from other cities.

Global Perspective

- **China** : Started Sponge City Programme in 2014; Shenzhen now harvests 70% of stormwater.
- **Copenhagen** : Re-engineered 250 public spaces post-2011 floods.
- **Germany** : Launched *Hydrotex Project* to integrate permeable surfaces and green infrastructure.

Expert Suggestions

- Improve conventional stormwater systems alongside sponge parks.
- Ensure material quality and environmental safety.
- Adapt strategies based on local soil and urban planning needs.
- Community involvement and scientific planning are key to long-term success.

Conclusion

Sponge parks represent a sustainable urban flood mitigation strategy, but their success depends on careful design, local adaptation and environmental safeguards.

THE MAMMOTH IN THE PATENT SYSTEM

De-extinction—the revival of extinct species using gene-editing and reproductive technologies—is gaining traction. The woolly mammoth is at the center of this biotech revolution, raising questions about ethics, ownership and patent rights.

Key Developments

- De-extinction technology uses DNA from fossils/museum specimens and CRISPR tools to insert traits into living relatives (e.g., elephants for mammoths).
- Companies like Colossal Biosciences, a Texas-based startup (est. 2021), are leading the charge, raising \$ 400 million in investor funding.
- Colossal claims it will release mammoth lookalikes in Siberian nature parks and has even trademarked terms like 'Mammouse' and 'Woolly Mouse' for commercial purposes.

Concerns Over Patents & Monopolies

- Colossal has filed broad patent claims—not for specific methods but for any genetically re-engineered animal with mammoth-like traits.
- Legal experts warn this could lead to monopoly over extinct species' DNA, stifling scientific research and creating unprecedented private control over 'revived' wildlife.
- Their approach echoes concerns raised in past bioscience patents, such as those on the OncoMouse and genetically modified pigs.

Scientific Critique

- Colossal's claims of re-engineering dire wolves have been debunked—genomes contain only fragments of actual dire wolf DNA.
- Scientists say the re-created species are not true revivals but genetically altered approximations.

Environmental Claims & Speculation

- Colossal argues that mammoths could help preserve permafrost, reducing greenhouse gas emissions and earning carbon credits (up to \$ 2 million per mammoth).
- The company also sees tourism potential in bringing back extinct icons like the dodo.

Conclusion

De-extinction efforts, particularly by firms like Colossal Biosciences, combine cutting-edge science, bold commercial ambitions, and intellectual property claims. However, concerns persist over scientific validity, ethical boundaries and the potential monopolization of extinct life. The broader issue : who owns the rights to life revived from extinction ?

RESTORING ENVIRONMENTAL FLOW IN THE YAMUNA

During the 2025 Delhi Assembly elections, Yamuna pollution emerged as a key concern. However, most discussions overlooked the crucial issue of environmental flow—the river's natural ability to flow, essential for its ecological health.

Key Issues

1. Fragmented River Management :

- Rivers like the Yamuna must be managed holistically—not by administrative boundaries.
- A river's longitudinal (upstream-downstream), lateral (floodplains, tributaries, wetlands) and vertical (surface-groundwater) connectivity is vital.

2. Environmental Flow Loss :

- Downstream of Hathnikund Barrage (Haryana), flow is severely depleted due to excessive water extraction for hydropower, irrigation, industry and potable use.
- As per a 2019 NIH Roorkee study, current flow (10 cumecs) is inadequate—recommended : 23 cumecs.
- Yamuna flows only 3 months/year, endangering aquatic ecosystems and self-purification.

3. Regulatory Failures :

- Laws like the Ganga (Rejuvenation) Order, 2016 and Sustainable Sand Mining Guidelines, 2016 exist but lack enforcement.
- Activities like sand mining, groundwater over-extraction and floodplain encroachment continue unabated.

Pollution Crisis in Delhi

- Delhi covers just 2% of Yamuna's catchment but contributes 79% of its pollution.
- 85% of pollution comes from domestic sewage.
- Of 790 MGD sewage generated : 550–600 MGD is treated, but often mixes with untreated sewage before reaching Yamuna via 22 drains. 21 of 37 STPs in Delhi fail to

meet standards; 16 of 33 industrial areas lack CETPs.

