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Topic

Water and Sanitation

SWACHH BHARAT MISSION (G) & JAL JEEVAN MISSION : PAVING WAY FOR VIKSIT BHARAT @2047

Swachh Bharat Mission (Grameen) and Jal Jeevan Mission are key rural development initiatives launched in 2014 and 2019. These missions aim to improve sanitation and drinking water services, not merely through infrastructure but also by promoting participatory governance. Guided by the principles of *Sabka Saath, Sabka Vikas, Sabka Vishwas, Sabka Prayas*, they aim to trans-form public health and ensure dignity and equity in rural areas.

Sustaining the Sanitation Momentum

- SBM-G celebrated its 10th year by significantly improving sanitation and health indicators in rural India.
- The mission increased sanitation coverage from 39% in 2014 to 100% in 2019.
- The initiative created decentralized systems that empowered communities to manage their sanitation needs independently.
- SBM Phase II focused on achieving Open Defecation Free (ODF) Plus status across villages, enhancing waste management and cleanliness.
- As of 21 July, 2025, over 96% of villages are declared ODF Plus.
- Jal Jeevan Mission expanded access to clean drinking water, achieving over 15-67 crore functional household tap connections by July 2025.
- The initiative has crossed 80% rural coverage, addressing geographical and hydrological challenges across regions like Bundelkhand, the Himalayas and the Deccan.

Profound Impact

- Studies suggest universal access to safe water could reduce infant mortality by 30%, saving 1-36 lakh children annually.
- WHO projects that JJM could prevent 4 lakh diarrheal deaths, save over 5-5 crore hours of women's time and generate ₹ 8-28 lakh crore in economic benefits.
- Employment creation includes 60 lakh person-years of direct jobs during construction.
- SBM-G's efforts led to 3 lakh diarrheal deaths avoided by 2019 compared to 2014.
- Improved access to toilets enhanced safety and dignity, promoting hygiene and gender equity.

A SMART Vision for the Future of SBM-G

- The mission calls for a SMART approach :
 - ❑ Sustainability of assets and behaviours
 - ❑ Making women central to development
 - ❑ Accelerating private sector involvement
 - ❑ Re-establishing communication protocols
 - ❑ Technological and training interventions

S : Sustainability of Assets and Behaviours

- The focus is shifting from infrastructure to long-term systems management.
- Sustainable sanitation means toilets and waste systems are cleaned, repaired and monitored.
- Innovations like greywater reuse in Tamil Nadu and soak pit standardization in Rajasthan are encouraging models.

M : Making Women Central to Development

- Women are key stakeholders, leading initiatives across SBM-G and JJM.
- The mission promotes gender equality, economic empowerment and leadership opportunities.

A : Accelerating Private Sector Involvement

- Partnerships with private entities, such as GOBARDhan units and CSR-backed projects, are encouraged to enhance waste management and circular economy efforts.
- Corporate engagement models are being explored for sustainable development.

R : Re-establishing Communication Protocols

- Communication strategies focus on removing the stigma around sanitation.
- Digital tools like SBM Academy and WhatsApp-driven campaigns are being deployed to promote hygiene practices.

T : Training and Technological Interventions

- Cutting-edge training and tools for sanitation workers and local governance bodies are being prioritized.
- Real-time monitoring of toilets and waste systems is being adopted in states like Karnataka and Madhya Pradesh.

Beyond the Tap

- The Union Budget 2025-26 extended the Jal Jeevan Mission till 2028 to ensure long-term sustainability.

- Innovations like spring-shed management and rainwater harvesting are being incorporated.
- Institutional reforms aim for convergence across ministries, aligning efforts towards self-reliance and collective ownership through *Aatmanirbhar Bharat*.

This reflects how these missions are not just about infrastructure but about transforming governance, empowering women and ensuring sustainable development as India progresses toward *Viksit Bharat @2047*.

MAKING WATER SOURCES SUSTAINABLE

India's water story is being reshaped not through files but by people's action—ASHA workers, schoolchildren, sarpanches and mothers. With just 4% of global freshwater sustaining 18% of the population, India faces a call to action against erratic rainfall, over-extraction, and pollution. Bold policies, people-led movements and technology are driving the change.

The Tap that Changed Everything

The Jal Jeevan Mission (2019) has transformed rural life by providing over 15-67 crore tap connections. Beyond pipes, it empowered communities through VWSCs, with women leading water management, testing and planning. This has improved health, education, and livelihoods.

Recharging the Future

The 'Catch the Rain' campaign revives traditional wisdom with modern tools. The Jal Shakti Abhiyan focuses on rainwater harvesting, mapping water bodies, afforestation and awareness. Over 2.5 lakh Amrit Sarovars have been created/revived. *Jal Sanchay Jan Bhagidari* fosters recharge structures with community participation.

Managing Wastewater

SBM (Grameen) Phase II goes beyond toilets to manage solid and liquid waste. Greywater is reused in kitchen gardens and recharge systems. Innovative technologies like bio-remediation and DEWATS are adopted. Wastewater is now treated as a resource, not waste, supporting circular water use.

What Lies Beneath, Groundwater

The Atal Bhujal Yojana empowers communities to monitor, budget, and conserve groundwater using sensors, apps, and AI dashboards. Farmers are encouraged to adopt water-efficient cropping. This strengthens aquifers and promotes collective water governance.

The Rivers will Flow Again

Namami Gange has built sewage treatment plants, curbed effluents, and rejuvenated riverfronts. Inspired by it, smaller rivers and streams are being revived through desilting, pond restoration and afforestation, reconnecting communities with rivers.

Partnerships that Enable Change

Collaboration with SHGs, startups, CSR, and international partners ensures innovation, awareness and accountability in water management.

A Tapestry Woven by All

This is a people's movement—soak pits by ASHA workers, audits by children, ponds cleaned by sarpanches, and sustainable farming by aware farmers. India's water story is being lived, not just written.

The Road Ahead

Climate change and population growth remain challenges. But robust policies, community institutions and technology aim for a *Jal Surakshit Bharat*—safe water for every home, living rivers, resilient villages and water as a common good.

WASH FOR WOMEN, WASH FOR THE NATION

India's rural sanitation and water supply have seen a major transformation, with women emerging as leaders, custodians and change-makers. Jal Jeevan Mission (JJM) and Swachh Bharat Mission (SBM) have redefined governance and gender roles by placing women at the centre of WASH outcomes.

Women's Leadership in WASH

Traditionally burdened with fetching water and sanitation responsibilities, women faced

barriers in health, education, and agency. With Jan Bhagidari (people's participation), women are now mobilisers, decision-makers and leaders. Programmes like SBM and JJM have integrated women formally into governance frameworks, empowering them through VWSCs, SHGs and as Jal Sahiyas.

Self-Help Groups (SHGs)

SHGs manage sanitary complexes, oversee user fee collection and handle repairs. Their role

links women's economic empowerment with sustainable WASH services. Supported through SBM-G, JJM and rural livelihood missions, SHGs provide replicable models for scale.

Village Water and Sanitation Committees (VWSCs)

Both missions mandate 50% women's representation in VWSCs. Over 3.2 lakh women serve in leadership roles. Women-led VWSCs improve community contributions, water safety adherence, and grievance redressal. Example: Maa Narmada Jal Samiti in Madhya Pradesh, which is run by tribal women.

Swachhagrahis and Community Resource Persons

Women swachhagrahis lead community mobilisation for sanitation, menstrual hygiene management and awareness campaigns. Their credibility makes them effective in addressing sensitive topics. Over 3.6 lakh swachhagrahis (many women) are engaged in Phase II.

Water Revolution Led by Women

JJM has provided over 15 crore tap connections. More than 24.8 lakh women are trained in water quality testing, plumbing, and system management, making them frontline

managers of rural water supply. Women's leadership contributes directly to SDGs on health, education, gender equality, clean water, sanitation, and livelihoods.

Linking WASH to Broader Rural Development

Women-led WASH action supports multiple SDGs. Key strategies ahead include :

- Institutionalising women's leadership in VWSCs and SHGs.
- Investing in modular training and capacity-building.
- Promoting women-owned sanitation enterprises.
- Recognising and rewarding women-led initiatives.
- Ensuring convergence with health, nutrition, and livelihood programmes.

The Road Ahead

The next phase of rural WASH must shift from participation to power. Women-led development in WASH ensures inclusive, lasting change. A Jal Surakshit Bharat will emerge when every woman becomes a water warrior, sanitation entrepreneur, and hygiene champion.

A DECADE OF WASH

Water and cleanliness are central to life, dignity, health, and prosperity. Over the last decade, India has seen a silent revolution in rural sanitation and water through Swachh Bharat Mission–Gramin (SBM-G) and Jal Jeevan Mission (JJM), transforming living standards, inclusivity and public health.

Turning Point

In 2014, the Prime Minister's call for an ODF India launched the world's largest sanitation drive, building 10 crore toilets and raising sanitation coverage from 39% to 100% by 2019.

- **SBM-G Phase II** focuses on sustaining ODF status and solid/liquid waste management.
- **Impact** : 3 lakh diarrhoeal deaths avoided, child malnutrition reduced, women's dignity ensured, household savings increased, groundwater contamination reduced and child deaths averted.

In 2019, Jal Jeevan Mission (JJM) was launched to provide every rural household with safe tap water, ensuring quality, quantity and regular supply.

Community Led Transformation

Gram Panchayats and communities drive WASH change.

- **Village Action Plans (VAPs)** : Prepared and managed by Village Water and Sanitation Committees (VWSCs) with 50% women representation.
- **SBM-G Phase II** : Over 4.61 lakh villages achieved ODF Plus status with GP leadership.