- Dissolved Oxygen (DO) levels in Delhi stretch are below life-supporting standards (5 mg/l).

Solutions Proposed

(A) Restoring Environmental Flow :

- Protect and restore catchments and tributaries.
- Demolish unnecessary water structures.
- Enforce laws on floodplain encroachment, sand mining and groundwater extraction.

(B) Pollution Control :

- Upgrade STPs/CETPs, improve sewage interception, desludge riverbeds and unsewered areas.
- Promote eco-friendly detergents and nature-based purification solutions.

(C) Water Demand Management :

- Delhi's water demand : ~1,290 MGD; current supply ~977–993 MGD.
- Sources : Yamuna (40%), Ganga (25%), Bhakra Dam (22%), subsurface (13%).
- Strategies : Reduce domestic usage norms, install water-saving devices, reuse treated water. Expand rainwater harvesting, fix water losses in old infrastructure. Conduct awareness workshops for public engagement.

(D) Addressing Climate Change :

- Glacial melt threatens to make Yamuna and Ganga seasonal rivers.
- Requires global carbon reduction and local water conservation, including catchment restoration.

Conclusion

A comprehensive, integrated watershed approach is crucial to reviving the Yamuna—not just pollution control. Delhi urgently needs a full-fledged water policy to ensure river health, climate resilience and water security.

THE GROSS DEPRIVED PARAMETER

As India nears a \$5 trillion GDP milestone, the questions arise whether GDP truly reflects economic well-being, especially for marginalized individuals like Sukru Ojha, a daily wage worker from Koraput, Odisha, who has remained poor despite decades of GDP growth.

1. GDP's Disconnect from Ground Reality

- Sukru Ojha, born in 1965 when India's GDP was \$ 60 billion, has seen no meaningful improvement in his life despite India's GDP crossing \$4 trillion in 2025.
- His income has decreased in recent years due to inflation and he remains largely excluded from the formal economy that GDP measures.

2. Criticism of GDP as a Welfare Indicator

- GDP measures economic activity, but ignores income inequality, informal economy and non-monetary well-being.
- It does not differentiate between constructive and destructive spending (e.g., education *vs.* pollution clean-up).

- Eric Zencey, an economist, calls GDP a 'foolish indicator' for assessing true progress.

3. Global Rejection of GDP-Only Metrics

- Even Simon Kuznets, the architect of GDP, warned in 1934 that it was not meant to assess true welfare.
- The G7 Summit (2018) and UN's 'Our Common Agenda' (2021) have called for measures beyond GDP.
- The UNEP's Inclusive Wealth Report 2023 criticized GDP for being gross, as it ignores depreciation of natural and capital assets.

Conclusion

While India celebrates its rise as the world's third-largest economy, GDP alone cannot reflect the lived realities of its poorest citizens. There is an urgent need for alternative metrics like the Genuine Progress Indicator (GPI) that factor in well-being, equity and sustainability for a more accurate picture of true national progress.

Down to Earth 1- 15 July

YET ANOTHER WASHOUT : UN OCEAN CONFERENCE & SDG 14 CHALLENGES

Backdrop : Local Crisis Mirrors Global Inaction

- Ennore (Chennai) : Once rich in mangroves and wetlands, now facing severe ecological degradation—wetlands shrunk by 70% (889 ha in 2016 to 278 ha in 2022).
- Coastal erosion and loss of biodiversity highlight local struggles to protect marine ecosystems.
- Restoration plans exist (e.g., by Tamil Nadu govt.), but lack of funds hinders execution.

UN Ocean Conference 3 (UNOC 3) : Overview

- Held in Nice, France (June 9–13, 2025).
- Attended by 175 countries to assess progress on SDG 14 (Life Below Water).
- SDG 14 remains the least funded SDG.
- Total annual investment required: \$175 billion.
- Actual global investment : less than \$10 billion (2015–2019).

Key Financial Observations

- Voluntary commitments announced at UNOC 3 are mostly repurposed funds, not new allocations.

- Official Development Assistance (ODA) declined 7.1% in 2024.
- ODA for sustainable ocean economy in 2022 was just \$3.5 billion (1% of total ODA).

Funding Mechanisms and Challenges

- **Blue Bonds** : Offer promise but risk worsening debt crises.
- **Debt-for-Nature Swaps** : Can lead to foreign oversight and restrictive investor conditionalities.
- **Parametric Insurance** : Promising, but needs reliable data infrastructure (currently lacking).
- **Global Fund for Coral Reefs (GFCR)** : Mobilised \$741 million so far (target : \$ 500 million).

Shipping Emissions Regulation

- IMO's Net-Zero Framework (from 2028) : Introduces fuel standards and emission pricing. Could raise \$10 billion/year, but lower than potential \$60 billion via carbon levy.

Overall Assessment of UNOC 3

- Despite bold declarations, actual financial support remains inadequate.

- Observers express concern that : Private sector alone cannot bridge the gap. Grants and capacity building are needed for sustainable marine conservation. Traditional investment logic risks promoting 'financial colonialism'.

Conclusion

The conference saw more talk than transformative action. While awareness has increased, funding and execution remain dismal, leaving SDG 14 and coastal communities like Ennore vulnerable and under-supported.

DEBT'S CLIMATE LINK

A Dual Crisis : Climate Emergency and Mounting Debt

- Developing countries, home to 80% of the global population, are battling climate threats and a crippling debt crisis simultaneously.
- Nauru's golden passport scheme—selling citizenship to fund climate relocation—highlights the desperate measures small nations are taking.
- Countries are forced to choose between servicing external debt and investing in climate resilience.

Alarming Debt Trends

- Global public debt reached a record \$ 97 trillion in 2023, per UNCTAD : Individuals' average share of global debt grew 61%, while income rose just 22%. Developing countries hold \$29 trillion of this debt, but their debt burden has grown twice as fast as that of developed countries since 2010.

The Burden of External Debt

- Much of developing countries' debt is external, owed to foreign creditors, making them vulnerable to currency shocks.
- Sri Lanka's 2022 economic collapse is a case in point, caused by over-reliance on foreign borrowings and depleted foreign exchange reserves.

Historical Roots & Vicious Cycles

- Debt dependence stems from the 1970s oil crisis, when Western banks funneled 'petrodollars' to developing nations.
- Rising interest rates in the 1980s led to debt traps: *e.g.*, Brazil paid \$176 billion in interest on a \$124 billion debt by 1988.

Soaring Interest, Shrinking Development Space

- **In 2023 :** \$ 1.4 trillion spent by developing nations on foreign debt servicing. 54 countries spent over 10% of revenues on interest payments. LMICs' annual external debt service bill doubled from \$182B (2013) to \$ 368B (2023). For every dollar of GNI, 2.8 cents go to external debt servicing (up from 1.8 cents in 2013).

Why Debt is so Expensive for the Global South ?

- Developing nations borrow at 2–12 times higher interest rates than the US or Germany due to biased credit ratings.
- This inequity in global financial architecture disproportionately burdens poorer countries, increasing economic and environmental vulnerabilities.

Reverse Resource Flow

- In 2022–23, developing nations paid \$ 38.5B more to creditors than they received in loans—negative net transfer.
- *E.g.* : Netherlands received \$ 7.12B more than it lent. China got \$12B more than disbursed.
- Some debts are linked to natural resource exports, *e.g.*, Chad owes \$ 1.45B to oil firm Glencore—tying resources to debt.

Conclusion

The climate-debt nexus reveals a structural injustice : developing nations contribute least to the climate crisis yet bear the highest adaptation costs while struggling under crippling debt burdens. Reforming the global financial system is essential to ensure they can serve both people and the planet, not just creditors.

SPILLOVER IMPACTS OF EXTERNAL DEBT

1. Debt Crowding Out Development Priorities

- **UNCTAD Report (2024) :** 3.3 billion people live in countries spending more on debt interest than health. 2.1 billion people live in countries spending more on debt interest than education.

● Jubilee Report (Vatican-backed) :

- Since 2015, gross capital formation in LICs is stagnant at 22% of GDP, far below the 33% average in MICs.
- Interest payments are crowding out investment in health, education, infrastructure and climate resilience.

2. Rising Cost of External Debt Servicing

- **Debt service as % of revenue (LICs)** : Rose from 5.88% in 2014 to 16.59% in 2019.
- **By 2023** : 17 countries spent more on debt service than on education. 48 countries spent more on debt service than on health. Example : Mongolia's debt service exceeded education spending by 8.2 percentage points.