Technology and Innovation

WASH services improved through technology :

- **Twin pit toilets**, plastic waste management, and SHG-led waste collection.
- **Innovations** : insulated pipes in Ladakh, solar-powered supply, floating water systems in Gujarat, IoT-based monitoring.
- **Water quality labs and vans** : 2,183 labs, mobile testing vans, and WQMIS for transparency.
- **Toilet Clinics in Bihar** : Affordable retrofitting and maintenance, engaging women SHGs.

Behaviour Change and Citizen Engagement

Infrastructure alone is insufficient; IEC and BCC campaigns like *Darwaza Band*, *Swachhagrahi movement*, *Jal Utsav* created awareness.

- Women trained to test water with FTKs (24.8 lakh trained).
- Women's groups like Jal Saheli, Jal Sakhi, and Jal Sahiyas lead water conservation and sanitation.
- Convergence with MGNREGS, NHM, and Samagra Shiksha strengthened WASH outcomes.

The Road Ahead

India's WASH goals for Viksit Bharat@2047 :

- Sustain ODF Plus Model villages.
- Achieve universal safe water access.

- Use digital tools (IoT, AI, GIS) for smart water management.
- Build the capacities of GPs, VWSCs, and rural engineers.
- Strengthen inter-departmental and Panchayat roles as service providers.

In a decade, India has moved from sanitation deprivation to dignity, water scarcity to security, and top-down programmes to community-driven development. SBM and JJM embody dignity, health, livelihoods, and participatory governance—showing what policy, people and technology can achieve together.

WASH IN SCHOOLS AND ANGANWADIS

WASH in schools and Anganwadi Centres is crucial for children's health, dignity, education, and equity. Linked with NEP 2020 and SDGs 4 & 6, the Government prioritises safe water, sanitation, and hygiene education in schools and AWCs through convergence of DoSE&L, DDWS, MoWCD, and States/UTs.

Swachhata Action Plan

- Implemented under the Samagra Shiksha Scheme (since 2018-19) aligned with NEP 2020.
- States prepare Annual Work Plans & Budgets approved by the Project Approval Board.
- Separate budget under Swachhata Action Plan (SAP) : schools get up to ₹ 1,00,000/year; minimum 10% spent on WASH (toilets, safe water, hygiene).

Behavioural Change and Community Engagement

- Behavioural change is central; campaigns include Swachh Vidyalaya, SAP, Swachhata Pakhwada and Swachhata Hi Seva.
- **Swachhata Pakhwada 2024** : 7.06 lakh schools covered; 7.43 crore students participated; 98.3% schools have drinking water, 94.7% handwashing facilities; and 97.2% schools have girls' toilets.
- **Activities** : Handwashing demos, rallies, clean school drives, poster contests. Community role through SMCs and VHSNCs for ownership.

Gender and Inclusive WASH Infrastructure

- Focus on separate toilets for girls, sanitary product availability and safe disposal to reduce absenteeism.

- Infrastructure for CWSN (children with special needs) : ramps, handrails, and adapted toilets.

Source Sustainability and Climate Resilience

- JJM and AMRUT 2.0 emphasise sustainability : rainwater harvesting, groundwater recharge, greywater reuse, soak pits, rooftop harvesting, and kitchen gardens.
- Links environmental education with sustainable practices.

Technological and Institutional Innovation

- Digital dashboards, mobile apps, and geo-tagging under Samagra Shiksha & DDWSO.
- UDISE+ and PRABANDH portal track real-time WASH data and progress.

Institutional Coordination and Government Communication

- **Whole-of-government approach** : Saturate schools with tap water. Greywater management & rainwater harvesting. Quarterly reviews (Chief Secretary level), monthly (Education Secretary level). National co-ordination via DoSE&L.

Way Forward

- Adopt a saturation approach for universal WASH in schools & AWCs.
- Prioritise : separate girls' toilets, tap-based safe drinking water, continuous running water, and rainwater harvesting.
- Convergence with multiple departments to ensure sustainability.
- WASH is not just infrastructure—it drives education, gender equality, health and equity.

EMPOWERING WOMEN AND NURTURING CHILDREN

WASH (Water, Sanitation and Hygiene) is a fundamental right and key to gender equality and child development. In India, women and girls disproportionately shoulder sanitation responsibilities, limiting education and livelihood opportunities. The Ministry of Women and Child Development (MoWCD) has embedded WASH into its schemes to empower women and ensure child well-being.

Gender Equality

- **Menstrual Hygiene Management (MHM) :** Safe facilities improve girls' school attendance and dignity.
- **Safety and Dignity :** Toilets reduce risks of harassment.
- **Time Burden :** Nearby water resource makes time for education and income generation time available.
- **Empowerment :** Women's participation in WASH committees strengthens decision-making.

Child Well-being

- **Improved Health :** Reduces diarrhoea, cholera, and typhoid.
- **Better Nutrition :** Fewer infections improve nutrient absorption.
- **Regular Attendance :** Functional toilets increase enrolment and retention, especially for girls.
- **Early Childhood Development :** AWCs promote healthy hygiene habits.

Initiatives to Integrate WASH

1. Mission Saksham Anganwadi and Poshan 2-0 : Integrates nutrition, health, early childhood care, and hygiene. Over 14 lakh AWCs cover 10+ crore beneficiaries. Hygiene education through CBEs and home visits. Infrastructure upgrades to Saksham Anganwadis with water, toilets, Poshan Vatikas. The scheme for Adolescent Girls promotes menstrual hygiene.

2. Mission Shakti (Beti Bachao Beti Padhao) : Promotes hygiene and sanitation along with gender equality. Aims to reduce school dropout among girls due to poor sanitation.

3. Pradhan Mantri Matru Vandana Yojana (PMMVY) : Encourages antenatal care and hygiene counselling during pregnancy. Supports cleaner environments for mothers and infants.

4. Mission Vatsalya : Provides for under the Swachhata Action Plan (SAP) for WASH in Child Care Institutions. States must prepare annual activity calendars for implementation.

Conclusion

MoWCD is leveraging WASH as a driver of gender equality and child well-being. Through convergence of schemes, community participation and behavioural change, efforts ensure that every woman and child gains from clean water, sanitation and hygiene facilities. Sustained commitment is vital for long-term impact.

HAR GHAR JAL

Jal Jeevan Mission (JJM) launched in 2019, aims to provide Functional Household Tap Connections (FHTC) to every rural household. It shifts water governance from government-led to community-owned, turning water into a source of dignity, resilience and empowerment.

What Data Tells Us

- As of May 2025, 15.62 crore households (80%) have piped water.
- 8 States and 3 UTs achieved 100% coverage.
- Aspirational districts improved from 7.77% (2019) to 79.13% (2025).
- Schools and AWCs coverage : 89.57% and 85.54% respectively.
- True success lies in sustainability, quality and accountability, not just coverage.

From Infrastructure to Public Service

- Functionality is measured by quantity (55 lpcd), quality (BIS 10500), and regularity.

- Challenges : source fragility, power issues, grievance redress, and weak O&M.
- Jal Jeevan Survekshan & real-time monitoring improve accountability.
- PHEDs are being reimaged as citizen-responsive utilities.

Ensuring Scheme Sustainability

Four Key Pillars :

- 1. Source Sustainability :** Aquifer recharge, watershed development, rejuvenation of traditional water bodies.
- 2. Institutional Sustainability :** Stronger VWSCs, DWSMs, SWSMs.
- 3. Financial Sustainability :** Local tariff collection, convergence funds.
- 4. Social and Environmental Sustainability :** Community participation, safe wastewater disposal.

Case Study : Kotri Village, Rajasthan

- 550 households got tap water by 2024.
- VWSC is empowered for O&M, tariff collection (₹ 11.54 lakh fund created).
- Women trained in water testing, strengthening participation.

Greywater Management

- Promoted through soak pits, kitchen gardens, wetlands.
- Example : Chirana village (Rajasthan) – DEWATS system for reuse in agriculture.

Technology as an Enabler

- Dashboards (Village, District, State levels) enable monitoring.
- IoT sensors, mobile apps, WQMIS for water quality data.
- 2,183 labs established for testing.
- 24.83 lakh women trained with FTKs.
- Citizen Corner ensures transparency.

Institutionalising Participation

- 5-14 lakh VWSCs formed, with 50% women members.

- SHGs & women's collectives handle repairs, quality testing, and tariff collection.
- **Nal Jal Mitra Programme (NJMP)** : trained field operators for daily upkeep.
- Participation ensures ownership and sustainability.

The Road Ahead

- Focus on inclusive governance and adaptive resilience.
- Address water quality issues (fluoride, arsenic, salinity) and climate-linked stress.
- Emphasise risk management, convergence, and community vigilance.
- Success depends not just on budgets but on local stewardship, partnerships and ecological thinking.

Conclusion

JJM has redefined water governance :

- Government as facilitator
- Communities as custodians
- Infrastructure as means, not end

Water is transforming from deprivation to dignity, resilience and empowerment. That is the promise and power of Har Ghar Jal.

WATER WISDOM IN ACTION

- India faces the huge challenge of securing water for 1.4+ billion people and 6.5 lakh villages.
- Water is not only a resource but also a heritage, culture and life force.
- Ancient wisdom and modern innovations together form the path for sustainable water security.

Traditional Water Wisdom

- **Communities historically built sustainable systems like** : Baolis in Rajasthan underground rainwater storage. Phad system in Maharashtra joint canal management. Zabo system in Nagaland – conservation and forest protection. Eri tanks in Tamil Nadu cascading lakes for irrigation and recharge.
- **Core principles** : Rainwater harvesting, equitable sharing, ecological protection, and community ownership.

Colonial and Post-Colonial Shifts

- British laws (riparian rights, state control) disrupted customary community water rights.
- **Post-independence** : Focus shifted to economic growth and agriculture, causing fragmented water governance.
- National Water Policy 2012 emphasised conservation, sustainability, and integrated management.

Rising Water Demand

- Water demand is projected at 843 BCM by 2025 and 1,180 BCM by 2050.
- Renewable availability is 1,126 BCM, signalling a looming crisis.