3. Debt Trap and Decline in Social Spending

- **Action Aid (2023)** : Debt servicing is forcing cuts in public services and climate investments.
- **Public expenditure change (2010–2022)** : Education ↑ 38%, Health ↑ 58%, Interest ↑ 73% (fastest-growing).

4. The Debt-Climate Crisis Nexus

- **UNEP-SOAS Study** : Climate vulnerability has increased borrowing costs by 117 basis points.
- **Examples** :
 - ❑ **Dominica (2015)** : Hurricane Erika caused damages = 90% of GDP.
 - ❑ **Haiti (2023)** : Lost \$ 432 million due to climate disasters.
 - ❑ **Chad (2022)** : Paid \$ 393M in debt service (19.15% of revenue), more than 7x its health spending.

5. Severe Climate Finance Gap

- 36 LMICs face high climate risk and are in or near debt distress.
- Climate finance received (2012–2022) : \$ 7.17 billion/year.
- Climate needs : \$ 79 billion/year → 11x gap.
- In 25 climate-vulnerable nations : 70% paid more in debt service than they lost from climate disasters.

6. Structural Failures in Global Financial System

- **Jubilee Report (2024)** : Highlights lack of fair, timely sovereign debt restructuring mechanisms. LMICs suffer credit downgrades, foreign currency debt and high borrowing costs.

7. Proposed Reforms & Solutions

(a) **Multilateral Sovereign Debt Mechanism** : Supported by UNCTAD; stalled by opposition from Global North.

(b) **Debt-for-Climate Swaps** : Used in Belize, Seychelles, Barbados. Criticized for being small-scale, slow and ad-hoc.

(c) **Climate-Resilient Debt Clauses** : Allow payment pause after disasters (e.g., Barbados, Grenada). Criticized : interest still accrues, limited uptake.

(d) **Debt Sustainability Framework Reform** : Call to include climate risks, use climate scenarios for fairer assessment.

(e) **Concessional Climate Finance** : OECD data shows non-concessional finance has overtaken concessional since 2015. In 2022, 69% of total climate finance was in the form of loans.

8. Call to Action

- Debt cancellation and justice-based climate finance are essential.
- Without reforms, debt service will continue to outweigh investments in adaptation, development and resilience.

Conclusion

The convergence of external debt burdens and climate vulnerability in LMICs exposes deep systemic flaws in the global financial architecture. Without fair debt restructuring, non-debt climate finance, and reform of concessional flows, the global south risks being locked in a permanent cycle of poverty, underdevelopment and climate disaster.

THE NATIONAL CHARACTER OF INDIAN SCIENCE

India's growing confidence in its scientific and technological progress, especially in advanced fields like 5G and 6G, needs careful introspection. While celebrating achievements is important, it is equally crucial to avoid mistaking quantity—such as the sheer number of patents—for the quality of true innovation. A focus on long-term research outcomes, real-world applications and sustained investment in R&D should take precedence over superficial metrics.

False Leadership Claims in Telecom

- Union Minister Jyotiraditya Scindia claims India will lead the world in 6G, despite India lagging in 5G deployment.
- India launched 5G in 2022, three years after South Korea, with 70+ countries ahead.
- China has already established three international 6G standards via ITU, giving it a head start in setting global benchmarks.

Patent Obsession Vs. Innovation

- India boasts of rising patent applications (100,000+ granted in 2023–24), yet there's no breakthrough technology to show for it.
- No assessment exists on : The impact of these patents on science and innovation. The sectors India is truly innovating in. The relevance and utility of patents.

The Quality Question

- Bharat 6G Alliance aims to contribute 10% of global 6G patents, a target seen as numerical, not strategic.
- Focus is more on quantity over quality, with no clarity on how meaningful contributions will be made.

Historical Echo – Al-Biruni's Observation

- 11th century scholar Al-Biruni, in *Kitab al-Hind*, described Indians as : "Haughty, narrow-minded, and convinced of their own scientific superiority."

- He criticized Indians for not learning from or engaging with other cultures and for mixing scientific thought with superstition.
- His words, 1,000 years later, still resonate with present-day attitudes.

Key Takeaways

- India's scientific narrative is dominated by bravado, not substantiated innovation.
- Without introspection and global collaboration, scientific nationalism risks becoming hollow.
- The policymakers need to focus on meaningful research, infrastructure and critical evaluation, rather than vanity metrics like patent counts.

Conclusion

India needs to shift from symbolism to substance in its scientific pursuits. Instead of chasing numbers, it must build research ecosystems, encourage critical thinking and genuinely engage with the global scientific community.

TAME THE TRADE

India faces a rising threat from illegal hunting and wildlife trade, including the smuggling of exotic species and protected native fauna. Despite having laws in place like the Wildlife Protection Act (WLPA), 1972, enforcement gaps and legal loopholes persist.

Key Incidents Highlighted

- **June 2025, Assam** : Arrest of two men for hunting *egrets* (Schedule IV of WLPA).
- **May 2025, Mumbai Airport** : Indian arrested for smuggling *over 50 reptiles* from Thailand, including CITES-listed species like spider-tailed horned vipers and Asian leaf turtles.

Wildlife Under Threat

- **Pangolins** : Despite Schedule I and CITES Appendix I protection, populations may have declined by up to 90% in three generations.
- Other frequently traded species :
 - ❑ *Mammals* : Slender loris, bats, macaques.
 - ❑ *Birds* : Parakeets, grey parrots.
 - ❑ *Reptiles* : Spiny-tailed lizards, Indian softshell turtles.

These practices increase biodiversity loss and zoonotic spillover risks (Ebola, mpox, possibly COVID-19).

Gaps in Existing Legal Framework

- Wild Life Protection Act (WLPA), 1972
- Central law for wildlife protection.

- Amended in 2022 to align with CITES and regulate international trade in exotic species.

Other Laws with Gaps

- **Customs Act, 1962** : Vaguely defines endangered resources; could be updated to define and include wildlife explicitly.
- **Foreign Trade Act, Biological Diversity Act** : Need alignment with WLPA.
- **Prevention of Cruelty to Animals Act, 1960 & Pet Shop Rules, 2018** : Don't ban trade in WLPA/CITES-listed species as pets.
- **Arms Act, 1959** : Doesn't explicitly ban use of firearms in wildlife hunting.
- **Food Safety & Standards Act (FSSA), 2006** : No clear ban on sale of wild meat.
- **Bharatiya Nyaya Sanhita** : Should include offences like use of snares, baits, traps and hunting weapons.

Key Recommendations

Legal Integration :

- Harmonize WLPA with other relevant laws (Customs, Arms, FSSA, etc.).
- Update animal welfare and food safety laws to explicitly include wildlife protections.
- Ban sale of exotic and native wild species as pets in pet shops and online.

Community Engagement :

- Train and support local communities to monitor rural markets and haats for wildlife trade.

- Enforce strict penalties for bushmeat and rare animal part sales.
- Provide alternative livelihoods to reduce hunting pressures.

Conclusion

India needs to strengthen wildlife protection through :

1. Stricter, integrated legislation across sectors.

2. Enforcement in local markets and trade networks.
3. Community-based conservation and livelihood alternatives.

Such a multi-pronged approach is essential to curb illegal trade, protect biodiversity and reduce risks of future pandemics.

A GROVE REVIVED

Sirawas village in Rajasthan's Alwar district has successfully revived a degraded sacred grove (oran), named Chudasidh Adavad, through sustained community efforts over 15 years. This initiative is now inspiring replication across the region.

What are Orans ?

- Orans are *sacred groves* or community forests named after local deities or spirits.
- Known by different names across India : Devbani in Rajasthan, Devrai in Maharashtra, Sarna in Jharkhand and Madhya Pradesh, Kavu in Kerala.

The Sirawas Revival Story

- By 2010, Chudasidh Adavad was barren, overrun by the invasive *Prosopis juliflora*.
- Livestock migration was necessary due to a lack of fodder.
- KRAPAVIS, a local NGO, started a revival initiative : Community-led survey and planning (2009–11); Check dams, ponds, and grass planting to prevent soil erosion; By 2017, over 3,400 plants (*e.g.*, fig, lemon, amla) were planted; A village committee coordinated restoration; A women's group later built another pond to fix water issues.