Modern Water Missions

1. **National Water Mission (2008)** : Emphasis on conservation, efficiency, integrated management.

2. **Jal Shakti Abhiyan (2019)** : Emphasis on mass movement for conservation in stressed districts :

- Expanded to Catch the Rain (2021) : “Where it falls, when it falls.”
- **2024 theme** : ‘Nari Shakti se Jal Shakti’ – women as leaders in water governance.
- **Outcomes** : 1.71 crore structures built, 139 crore saplings planted, ₹ 1.17 lakh crore mobilised.

3. **Jal Sanchay Jan Bhagidari (2024)** :

- **Target** : 1 million recharge structures but achieved 1.8 million.
- **JSJB 2.0 (2025)** : target doubled to 2 million.
- **Innovative models** : community recharge, school rainwater harvesting, and low-cost structures.
- Backed by government schemes, CSR and crowdfunding.

Technological and Institutional Innovations

- GIS mapping, dashboards, and hydrological data for planning and monitoring.
- 712 Jal Shakti Kendras as hubs for awareness and guidance.
- Water Use Efficiency (BWUE) : Reducing footprints across sectors.

Guiding Principles

- **5R Mantra** : Reduce, Reuse, Recycle, Recharge, Respect.

- Emphasis on community participation, women's leadership, and blended traditional-modern approaches.

Conclusion

India is building not just water infrastructure but a national movement of resilience and renewal. Every recharge structure, every village effort and every citizen's participation strengthens climate resilience, livelihoods and life itself.

FROM TOILETS TO TAPS

- The journey from toilets to taps is more than infrastructure—it is transformational.
- **Impacts** : public health, gender equity, rural development, and empowerment, especially for women and girls.
- WASH (Water, Sanitation, Hygiene) is fundamental to health, livelihoods and sustainability.

Swachh Bharat Mission-Grameen (SBM-G)

- Launched on 2 October, 2014, the goal is to eliminate open defecation by 2019.
- India declared ODF (Open Defecation Free) on 2 October, 2019, 11 years ahead of the SDG 6 target.
- **Achievements** : 10+ crore toilets built, mass behavioural change campaigns, community mobilisation.
- **Innovations** : Twin-pit toilets, in-situ waste treatment.
- **Women Empowerment** : Rani Mistris, CLTS trainers, Nigrani Samitis.
- **Outcomes** : Privacy, safety, dignity for women and reduced waterborne diseases.

Jal Jeevan Mission (JJM)

- **Launched** : 15 August, 2019, goal : Functional Household Tap Connections (FHTCs) for all rural households.
- **Progress** : 17% coverage in 2019 → 80-98% by July 2025 (~15-68 crore households).
- **Socio-economic impact** : Saves ~5.5 crore hours daily, frees women for education, livelihoods, and leadership.
- **Gender focus** : Improves menstrual hygiene, childcare and WASH decision-making for women.

Community Participation (Jan Bhagidari)

- Village Water & Sanitation Committees (VWSCs) manage planning, operations, maintenance, and water quality testing.

- SBM-G uses Swachhagrahis and Nigrani Samitis for behaviour change campaigns.
- Integration of SBM-G and JJM promotes a holistic WASH ecosystem, including grey-water management.

Conclusion

- Toilets provide dignity and safety, taps provide health and empowerment.
- The journey exemplifies public health improvement, gender equity and rural development.
- Lessons from this journey inform future sustainable development initiatives.
- Reflects India's ethos : 'Cleanliness is next to godliness' and 'Water is life'.

Making Every Drop Count

- Jal Jeevan Mission (JJM) is transforming rural India's drinking water scenario from infrastructure delivery to community-led management.
- Focus : sustainable, safe, affordable, and reliable water at every household.
- Recognises water as life, livelihood, and a social resource, historically managed via wells, baolis, tanks, and Tanka systems.

Historical Context and Challenges

- Traditional water systems sustained generations but faltered due to population growth, over-extraction, water contamination issues (fluoride, arsenic, salinity) and climate variability.
- Previous programmes (ARWSP, NRDWP) improved access but lacked sustainable service delivery and community ownership.

Governance and Institutional Framework

- Water is a state subject, but the 73rd Constitutional Amendment empowered Gram Panchayats (GPs) and Village Water & Sanitation Committees (VWSCs) for planning, implementation, and O&M of water supply.

- JJM places local governance at the center, integrating people, policies, and partnerships for sustainable water management.
- Digital monitoring platforms ensure transparency and accountability.

Key Principles of JJM :

1. **Service Delivery over Infrastructure :** Ensure 55 LPCD of safe water per household.
2. **Source Sustainability :** Promote local recharge, greywater management and water conservation.
3. **Local Governance :** Empower GPs and VWSCs as custodians of water systems.
4. **Water Quality Monitoring :** Train communities using Field Test Kits (FTKs) and sub-district labs.
5. **Capacity Building :** Train Panchayat members, youth, and women as Nal Jal Mitras for O&M and livelihood.
6. **Community Engagement (Jan Andolan) :** Promote ownership, responsible water use, and participatory governance.

Convergence with Other Programmes

- MGNREGS, SBM-G, JSA: Catch the Rain, NRLM, POSHAN Abhiyaan, ICDS and

education programs integrated for holistic rural development.

Impact and Outcomes

- **Health :** Prevents ~400,000 diarrhoeal deaths; saves 14 million DALYs; USD 101 billion economic gain.
- **Gender and Social Empowerment** Saves 5.58 crore hours daily, mostly women's time; increases participation in education, agri-culture, and income generation.
- **Community Ownership :** Villages manage, maintain, and sustain water systems, reducing downtime and improving service reliability.

Future Roadmap

- **Transition to utility-based governance :**
 1. **Micro-utilities :** Village-level infrastructure managed by GPs & VWSCs.
 2. **Macro-utilities :** State/regional-level management of larger infrastructure.
- Requires political commitment, capacity building, behavioral change and citizen participation.
- **Vision :** Self-reliant, water-secure rural communities, ensuring every drop counts for generations.

IEC AND BEHAVIOUR CHANGE

- Lasting change in Water, Sanitation and Hygiene (WASH) is driven not just by infrastructure but by behavioural change.
- Flagship programmes—Swachh Bharat Mission (SBM-G) and Jal Jeevan Mission (JJM)—demonstrate how communication acts as invisible infrastructure, sustaining change over the long term.
- Guided by Jan Andolan (people's movement), IEC/BCC (Information, Education, Communication/Behaviour Change Communication) is central to success.

Role of Communication

- India's WASH revolution relies on adaptive, multi-layered IEC strategies: community mobilisation, interpersonal communication (IPC), folk art, street plays, social media, and mass media.
- Focused on local relevance, cultural resonance, and behavioural reinforcement.
- 4 P's driving success: People, Political Leadership, Public Funding, Partnerships.

Behaviour Change in SBM-G

- **SBM-G Phase I (2014) :** Not just toilet construction; the largest behaviour change campaign globally.

- **Tools :** Community-Led Total Sanitation (CLTS), Participatory Rural Appraisal (PRA), Swachhagrahis, celebrity campaigns, folk performances, children as change agents.
- **Achievements :** ODF declaration (2019), adoption of safe sanitation as a social norm.
- **SBM-G Phase II :** Focus on sustaining ODF outcomes, solid-liquid waste management (SLWM), gender-sensitive and inclusive communication and digital/hybrid outreach.

Behaviour Change in Jal Jeevan Mission (JJM)

- IEC promotes community ownership, service-level awareness, and sustainability.
- **Core strategies :** Har Ghar Jal messaging emphasizing health, dignity and time savings, especially for women and girls. VWSCs engage in planning, monitoring, and management. Capacity-building workshops, programme materials, social media campaigns, and school-based initiatives.
- Initiatives like Jaldoots (students), Jal Sakhi/Jal Sahiya (women leaders) foster grassroots participation and behavioural change.

Innovations and Campaigns

- **Darwaza Band/Dobara** : Reinforcing toilet use.
- **Swachh Sundar Shauchalaya** : Aspirational toilets through wall art.
- **Saucha Singh mascot** : Friendly sanitation messaging.
- **Swachhata Hi Seva & 100-Day Campaign**: Volunteer-driven sanitation drives.
- **Jal Utsav and Azadi Ki 75 Kahaniyan** : Cultural storytelling for water awareness.

Inclusivity and Accountability

- Gender-sensitive, disability-inclusive messaging ensures no one is left behind.

- Focus on behavioural nudges, social norms, gamification, and real-time monitoring for accountability.
- Communication moves beyond awareness to service ownership, sustainability and community-led monitoring.

Conclusion

- IEC/BCC is the core driver of lasting WASH outcomes, complementing infrastructure.
- By mobilising communities, women, children, and local institutions, India has turned intent into impact, ensuring ODF-sustained villages and Har Ghar Jal through informed, empowered citizens.

LIGHT HOUSE INITIATIVE (LHI)

Light House Initiative is a collaborative effort led by the Department of Drinking Water and Sanitation (DDWS), India Sanitation Coalition (ISC), and corporate partners.

- **Phase 1 (2022)** : Focused on 75 Gram Panchayats (GPs) as 'Light House' models to demonstrate sustainable, community-driven sanitation.
- **Phase 2 (2024–25)** : Scaling impact to 43 Blocks across 37 districts in 14 States/UTs, aligning with SDG 6-2 for equitable sanitation access by 2030.

Phase 1 Highlights

- Demonstrated localised models driven by community participation; convergence of government schemes and targeted innovations
- **Success Stories** :
 - ❑ **Andhra Pradesh** : Six GPs adopted Rs 1 daily user fee for waste collection, achieving 90% source segregation.
 - ❑ **Nadimapalem GP** : Won the Healthy Gram Panchayat Award for self-sustainable solid waste management.
- **Key Lessons** : Importance of institutional capacity, funding alignment and grassroots ownership.

Phase 2 Objectives and Approach

- **Goals** : Demonstrate the ODF Plus Model at the Block level; Strengthen decentralized governance and local capacities; Leverage corporate expertise, innovative technologies and sustainable O&M models.
- **Methodology** : Community leadership by SHGs, VWSCs and local champions; Technology integration for monitoring and operations; Adoption of user-fee models to

ensure sustainability; Inclusive and equitable approach for marginalized groups.

Case Studies and Innovations

- **Khankitta GP, Bihar** : ITC's Mission Sunehra Kal transformed sanitation through IEC/BCC, community ownership, and SLWM systems.
- **Malthan & Dahiwadi GPs, Maharashtra** : SHG-led waste management integrating livelihood promotion with sanitation.
- **Mithoi GP, Gujarat** : Nayara Energy supported toilet retrofitting, wastewater systems, skill-building and behaviour change campaigns.
- **Darlaghat & Dabhota GPs, Himachal Pradesh** : Terrain-sensitive SLWM interventions with user fees improved hygiene and community participation.
- **Paschim Chayagaon GP, Assam** : Tata Trusts supported composting, soak pits, and wastewater reuse for agriculture.

Deliverables and Expected Impact

- 43 Blocks as model ODF Plus ecosystems.
- Sustainable SLWM practices via active community engagement.
- Corporate partners provide technical support and bridge funding.
- Strengthened national roadmap toward Sampoorna Swachhata (total, inclusive, lasting sanitation).

Conclusion

LHI exemplifies community-led, partnership-driven, and innovation-backed sanitation transformation. Phase 2 scales successful models, institutionalizes sustainability and ensures inclusive, resilient and self-sufficient rural sanitation systems. The initiative reinforces India's journey toward total sanitation, health, dignity and community empowerment.

**SEPTEMBER
2025**

**GIST
OF
KURUKSHETRA**

Topic

Skill, Employment and Social Security

FOSTERING JOBS, BUILDING BHARAT : ELI SCHEME AS A GAMECHANGER

The Employment Linked Incentive (ELI) Scheme is designed to generate employment, enhance employability, and extend social security, with a special focus on the manufacturing sector. It incentivises both employees and employers, ensuring equitable economic opportunities and driving inclusive growth.

Extant Job Scheme Scenario

India has moved from broad-based employment programmes to more skill-focused interventions. The Skill India Mission (SIM) and 36 Sector Skill Councils (SSCs) already work to enhance employability, but ELI goes beyond skilling—it directly links incentives with actual job creation and formalisation.

ELI Scheme : A Brief Overview

Descriptions	Details
Objective	Focus on manufacturing, job creation, employability, and social security
Budget Outlay	₹ 99,446 crore
Scope & Scale	Pan-India, target 3-5 crore jobs in 2 years
Duration	01.08.2025 – 31.07.2027
Major Outcome	Job creation & formalisation, social security for crores

Key features : Demand-driven skilling, accountability of the private sector in job creation, official job registration and incentives tied to sustained employment.

Strong Framework and Structuring Success

The scheme has two parts : 1. Incentive to First-Time Employees, 2. Support to Employers.

Incentive to First-Time Employees		
S.No	Dimensions	Descriptions
1	Beneficiaries	1-92 crore first-time EPFO registered employees
2	Eligibility	Salary up to ₹ 1 lakh/month
3	Incentive	One-month EPF wage (max ₹ 15,000) in 2 instalments + financial literacy

Support to Employers		
S.No.	Dimensions	Descriptions
1.	Target & Scope	2-6 crore additional jobs; focus on manufacturing
2.	Eligibility	Sustained employment (6 months), EPFO registration, and minimum new hires
3.	Incentive Particular	Up to ₹ 3,000/month per additional employee for 2 years (4 years in manufacturing)
4.	Payment	DBT to PAN-linked accounts

United Stakeholders : One Vision and One Mission

Implementation involves multi-agency coordination – Labour, Finance, Revenue, EPFO, NIC, UIDAI, NPCI, auditors, employers, employees with focus on technology-driven monitoring, Aadhaar-PAN-GST integration, fraud detection, and grievance redressal.

Fixing Roadblocks with Resolutions

Possible challenges include fake employee records, salary under-reporting, attrition, DBT failures, low awareness, weak training delivery, and monitoring gaps. Suggested resolutions :

- Aadhaar-PAN-GST cross-verification
- Salary data audits
- Employee retention rewards
- Technology-led DBT validation
- Awareness campaigns via MSME offices, trade unions, and social media
- Strong AI-based monitoring and audits

Concluding Remarks

The ELI Scheme is a targeted tool linking monetary benefits to actual job creation and retention, bridging the gap between skilling and real employment. With strong monitoring, data integration, and stakeholder collaboration, it can deliver 3-5 crore jobs and strengthen India's workforce for sustainable growth.

UNORGANISED WORKERS AND SOCIAL SECURITY MEASURES : AN OVERVIEW

- Over 90% of India's workforce is engaged in the unorganised sector, contributing nearly 50% to GDP.
- Despite this contribution, workers remain marginalised, facing poverty, exploitation,

job insecurity and a lack of social protection.

- To address these issues, the Code on Social Security, 2020 was enacted, expanding benefits to unorganised, gig and platform workers.

Who is an Unorganised Worker ?

- It is defined under the Unorganised Workers' Social Security Act, 2008.
- Includes home-based, self-employed, wage workers in the unorganised sector, and workers in organised sectors not covered under specified Acts.
- **Categorised into four groups :** 1. Occupational (farmers, beedi workers, artisans, etc.). 2. Nature of Employment (casual, bonded, migrant, contract labourers). 3. Distressed Categories (toddy tappers, scavengers, load carriers, etc.). 4. Service Categories (domestic workers, vendors, barbers, etc.).

Problems Faced by Unorganised Workers

- Low wages and lack of allowances/benefits.
- Job insecurity due to the casual/seasonal nature of work.
- Exploitation and lack of protection from unions and laws.
- Deprivation of basic amenities (sanitation, housing, education).
- Use of traditional techniques, no access to modern technology.
- Poverty and indebtedness, making them vulnerable.

Code on Social Security, 2020

- Consolidates multiple labour laws into one framework.
- Expands coverage to unorganised, gig, and platform workers.
- Provides social benefits beyond wages, including life cover, pension, health, and maternity support.

Government Measures for Unorganised Workers

Life and Disability Cover :

- **PMJJBY :** ₹ 2 lakh coverage; premium ₹ 436. (18.58 crore enrolled till Nov 2023).
- **PMSBY :** ₹ 2 lakh accidental death/total disability; ₹ 1 lakh partial disability; premium ₹ 20.
- Together, over 23.6 crore enrolments by April 2025.

Pension Schemes :

- **Atal Pension Yojana (APY) :** Launched in 2015, it ensures a defined monthly pension (₹ 1000–₹ 5000).
- **7.65 crore subscribers :** ₹ 45,974 crore corpus (April 2025). Women constitute 48% subscribers.
- **PM-Shram Yogi Maandhan (PM-SMY) :** Launched in 2019, provides ₹ 3000 monthly

pension at 60 years. 30.51 crore workers registered (December 2024). The government matches worker's contribution.

Health and Maternity Benefits :

- **AB-PMJAY :** Health insurance up to ₹ 5 lakh per family. Expanded in 2024 to cover ASHA, Anganwadi workers, and 6 crore senior citizens. 365 million Ayushman cards issued so far.

Food Security :

- Public Distribution System (PDS) & One Nation One Ration Card (ONORC) ensure food access to poor & migrant workers.

Welfare Schemes :

- **PM SVANidhi Yojana :** Loans up to ₹ 30,000; benefitted **68 lakh vendors** by June 2025.
- **Self-Employment Scheme for Rehabilitation of Manual Scavengers :** One-time cash assistance, training, stipend.
- **PM Vishwakarma Yojana :** 2.37 million artisans registered for financial and skill-building support.
- **PM Garib Kalyan Anna Yojana :** Free food-grains to 81 crore people (Budget ₹ 11.80 lakh crore till 2028).

Challenges :

- Coverage gaps due to awareness and eligibility issues.
- Financing constraints for universal coverage.
- Administrative fragmentation across ministries.
- Informal employment relationships, difficult to track contributions.
- Digital divide, excluding vulnerable workers.

Achievements :

- 68 lakh loans sanctioned under PM SVANidhi.
- 30.86 crore workers registered on E-Shram Portal (53% women).
- Social protection coverage doubled from 24.4% (2021) to 48.8% (2024).
- 24.8 crore people exited multidimensional poverty in the past decade.

The Way Forward

- Universal registration linked with Aadhaar.
- Portable benefits for migrant workers.
- Simplified contribution mechanisms for irregular income earners.
- Awareness campaigns to educate workers about entitlements.

- Multi-stakeholder funding models to share costs.
- The measures mark a structural shift

towards inclusive growth, in line with the vision of "Sabka Saath, Sabka Vikas, Sabka Vishwas, Sabka Prayas."

GRAMODAY 2.0 : FROM SKILLS TO SELF-RELIANCE

Gramoday 2.0 envisions a transformative framework where rural communities move beyond survival to self-reliance, powered by sustainability, skills and grassroots participation.

Rural Roots to National Success

- Daspara, Tripura** : India's first self-sustaining bio-village; solar power, biogas, organic farming, and skill-based livelihoods raised incomes by more than ₹ 5,000.
- Dhudmaras, Chhattisgarh** : UN-recognised best tourism village; combines eco-tourism with renewable energy. Local youth lead kayaking, homestays and crafts, blending tradition with modernity.
- Together, these models showcase villages thriving on both sustainability and self-reliance.