Impact

- Supports ~2,000 animals with fodder and water.
- Locals use plant products (*e.g.*, date palm leaves) for income.
- Rich biodiversity : peacocks, hill birds, robins, etc.

- Migration of cattle herders has reduced.

Scaling the Model

- The revival is being replicated in Kalikhol village, near Sariska Tiger Reserve.
- Managed by a women's committee with help from KRAPAVIS.

Policy Gaps and Interventions

- Orans were protected by communities until the 1950s.
- Post-land reforms, many were reclassified as *revenue land*, making them vulnerable to mining, agriculture and expressway development.
- Rajasthan's 2020 Forest Policy *removed* a dedicated section on sacred groves that was included in 2010 after NGO interventions.

Judicial Push

- In December 2024, the Supreme Court : Directed identification and mapping of sacred groves in Rajasthan. Recommended a national policy for sacred grove governance. An expert committee is now working on implementation.

Conclusion

The Sirawas initiative shows how community-led restoration of sacred groves can :

- Support rural livelihoods
- Conserve biodiversity
- Preserve cultural heritage

However, scaling up requires policy support, dedicated funding, and formal recognition of orans as critical ecological and cultural assets.

A LINE OF CAUTION

Poverty Estimation in India : A Confusing Picture

No Official Poverty Line Since 2011-12 :

- Last official poverty line : based on 2011–12 consumption expenditure data.
- No updated national poverty estimate available despite the 2023 release of new consumption data.

World Bank's New Global Poverty Line :

- New extreme poverty line : \$3/person/day (2021 PPP), up from \$ 2.15.
- India's extreme poverty dropped from 27.1% (2011–12) to 5.3% (2024).
- Approx. 171 million people escaped extreme poverty in a decade.

Global Impact of India's Poverty Decline :

- Despite global poverty increasing to 838 million, South Asia saw a decline—mainly due to India.
- India's poverty drop has significantly lowered global averages.

World Bank's Categorization :

- Low-income countries : \$ 3 line.
- Lower-middle-income countries (India) : \$ 4.20 line.
- Upper-middle-income countries : \$ 6.85 line
- India's poverty declined even under higher thresholds.

Questions on Data Accuracy :

- New methodology used in India's 2023 consumption survey affects comparability.
- World Bank cautions against using global poverty lines for national analysis.
- National poverty line better reflects local realities, but India hasn't updated it yet.

Conclusion

- India's steep poverty decline is being celebrated, but it is based on methodologically shifted data, not updated official national estimates.
- Without a new poverty line, claims of 'historic' poverty reduction remain questionable.

**JULY
2025**

GIST OF SCIENCE REPORTER

Topic : Yoga in Space

SCORCHING SUMMERS AND HEALTH CONCERNS

Extreme Weather Becoming the 'New Normal'

- Frequent and intense heatwaves, floods, storms and irregular monsoons.
- Climate extremes are no longer anomalies—they indicate systemic climatic shifts.

Increased Human Vulnerability

- Heatwaves are becoming more severe year by year.
- Cold snaps are becoming more unpredictable, increasing health risks.
- Populations, especially in low-income and urban areas, are more exposed and unprepared.

Climate Change as a Public Health Crisis

- Climate issues are interlinked with public health.
- Rising temperatures can lead to : Heat strokes, dehydration; Aggravation of cardiovascular and respiratory illnesses; Vector-borne diseases (e.g., malaria, dengue) are due to water stagnation and warmer climates.

Need for Health Preparedness

- Current events are a warning signal.
- Urgent need for : Adaptation strategies in public health; Urban heat action plans; Investment in climate-resilient health infrastructure.

YOGA IN SPACE : BRIDGING ANCIENT WISDOM WITH THE FUTURE OF SPACE EXPLORATION

The Central Question

- Beyond 'how to travel in space', the key question is 'how to live in space' as humans venture deeper into the cosmos.

Challenges of Living in Microgravity

- Muscle atrophy, bone thinning, altered digestion, blood redistribution.
- Mental health issues : isolation, sensory disorientation, emotional imbalance.

Current Solutions

- Use of strength training, pharmacological interventions to counteract physical decline.
- Yet, these are often temporary or partial.

Why Yoga ?