From Vision to Reality

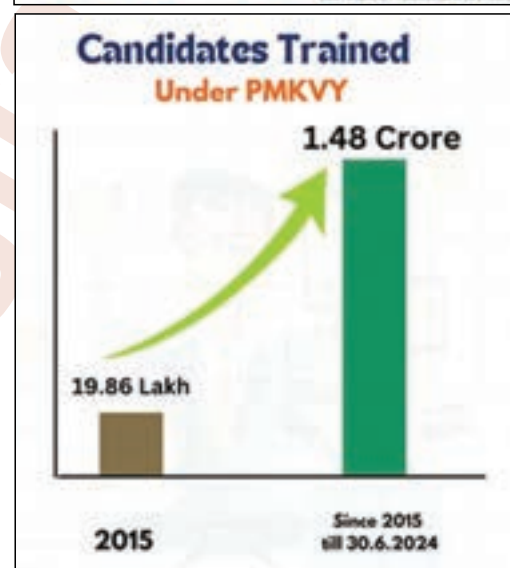
- Gramoday 2.0 is inspired by Mahatma Gandhi's Gramoday to Rashtroday and carried forward by leaders like Nanaji Deshmukh and Pandit Deendayal Upadhyaya.
- Core values** : Self-reliance, sustainability, grassroots empowerment and inclusive growth.
- It focuses on building resilient, community-driven rural ecosystems that integrate tradition with modern skills.

Skills as a Key to Self-Reliance

- Flagship MoRD schemes (MGNREGA, Mission Antyodaya, DAY-NRLM, DDU-GKY, RSETIs) are central to empowering rural youth and women.
- Deen Dayal Upadhyay-Grameen Kaushal Yojana (DDU-GKY)** : Placement-linked training for poor rural youth.
- Rural Self-Employment Training Institutes (RSETIs)** : District-level training institutes run with banks, offering entrepreneurship and livelihood skills.
- Over 56.6 lakh trained via RSETIs and 17.5 lakh under DDU-GKY, with major focus on SCs, STs, women, and persons with disabilities.

Bridging the Skill Divide

- MSDE programmes** : PMKVY, JSS, NAPS, ITIs, and NSDC initiatives align training with market demand and Industry 4.0.



- Partnerships with IBM, Cisco, Microsoft, AWS, Intel bring advanced skills in AI, IoT, Robotics and Cybersecurity.
- SIDH (Skill India Digital Hub) integrates education, skilling and jobs, raising youth employability to 51.25% in 2024.

Digital India at the Village Doorstep

- CSCs expanded from 83,000 (2014) to 5.5 lakh (2025), covering 90% of villages.
- Provide Aadhaar, banking, insurance, telemedicine, education and agricultural services.

- Women Village-Level Entrepreneur (VLEs) (74,000+) play a key role.
- Launch of free AI training for 10 lakh people to equip rural communities with advanced digital skills.

Women as Rural Entrepreneurs

- **SHGs** : 10 crore women across 91 lakh groups; goal of 3 crore Lakhpati Didis.
- **Initiatives** :
 - ❑ **MoRD-MSDE MoU (2025)** : Focuses on structured skilling, entrepreneurship, market access.
 - ❑ **Bima Sakhi** : SHG women as insurance facilitators.
 - ❑ **Namo Drone Didi** : 15,000 SHGs equipped with drones for modern farming.
- Women-led enterprises enhance incomes, leadership, and social cohesion.

Incentivising Jobs, Securing Futures with ELI

- **Employment Linked Incentive (ELI) Scheme** : ₹ 99,446 crore budget, 3-5 crore jobs in 2 years.

GREEN TECHNOLOGY FOR SUSTAINABLE RURAL JOBS

Green technology is reshaping rural employment, boosting renewable energy, driving circular economy initiatives, improving healthcare, empowering MSMEs, and creating eco-conscious tourism opportunities.

Employment Growth and Opportunities in India's Renewable Energy Sector

- India employed 1.1 million people in renewables (2025), mainly in hydropower, solar, wind, and biomass.
- Solar jobs grew from 16,800 (2017-18) to 1.6 lakh (2025).
- **Flagship Initiatives** : National Solar Mission, Suryamitra Skill Programme, PM-KUSUM, National Green Hydrogen Mission, PM Surya Ghar, PLI for Solar PV.
- Decentralised solutions (microgrids, solar pumps, bioenergy) create rural jobs and reduce migration.
- **Projection** : By 2026, full-time equivalent (FTE), jobs of 1 million in solar sector and 1.8 lakh in wind sector.
- Renewable jobs empower women, youth and local entrepreneurs.

Lessons from the Smart Cities Mission

- Smart Cities Mission (2015) completed 7,555 projects worth ₹ 1.5 lakh crore by May 2025.

❑ **Part A** : First-time EPFO workers get up to ₹ 15,000 wage incentive.

❑ **Part B** : Employers get up to ₹ 3,000/month per worker (4 years in manufacturing).

- Complements PMAY-G (2.69 crore houses), PMGSY (rural roads), and NSAP (social security).

Financial Inclusion at the Core

- **Jan Suraksha Saturation Campaign (July-Sept 2025)** : 100% enrolment in PMJDY, PMJJBY, PMSBY, and APY.
- Enrolment (till June 2025) : 29 lakh (APY), 92 lakh (PMJJBY), 194 lakh (PMSBY), 194 lakh PMJDY accounts opened
- Promotes financial literacy, insurance, pension, and fraud prevention awareness.

Conclusion

Gramoday 2.0 is a unified national mission, combining skills, jobs, digitisation, women's empowerment, and social protection. It transforms CSCs into digital hubs, SHGs into economic units, and youth into change agents—making rural India a driving force of Viksit Bharat.

- **Integrated green tech** : Solar, rainwater harvesting, waste-to-energy, energy-efficient lighting.
- Promoted sustainable mobility, healthy public spaces and food safety.
- Provides models adaptable to rural areas for green entrepreneurship and job creation.

Mission LiFE : Circular Economy and Green Technology for Rural Livelihoods

- Circular economy in 11 waste streams (plastic, e-waste, C&D, tyres, used oil, etc.).
- Potential to create 33 lakh new jobs on top of 50 lakh existing ones.
- Green tech like waste-to-energy, bio-methanation, and plastic-to-fuel supports rural micro-enterprises.
- The Extended Producer Responsibility (EPR) framework formalises the informal waste sector and boosts income.

Strengthening Rural Healthcare : A Green-Tech Path to Sustainable Employment

- The healthcare sector is expanding at 7-10% annually, with a 2.7 million workforce gap.
- Green-tech innovations in healthcare telemedicine, solar clinics, mobile health units, AI diagnostics can expand access to healthcare.

- Expanding health workforce generate 5.4 million jobs (2021–25) and add ₹ 3,429 billion annually to national income.

Nationwide Skill Ecosystem Fueling Green Employment

- Skill Council for Green Jobs (SCGJ) developed 44 qualifications, trained 5 lakh+ candidates (1 lakh in solar/renewables).
- SCGJ's Green India Portal streamlines certification.
- State-level PPPs (e.g., Andhra with Schneider, Maharashtra ITI upgrades) expand training.
- Equips rural youth with skills in solar, AI, clean mobility, waste management.

Smart Manufacturing and Recycling: Driving Green Growth Through MSMEs

- MSMEs accounts for 90% of manufacturing, key to India's \$ 7.5 trillion economy goal.
- Focus on smart manufacturing, clean-tech (solar, EV batteries, wind, electrolyzers).
- Recycling every 10,000 tonnes of waste creates 115 jobs.
- PPP-led centres train workers in automation, robotics, and AI.
- Creates jobs across repair, refurbishment, recycling, and clean-tech production.

Eco-Conscious Tourism : A Green Employment Engine in Rural India

- Post-pandemic surge : 18 million visitors in Himachal (2024); Kerala eco-tourism thriving.
- Growth in wellness, rural and spiritual tourism.
- Jobs in hospitality, guiding, wellness, handicrafts, and homestays.
- Industry status for tourism could unlock finance and boost rural livelihoods.
- Projects like eco-tents in Araku Valley, homestays in MP integrate sustainability with rural jobs.

Building a Green Workforce : Skills, Professions, and Training for India's Sustainability Transition

- Demand is rising for energy auditors, engineers, ecologists and green entrepreneurs.
- Training and certifications (LEED, ISO 14001, IITs, TERI) equip professionals.
- Jobs are spreading across renewables, agriculture, transport, forestry, waste and eco-tourism.
- India achieved 50% clean energy capacity in 2025 (242.8 GW non-fossil), 5 years ahead of target.
- Green jobs promotes economic growth with environmental protection, paving the way for a resilient, inclusive future.

THE SUCCESS OF 'DIGITAL INDIA' IN RURAL INDIA

Digital India has brought transformative changes in rural India by improving connectivity, innovation, education, skill development, employment and entrepreneurship. Villages are now part of India's digital revolution through large infrastructure projects, digital platforms, and targeted training programmes.

Digital Transformation in Panchayats

- Over 2.6 lakh Gram Panchayats are going digital. Technology ensures transparency, service delivery, and citizen-government communication.

Expanding Connectivity

- **BharatNet** : 2.18 lakh Gram Panchayats connected via 6.92 lakh km optical fibre.
- **4G/5G expansion** : 4.74 lakh towers covering 99.6% of districts, 1.16 billion people connected.
- Rural internet growth outpacing urban; 55% of India's active users now rural.
- National Broadband Mission 2.0, Wi-Fi hotspots, and satellite services are strengthening access.

A Climate of Innovation

- Startups, AI, Blockchain, IoT research reaching villages.
- Apps like UMANG, e-Panta, and e-Sahmati deliver governance, crop insurance, and market linkages.
- 60% of Indian internet content is now in regional languages.
- **Examples** : Yaktan (Sikkim – digital nomad village), Akodara (Gujarat – digital payments), Harisal (Maharashtra – smart village).

Better Skills, Holistic Education

- **PMGDISHA** : 6.39 crore rural people trained in digital literacy.
- **Education schemes** : SWAYAM, PM e-Vidya, National Digital Library, Bhashini (multilingual digital access).
- 94.2% rural households have mobile phones, enabling online learning.
- CSCs now function as community as well as vocational training centres.

Employment Opportunities

- Digital India enabled rural BPOs, IT support, content creation, and e-commerce.
- UPI 10+ billion monthly transactions (record 70.7 crore in a single day, August 2025).
- Over 4.36 lakh CSCs in villages are creating jobs for local youth.
- Women's internet use is at 47%, narrowing the gender gap and opening new opportunities.
- Gig economy jobs in cloud, AI, and cybersecurity are emerging in villages.

Promoting Rural Entrepreneurship

- Digital tools enable artisans, farmers, and SHGs to access markets via e-commerce, WhatsApp, and Facebook.
- Schemes like Startup India, PLI and Make in India boost rural businesses.
- NASSCOM Women Entrepreneurship Programme trained 1 lakh women; 83% rural enterprises are now independent.
- Agri-tech apps and tourism startups expand rural income sources.

INDIA-UK FTA : FROM FARM GATE TO PREMIUM SHELVES

The India-UK Comprehensive Economic and Trade Agreement (CETA), signed in July 2025 marks a historic trade milestone. It provides duty-free access for 99% of Indian exports to the UK, boosting bilateral trade (currently \$56 billion) with a goal to double by 2030. The pact strengthens India's farm sector, promotes value-added exports, safeguards sensitive products and supports inclusive growth.

Key Benefits for India's Rural Economy

- **Farmers and Fisheries :** Duty-free access for more than 95% of agricultural and processed food exports (grapes, rice, onions, honey, shrimps, spices, mango pulp, pickles, etc.).
- **Rural Prosperity :** Better prices at the farm gate, incentives for packaging, certification, and diversification.
- **Job Creation :** Across farms, fisheries, food processing, textiles, leather and MSMEs.

Transition in Agriculture : Volume to Value

- The Agriculture sector covers 1,437 tariff lines (14.8%); processed food 985 lines (10.1%).
- Tariff elimination could boost agri-food exports by 50% in 3 years.

Some Examples of Digital Expansion

- **BharatNet :** 2.18 lakh panchayats connected.
- **PMGDISHA :** 6.3+ crore villagers trained.
- **UPI :** 1,867 crore transactions in April 2025 worth ₹ 24.7 lakh crore.
- **CSCs :** 4.36 lakh in villages (78% of total).
- UPI supported 6.5 crore merchants.

Clear Policies and Direction

- Internet users grew from 19% (2015) to 66% (2025).
- Mobile ownership : 15% to 78% growth in a decade.
- Key policies : Digital India Act, Digital Personal Data Protection Act, National AI Mission.
- India is now a global leader in digital payments and inclusive digital governance.

Conclusion

Digital India has bridged the digital divide, empowered rural citizens, boosted financial inclusion, and created new jobs. Though challenges of skills and awareness remain, India is well-placed to become a global IT hub. The 'Tech Decade' (2020s) aims to make IT contribute \$1 trillion to the economy, with rural participation as its backbone.

- Niche exports (tea, coffee, spices, mangoes, marine products) to gain premium UK market access.
- States like Maharashtra, Gujarat, Punjab, Kerala, Karnataka, UP and the NE states are to benefit.

Competitiveness Boost

- Indian exports are now at par with the EU, South Africa, Turkey, Canada and Vietnam.
- Key gains in grapes, processed foods, sauces, preserved fruits/vegetables, bakery items, and seafood.
- Helps small and marginal farmers mitigate domestic price volatility.

Fisheries and Marine Exports

- **Current exports :** \$ 8.09 billion globally, but only \$ 104 M to the UK.
- **UK marine market :** \$ 5.4B, India's share is just 2.25%. FTA removes tariffs (4.2–21.5%), unlocking shrimp, tuna and seafood potential.
- Benefits coastal fisherfolk and boosts women's employment in processing units.

Plantation and Oilseeds

- Duty-free access for tea, coffee, spices; stronger position in instant/value-added coffee.

- Oilseed exports gain competitiveness with reduced tariffs and streamlined trade.

Safeguards for Sensitive Products

- No tariff cuts for dairy, edible oils, sugar, cereals (wheat, maize, millets), many fruits & vegetables, pork, chicken, eggs.
- Protection ensures small farmers and domestic producers remain shielded.

Inclusive Growth & Wider Impact

- Encourages women, youth, MSMEs and startups to join global value chains.

- Promotes sustainable practices and innovation.
- Indian professionals benefit from a 3-year exemption from UK social security payments.

Conclusion

The India-UK FTA is a growth catalyst for rural India, shifting agriculture from local to global, volume to value. With wider UK market access, job creation, and strong safeguards for sensitive sectors, the pact ensures that India's farmers, fisherfolk, and MSMEs share the gains of global trade.

AI-ENABLED DIGITAL SKILLING FOR RURAL INDIA

Linkage Between Skills, Empowerment, and Social Security

Digital and AI-enabled skills are empowering rural communities by providing access to formal jobs, self-employment, and entrepreneurship. These skills not only enhance income opportunities but also facilitate access to social security benefits like health insurance, pensions, and financial inclusion. This transforms vulnerability into resilience and fosters social and economic inclusion.

Government Initiatives Driving Change

The Skill India Mission and schemes like PMKVY 4.0, NAPS, JSS and SOAR are driving digital skilling, with special focus on AI, cybersecurity, and emerging technologies. Efforts include personalized AI-powered learning, industry partnerships, women-focused skilling, and vocational training. Initiatives like BharatNet, Digital India and PMGDISHA have expanded rural connectivity and digital literacy, though challenges remain.

Bridging the Digital Divide Through AI Skilling

Despite progress, only 25% of rural households are digitally literate compared to 61% in urban areas. PMGDISHA, CSCs, and state-led programs like AI Pragya aim to close this gap. Yet, participation in AI skilling remains limited, with only 1 in 5 youth accessing such training, highlighting a major opportunity gap.

Women at the Forefront of Digital Empowerment

AI-enabled skilling helps rural women overcome barriers to mobility and literacy. Women are entering entrepreneurship in e-commerce, digital services and AI-enabled agriculture. Closing the gender gap in digital access could add **\$700 billion** to India's GDP. Examples include women in Jharkhand developing AI models for crop disease detection, marking a shift from passive beneficiaries to active innovators.

AI-Driven Agricultural Advisory Systems : Securing Livelihoods and Social Protection

AI-powered platforms like Digital Green's chatbot and Krishi AI provide farmers with location-specific advisories on crop selection, pest control, and climate resilience. These tools improve productivity, reduce crop losses by up to 30% and protect farmers' incomes by reducing dependence on middlemen while connecting them to markets.

Conclusion

AI-enabled digital skilling is not just a technical upgrade but a tool of social transformation. It empowers rural communities with bargaining power, financial security, and dignity. To ensure inclusivity, sustained investment in affordable internet, local language AI tools, and inclusive policies is crucial. With the right ecosystem, AI can uplift millions of rural Indians, making them entrepreneurs, innovators and leaders.

**SEPTEMBER
2025**

GIST OF DOWN TO EARTH

Topic

- **Cleaning up Coal (1-15 September)**
- **By Consensus (16-31 August)**

DOGGED DISRUPTION

Rise in Conflict

The decline of vultures in India due to diclofenac use in the 1990s has led to dogs replacing them as dominant scavengers. At sites like Jorbeer, Keru in Jodhpur and Bhadariya oran in Jaisalmer free-ranging dogs disrupt vulture feeding, reducing their efficiency by up to 30%. Fenced carcass sites show better vulture attendance, while open sites are dominated by dogs.

Threat to All Species

With food security and territory, dog populations are growing rapidly. Free-ranging dogs now act as top predators, hunting wild species like chinkara, nilgai blackbuck, and preying on vulnerable birds like Sarus cranes. They also spread diseases such as rabies, distem-

per, and parvovirus, threatening both wildlife and humans. India reports nearly 5,726 human rabies deaths annually, mostly from dog bites. Dogs even outnumber tigers in several reserves, intensifying risks.

Control is Crucial

India has banned toxic NSAIDs and launched vulture conservation programs, including breeding and feeding centres. For dogs, NTCA has issued SOPs for capture, vaccination and sterilisation. The Supreme Court has mandated sterilisation and release, though experts call for stricter measures like relocation or sheltering, especially near wildlife areas. Some conservationists suggest population control through neutering, relocation, or even culling in extreme cases to restore ecological balance.

DISASTER ZONE

Daily Disasters in the Himalayas

- In 2025, the 13 Himalayan States/UTs faced disasters on 221 of 230 days, the highest in four years.
- At least 632 people have died so far this year.
- Disasters are rising : 63% of days in 2022, 68% in 2023, 70% in 2024, and 96% in 2025 (till August 18).

Climate Drivers

- Western disturbances—storms that usually affect India in winter—are now occurring in summer, intersecting with the monsoon trough and intensifying rainfall.
- Climate change has warmed the high Himalaya faster than global averages, increasing moisture in the air and triggering intense rainfall.
- Steep valleys and moraine-filled catchments turn even modest rainfall into cascading landslides, debris flows, and flash floods.

Case Studies of 2025 Disasters

- **Dharali & Harsil (Uttarakhand)** : Flash floods from glacial moraine surges buried markets under 12 m of debris, with more than 70 people missing.
- **Mandi (Himachal Pradesh)** : A Cluster of nine cloudbursts in July caused 400–600% above-normal rainfall, killing 280+ and destroying infrastructure.

Warnings Ignored

- Previous floods (2013, 2018) had already signaled Dharali's risk.
- Locals' demands to halt riverbed construction and clear drainage went unheeded.
- Building protective walls created false security, encouraging more construction in fragile zones.

Gaps in Prediction and Response

- IMD has improved cyclone forecasts, but cloudbursts and mesoscale storms remain hard to predict.
- The Himalayas lack enough radars and weather stations for real-time monitoring.
- Night-time disasters and poor communication systems worsen risks.