- **Yoga offers** : Physical balance (asanas), Mental clarity (meditation), Emotional resilience (mindfulness), Breath regulation (pranayama)
- Helps maintain body-mind alignment, even without gravity (no 'up' or 'down').

Ancient Wisdom for a Cosmic Future

- As private and long-duration space missions increase, yoga could serve as : A wellness practice; A survival mechanism.
- A shift from relying solely on thrust and machines to integrating breath, posture and stillness for holistic well-being.

FROM DARWIN TO THE ISS : DECODING HOW PLANTS GROW

Darwin's Curiosity in the 1880s

- Charles Darwin studied how roots behave during seed germination.
- Noted that roots don't always grow straight down but often curve slightly.
- Wondered why roots make a turn instead of directly growing downward.

Root Functions

- Anchor the plant, absorb nutrients and respond to environmental stimuli.
- Directional growth is crucial for optimal plant health and survival.

Modern Research & the ISS

- Plant growth is now being studied in space (e.g., ISS) to understand : Gravitropism (response to gravity), Hydrotropism (response to moisture), Light and chemical cues.
- In microgravity, plants show altered growth patterns, helping scientists isolate environmental triggers.

Scientific Implications

- Ongoing research helps decode : The internal signaling mechanisms guiding root direction. How environmental conditions affect growth.
- Valuable for space farming, sustainable agriculture and climate-resilient crops.

MICROGRAVITY : THE NEXT FRONTIER FOR SCIENTIFIC INNOVATION

What is Microgravity ?

- Microgravity refers to extremely low gravity conditions, as experienced aboard spacecraft like the International Space Station (ISS).
- It's created by continuous free fall of the spacecraft toward Earth, making astronauts and objects appear weightless.

Why is it Important ?

- Microgravity offers a unique environment to study biological, chemical and physical processes without the interference of Earth's gravity.
- Crucial for scientific research and bio-manufacturing—the use of living systems to

create health, tech and sustainability-related products.

Research & Innovation Potential

- Enables deeper understanding of how cells, proteins, fluids and materials behave.
- Can lead to advances in drug development, tissue engineering, material science, and sustainable production methods.

Microgravity Simulation

- Though best studied in space, similar conditions are momentarily simulated on Earth through : Drop towers, Parabolic flights, Space analog environments.

THE COSMIC HANDSHAKE

The Big Question

- The idea of extraterrestrial life has fascinated humans, from movies like *E.T.* to statements by great scientists.
- Arthur C. Clarke noted that both possibilities—whether we are alone or not—are equally terrifying.

Scientific Perspectives

- Scientists like Carl Sagan and Stephen Hawking believed that it is highly improbable that life does not exist elsewhere in the universe.
- The sheer size of the universe, with billions of galaxies and planets, suggests a high probability of alien life.

Search for Life

- Programmes like SETI (Search for Extraterrestrial Intelligence) and space missions actively scan for signals or signs of life.
- Radio telescopes, space probes and astronomical observations are tools used in this quest.

What are We Looking For ?

- Not necessarily green aliens, but microbial life, biosignatures, or intelligent signals.
- Recent interest has grown around exoplanets in the 'habitable zone'.

SOLAR PAINTS FOR THE NEXT GENERATION RENEWABLE ENERGY

Global Energy & Climate Goals

- **Aim :** Meet rising energy demands while achieving net-zero carbon emissions by 2050.
- Solar energy is key to reducing dependence on polluting fossil fuels.

Current Scenario

- Solar panels are the most widely used method of harnessing solar energy.
- India promotes solar energy through schemes like the Free Solar Rooftop Scheme 2024, targeting 1 crore rooftop panels.

Emerging Innovation : Solar Paints

- Scientists are exploring solar paints as a next-gen renewable solution.
- Solar paints can absorb sunlight and convert it into electricity like solar panels.
- Advantages include : Low cost, Easy application on buildings, vehicles and even clothing, Potential to cover larger, irregular surfaces

Challenges Ahead

- Efficiency and durability of solar paints are still under development.
- More research and testing needed before mass adoption.

TIME : AN EMERGENT PHENOMENON

Time in Philosophy, Literature and Pop Culture

- Philosophers like Anaximander described time as apeiron—an ageless, primal substance.
- Writers and poets (e.g., T.S. Eliot in *Burnt Norton*) explore time's spiritual and abstract aspects.
- Pop culture (e.g., Doctor Strange, Infinity War) presents time as a mystical force with power over reality.
- Stephen Hawking proposed a universe with no beginning in time.