Recipe for Safer Development

- Halt large projects in fragile zones until holistic geological and hydrological studies are done.
- Enforce hazard mapping to keep flood paths free from settlements.
- Strengthen early warning systems, real-time monitoring of dams, glacial lakes and catchments.
- Relocation must be dignified and lasting, not token payouts.
- Adopt sustainable development, avoiding encroachment, deforestation and haphazard construction.

Core Message

The Himalayan crisis is a mix of climate change impacts and reckless human activity.

Technology and forecasting help, but without responsible governance and sustainable development, disasters will keep escalating.

POWER PARADOX

Promise Vs. Reality

- In drought-hit Chitradurga and Tumkur (Karnataka), solar parks bring wealth to big landowners through lucrative leases but cause displacement and livelihood loss for smallholders, landless labourers and pastoralists.
- Farmers are pressured to lease land due to a lack of irrigation and poor development indicators.

Case Studies

- **Bedareddyhalli** : Farmer Nagaraju's land repeatedly floods after nearby solar park construction; compensation denied.
- **Pavagada Solar Park (2,050 MW, 5,235 ha)** : Land leased from 2,300 farmers at low rates. Promises of model villages, jobs, and power supply remain unfulfilled. Most jobs go to outsiders; locals are reduced to security or cleaning roles. Grazing lands are fenced off, forcing farmers to buy fodder. 72% of residents have migrated due to loss of livelihoods.

Social and Environmental Impacts

- **Traditional survival systems dismantled** : women's collection of herbs, fuelwood, grasses, etc. has vanished.

- Rising child marriages are linked to loss of land and migration.
- Food security threatened—solar on cropland could reduce production (example: China study showing huge losses).

Policy Gaps

- Solar/wind parks are exempt from Environmental and Social Impact Assessments under current law.
- India's renewable push ignores justice frameworks—deployment is haphazard, without safeguards for the poor.

Bigger Picture

- India needs 5,000–8,000 GW of solar power capacity to meet net-zero goals (current capacity : ~150–200 GW).
- Agricultural land use is unavoidable, but fair compensation, community benefits and sustainable planning are essential.
- Without justice-centered frameworks, solar expansion risks deepening inequality and threatening rural livelihoods.

Core Message : Solar power is vital for India's climate goals, but the current model is prosperity for a few, displacement for many. A just and equitable transition is urgently needed.

NEED NOT BE A DIRTY AFFAIR

Background

- Coal-fired thermal power plants are the largest source of CO₂ emissions globally.
- In India, coal contributes to ~75% of electricity demand (223 GW capacity).
- Despite renewable growth, supply remains intermittent; coal remains critical for energy security.
- Electricity demand is projected to double by 2031-32, with coal capacity rising to 307 GW by 2035.

Key Challenges

- Projected addition of 262 GW thermal capacity would result in 1,100 million tonnes of CO₂ by 2031-32.
- No emission intensity reduction targets among top 15 thermal power generators.
- 66% of the fleet still runs on inefficient subcritical technology.

- Misaligned policies : Rigid Power Purchase Agreements (PPAs) and Merit Order Dispatch system that ignores efficiency/emissions.
- Biomass co-firing and flexibility targets are largely unmet.

Opportunities for Emission Reduction

- Decarbonisation can reduce more than 30% CO₂ emissions (423–433 MT) by 2031-32—more than cement and steel combined.
- **Efficiency improvements** : Older plants can perform well; younger plants often underperform. Benchmarking and Renovation & Modernisation (R&M) are needed.
- **Advanced technologies** : Supercritical and ultra-supercritical plants can cut emissions by 16–24%.
- NTPC's Tanda Unit in Uttar Pradesh demonstrated 20% biomass co-firing.

- Better operations and maintenance can improve the subcritical fleet significantly.

Policy Interventions Needed

1. Efficiency Benchmarking and R&M for all underperforming units.
2. Dispatch Reforms – prioritise efficient plants, not just cheapest coal.
3. Revamp PPAs – link payments to efficiency and emissions.
4. Set clear emission intensity reduction targets.
5. Flexibilisation – integrate renewables by upgrading automation and ramping ability.

6. Coal cess repurposing – direct revenue to clean technology and efficiency.
7. Accurate demand forecasting – avoid overbuilding coal capacity.

Conclusion

- Coal will remain central to India's power sector for the next decade.
- Decarbonisation is possible through efficiency, biomass co-firing, technology upgrades, and smarter policies.
- Aligning demand, dispatch and policy reforms can cut emissions significantly while ensuring energy security.

PROMISE IN PIECES

Global Talks Collapse on Plastic Treaty

The resumed fifth session of negotiations in Geneva (August 2025) to finalise a legally binding global plastic treaty ended in failure. Despite expectations to conclude the process initiated in 2022 under UNEA resolution 5/14, no agreement was reached.

Deep Divisions and Stalled Progress

Work was divided among four contact groups, but discussions became bogged down in excessive proposals, line-by-line disputes, and debates over obligations. Even established principles like the waste hierarchy were questioned. Only 3 of 32 articles progressed.

Finance : A Rare Bright Spot

Some flexibility was shown in finance talks, with proposals for compensation funds, remediation support for small island states, and public-private partnerships. Yet, these were overshadowed by deadlocks on single-use plastic bans and product design.

Immediate Rejection of the Chair's Draft

The Chair's compromise text of August 13 left bans optional, kept product design vague, and made producer responsibility voluntary. Over 80 countries rejected it outright as it weakened the original mandate of binding global action.

Consensus Under Fire

The talks exposed the flaw of consensus-based decision-making, where a few powerful,

fossil fuel-linked states used their veto to block progress. Critics argue a weak treaty would have been worse than no treaty, since plastic pollution is a transboundary problem requiring uniform global rules.

What Next ?

Reform of decision-making—through hybrid consensus-plus-voting models—may be essential. History shows other treaties have overcome such deadlocks, but unless this process evolves, a global plastic treaty risks irrelevance.

Failed Attempts Timeline

- **2022 Nairobi** : UNEA agrees to negotiate a treaty.
- **2022 Punta del Este** : INC-1 launches process.
- **2023 Paris** : INC-2 fails to agree on the zero draft.
- **2023 Nairobi** : INC-3 requests revised draft.
- **2024 Ottawa** : INC-4 shows partial convergence.
- **2024 Busan** : INC-5-1 fails.
- **2025 Geneva** : INC-5-2 repeats failure.

Conclusion : The Geneva failure underscores both the urgency of tackling plastic pollution and the fragility of multilateralism. Without reform, entrenched interests may stall the treaty indefinitely, but the crisis demands relentless pursuit of a global solution.

RICH PICKINGS FROM ORPHAN DRUGS

Misleading Term, Big Profits

The term 'orphan drugs' can mislead: instead of being neglected, these medicines for rare diseases have become highly profitable,

thanks to generous incentives in the US, EU, and other countries. The number of approved orphan drugs in the US has surged to nearly 900, with over 50% of FDA approvals in 2024 targeting rare diseases.

Rare Diseases and India's Gap

Rare diseases affect a small fraction of the population: fewer than 200,000 people in the US, or under 5 per 10,000 in the EU. India lacks precise data but considers diseases affecting up to 500,000 people as orphans for regulatory purposes. India's National Policy for Rare Diseases (2021) provides limited financial support (₹ 50 lakh per patient), benefiting only 1,118 patients despite 63 diseases being notified.

Incentives and Initiatives

The government recently launched the Birsa Munda Prize (up to ₹ 10 crore) to encourage drug development for sickle cell disease, in collaboration with AIIMS. While modest by international standards, this is a significant step for neglected diseases.

Global Examples

Countries like Thailand and China provide strong support for rare disease research through national registries, tax incentives, market exclusivity, accelerated approvals and insurance coverage, improving access and affordability.

High Costs and Limited Access

Big Pharma dominates the market with orphan drugs like Ibrutinib (\$ 13.1B), Elexacaftor (\$9B), and Olaparib (\$ 5.7B). Prices are extremely high—many exceed \$100,000/year, and gene therapies can cost \$1–3 million, making access difficult for patients.

Way Forward

India's efforts are limited and while initiatives like the Birsa Munda Prize are commendable, comprehensive policies and incentives are needed to improve research, drug accessibility and affordability for rare disease patients.

ROAD TO NOWHERE : HUMAN-WILDLIFE CONFLICT IN INDIA

Historical Perspective

Initially, human-wildlife conflict (HWC) was largely ignored, and wildlife laws like the Wildlife (Protection) Act, 1972 (WLPA) were focused on protecting animals, treating human casualties and property loss as collateral damage.

Shift in Conservation Paradigm

Over time, WLPA amendments (1991, 2003) prioritized animal rights over human rights, granting unrestricted movement to wild animals and imposing strict penalties even for driving them away. Dangerous species can rarely be killed, even after repeated attacks on humans or livestock. Every inch of India is now considered a wildlife corridor, restricting development and increasing risks to people.

Consequences

- India now has thriving populations of tigers, elephants, leopards and rhinos.
- But the **human cost is high** : 1,510 deaths in 2022 alone, thousands maimed and wildlife-

related agricultural losses estimated at ₹ 2,30,500 crore annually.

- Government policies often ignore the economic and safety costs to local communities.

Critique and Solutions

- Current conservation prioritizes animals over humans, violating constitutional rights to life and property.
- Suggested approach : 1. Set aside land specifically for wildlife conservation. 2. Confine dangerous animals to forests, culling or managing those that stray. 3. Treat wildlife as a natural resource benefiting people, combining sustainable tourism inside PAs with controlled consumptive use outside.

Conclusion : Wildlife conservation must balance animal protection with human well-being, shifting from a moral absolutism to a sustainable, people-centered approach.