Common Understanding of Time

- Time is viewed as absolute, linear and ever-flowing.

- Associated with decay, change, movement, and progression in both nature and human life.

Scientific Inquiry into Time

- Modern physics and cosmology question the absolute nature of time.
- Time may be an emergent property—not fundamental but derived from deeper physical laws.
- Some theories suggest time could disappear at quantum or cosmic levels, implying a timeless reality.

Philosophical Questions

- Is time real or illusory ?
- Could time be just a construct encoded in our observations and measurements ?

ONE DAY ONE GENOME INITIATIVE : MAPPING INDIA'S MICROBIAL WEALTH

- Launched by : Department of Biotechnology (DBT) & Biotechnology Research and Innovation Council (BRIC).
- Announced by : Shri Amitabh Kant, India's G-20 Sherpa.
- Objective : To release one fully annotated bacterial genome every day.

Significance

- India has immense microbial diversity with applications in : Healthcare (drug discovery, disease control); Agriculture (soil

health, biofertilizers); Environment (bioremediation, waste treatment).

Expected Impact

- Accelerates genome-based research and biotechnology innovation.
- Enhances disease surveillance, personalized medicine and antimicrobial resistance monitoring.
- Fosters data-sharing and collaborative research in life sciences.

EUROPA : AN OCEAN WORLD OF LIQUID WATER

Jupiter's Moon That May Host Life

- Discovered by Galileo ~400 years ago; one of the four Galilean moons (Io, Europa, Ganymede, Callisto).
- Europa is of prime interest due to strong evidence of a subsurface liquid ocean beneath its icy crust.
- Scientists believe Europa may contain more water than Earth.

- The moon meets key conditions for supporting microbial life, including : Liquid water; Possible energy sources; Essential chemical ingredients
- Visited by six spacecraft : Pioneer 10 & 11, Voyager 1 & 2, Galileo and Juno.
- Europa is a top priority for upcoming space missions and astrobiology research due to its potential to harbour extraterrestrial life.

TECHNOLOGICAL INTERVENTION TO PRODUCE GREEN HYDROGEN

Towards Clean Energy and Climate Goals

- Rising GHG emissions, especially CO₂, have reached 413.3 ppm (NOAA), which is 50% higher than pre-industrial levels.
- Major contributors : Fossil fuels → CO₂, SO₂, NO_x, CO, and particulate matter emissions.

Urgent Need to Meet Paris Agreement goals (limit temperature rise to 1.5°C).

- Green hydrogen is emerging as a clean energy alternative to reduce emissions.
- Various sectors (academia, industry, government, NGOs) are working to :

Develop and implement green hydrogen technology; Replace fossil fuels in sectors like transportation, industry and power.

- Green hydrogen offers a sustainable and low-emission path toward net-zero targets.

FOX NUT : A PROMISING AQUATIC SUPERFOOD WITH IMMENSE NUTRITIONAL AND ECONOMIC POTENTIAL

What is Fox Nut ?

- Also known as makhana, gorgon nut, or Euryale ferox
- Aquatic plant grown in freshwater wetlands (notably in Bihar, India)
- Seeds are harvested and popped to make them edible

Nutritional Benefits

- High in protein, low in fat and gluten-free
- Rich in antioxidants, magnesium, potassium, and fiber
- Low glycemic index – suitable for diabetics
- Contains flavonoids – anti-inflammatory and anti-aging effects.

Health Benefits

- Aids heart health, digestion and blood pressure regulation.
- Enhances fertility, stamina and helps with arthritis.
- Used in Ayurveda as a natural detoxifier.

Economic Importance

- India is the largest global producer, with Bihar producing ~90%
- Supports rural livelihoods in flood-prone, wetland areas
- Included in ODOP scheme in Darbhanga (Bihar)

Challenges

- Labour-intensive harvesting.
- Lack of modern processing technology.
- Needs more research and mechanization support.

Way Forward

- Invest in R&D, processing and value chain development
- Promote public awareness and policy support
- Potential to become a global superfood and support climate-smart agriculture.