MISSION-DRIVEN APPROACH TO CLIMATE, BIODIVERSITY AND COASTAL PROTECTION

Environmental Challenges

Tamil Nadu faces unique environmental pressures due to its long coastline and dense urban settlements, with 14 of 38 districts being coastal. Key challenges include :

- Extreme weather events and cyclones.
- Urban heat islands and flooding, especially in north Chennai.
- Rising sea levels and coastal erosion.

Climate Resilience Measures

- **Nature-based solutions** : Restoration of wetlands, mangroves, and creeks to act as natural buffers.
- **Pallikaranai marsh and Ennore mangrove restoration** : 200,000 mangrove saplings planted; ~3,625 ha of mangrove habitat restored over four years.

- **Bio-shields** : Multi-species coastal plantations (casuarina, cashew, palmyra, mangroves) mitigate cyclones and erosion.
- **Fishbone channel technology** : Restores tidal flows in intertidal zones.
- **Community participation** : Village mangrove councils manage nurseries, plantations and monitor ecosystem health.

Biodiversity Protection

- **Expansion of protected areas** : Notification of Dugong Conservation Reserve, Slender Loris Sanctuary and Agasthyamalai Elephant Reserve (~300,000 ha).

- **Species revival programs** : Nilgiri Tahr reintroduction, species-specific conservation centers for migratory birds, turtles, dugongs and seagrass.
- **Youth and community engagement** : Green Fellowship Programme trains young professionals in ecological monitoring and mission-driven conservation.

Conclusion

Tamil Nadu combines scientific, community-led, and nature-based strategies to build long-term climate resilience, restore ecosystems, curb coastal erosion and safeguard biodiversity while integrating human livelihoods.

ARE HUMANS BEYOND THE LAWS OF EVOLUTION ?

Disconnection from Nature

- Humans are increasingly disconnected from nature, a phenomenon termed the 'extinction of experience'.
- Professor Miles Richardson (University of Derby, UK) quantified this disconnection, finding a 60% decline in human connection to nature since 1800.
- Measurement was done using the frequency of nature-related words (e.g., river, blossom) in literature over generations, reflecting cultural engagement with nature.
- The decline accelerated post-1850 with industrialisation and urbanisation.

Human Dominance and Planetary Impact

- Humans have become the dominant force on Earth, producing objects that outweigh all living beings, adding a massive burden on the planet.
- This dominance has triggered the Sixth Extinction and unprecedented human-driven climate change.

Evolution and Human Exception

- Evolution traditionally operates via natural selection, where adaptation ensures survival.
- Humans, however, have circumvented natural selection through science, medicine, and societal systems, reducing biological pressures like disease and predation.
- Stephen Jay Gould noted that humans have not biologically evolved in tens of thousands of years, instead shaping culture and civilization with unchanged bodies and brains.

Conclusion

Humans now decide their own survival and evolution, largely outside natural evolutionary pressures. The only existential threat left is self-imposed choices, such as declining reproduction, rather than environmental or natural selection forces.

16-31 August

ICJ ADVISORY OPINION ON CLIMATE CHANGE : A STATUTORY FRAMEWORK

Key Highlights

- On July 23, 2025, the International Court of Justice (ICJ) issued an advisory opinion stating that countries driving climate change are legally responsible for their emissions.
- The opinion reinforces the principle of common but differentiated responsibilities under international law, highlighting the historical responsibility of developed nations.

- It clarifies that obligations under UNFCCC, human rights law, Montreal Protocol, and other environmental treaties are legally binding.

Legal Consequences

- Violations constitute internationally wrongful acts, triggering obligations such as : 1. Cessation of harmful actions. 2. Assurances of non-repetition. 3. Reparations to affected states (restitution, compensation, satisfaction).

- Developing countries, including Small Island Developing States (SIDS) and Africa, disproportionately suffer climate impacts despite minimal emissions.

Implications

- Strengthens the legal and moral basis for climate action, influencing COP30 negotiations.
- Increases accountability for major emitters, including emerging economies like India,

particularly on coal use, emissions targets, and fossil fuel subsidies.

- Expected to boost climate litigation globally, as courts increasingly address climate inaction by governments and corporations.
- Highlights the integration of climate litigation with domestic and international law, emphasizing precautionary, polluter-pays, and intergenerational equity principles.

MICRO MENACE : THE HIDDEN HEALTH COSTS OF PLASTICS

Key Findings

- Plastics contain chemicals like PDBE, BPA, and DEHP, which cause endocrine disruption, infertility, cancer, cardiovascular issues and neurodevelopmental disorders.
- Global health costs of just these three chemicals are \$ 1.5 trillion, enough to vaccinate every newborn for 200 years.
- Nearly 75% of the 16,000+ chemicals used in plastics have never been tested for toxicity.

Health Impacts

- Exposure affects pregnant women, infants, and children, leading to miscarriage, low birthweight, reproductive deformities, delayed lung development, chronic illnesses and cancer.
- Microplastics and nanoplastics are now found in human blood, organs and newborn meconium. They may cause cellular toxicity and act as carriers for pathogens.

- Plastic pollution contributes to disease spread (mosquito-borne illnesses) and antimicrobial resistance.

Production and Environmental Impact

- Plastic manufacturing releases over 2 gigatonnes of CO₂ annually and harms communities near petrochemical plants.
- Less than 10% of plastic is recycled, leaving 8 billion tonnes polluting the environment.

Solutions and Recommendations

- Treat plastic chemicals with regulatory oversight akin to pharmaceuticals.
- Implement global bans on harmful plastics, safe product design, financial realignment for a just transition and adaptable treaty measures.
- Adopt the One Health approach, protecting humans, animals and ecosystems collectively.
- Global Plastics Treaty negotiations must prioritize human health alongside environmental concerns.

SOFT TARGETS : RENEWABLE ENERGY Vs. PASTORAL LIVELIHOODS IN LADAKH

Project Overview

- **Location** : Skyang-Chu-Thang, Changthang plateau, Ladakh (4,657 m altitude, 175 km from Leh).
- **Scale** : India's largest hybrid renewable energy park—9 GW solar + 4 GW wind, covering nearly 20,000 ha.
- **Cost** : ₹ 60,000 crore; part of India's plan to reach 500 GW of renewable energy by 2030.
- **Infrastructure** : Ladakh Green Energy Corridor-II (713 km) to transmit electricity to Haryana.

Impact on Local Communities

- **Nomadic herders** : 270 families, over 50,000 goats, sheep, yaks; 7,000 families rely on pashmina production.
- **Livelihood threat** : Grazing lands and centuries-old pastoral knowledge at risk; no legal land rights or compensation.

- **Social disruption** : The project may require 60,000 workers (25% of Ladakh's population), straining water, waste, and eco-systems.

Concerns and Controversies

- **Environmental risks** : AC transmission lines may increase land use and ecological damage.
- **'Green grabbing'** : Land allotted without free, prior, informed consent; indigenous rights ignored.
- **Lack of transparency** : Details on environmental clearance, tender conditions and guarantees for herders remain opaque.

Attempts at Mitigation

- Consideration of agriphotovoltaic models (solar panels elevated for grazing), but costs are high; no formal commitments to herders.

FORGED CONSENSUS : FINANCIAL INCENTIVES AND PANCHAYAT ELECTIONS

Concept and Implementation

- **Samras Gram Yojana (Gujarat, 2001) :** Panchayats encouraged to elect candidates by consensus rather than contesting elections.
- **Financial incentives :** Villages receive grants (₹ 3 lakh to ₹ 16 lakh) for opting for consensus mode; additional incentives for women-led panchayats.
- **Spread :** Adopted by Gujarat, Madhya Pradesh, Andhra Pradesh, Telangana, Punjab, Haryana and Himachal Pradesh; around 10,000 panchayats in India have benefited.

Criticism and Concerns

- **Undemocratic practices :** Dominant individuals, local elites and officials influence consensus; weaker sections and marginalized groups (SC/ST, Dalits, women) are often excluded.
- **Manipulation and coercion :** Reserved seats are often used to ensure unopposed elections; sometimes, elections are 'auctioned' to secure financial incentives.

- **Impact on participation :** Reduces voter engagement and political competition; threatens accountability and social justice.
- **Limited financial benefit :** Incentives account for only 10–20% of annual panchayat budgets and may be misused.

Legal and Academic Perspectives

- **Constitutional concerns :** Elections by consensus conflict with Articles 243C and 243K regarding panchayat composition and election authority.
- **Research findings :** Studies show consensus elections decrease the representation of marginalized groups and weaken democratic decentralization.
- **Judicial response :** High Courts and the Supreme Court have largely upheld such elections, raising concerns about election integrity.

Conclusion

Financially incentivizing consensus undermines democracy, accountability and inclusive governance at the grassroots level, despite claims of efficiency and harmony.

REIGN OF FIRE : JHARIA COALFIELD

Persistent Coal Fires

- Jharia coalfield in Jharkhand has been burning for over a century, causing smoke, land subsidence and fatalities.
- Mining began in 1916; the first official fire was recorded the same year. Fires have rendered large areas unsafe for habitation.
- Underground fires have destroyed an estimated 37 million tonnes of coal; 220 billion tonnes remain unmineable.

Human Impact

- Thousands of residents, including Sarju Bhuiyan and his family, continue to live in hazardous conditions, reluctant to relocate due to fear of losing jobs and livelihoods.
- Casualties occur due to land collapses and accidents in active mines.

Rehabilitation Efforts

- Jharia Master Plan (2009) aimed to relocate residents from 595 hazardous sites covering 25.7 sq km; the plan expired in 2021.
- Construction of resettlement colonies (Belgaria and Karmatand) is slow; facilities

like water, healthcare, schools, and employment remain inadequate.

- The new revised plan (2025) allocates ₹ 5,940 crore for skill development, livelihood grants and credit support, but effectiveness is questioned.

Administrative Challenges

- Bharat Coking Coal Limited (BCCL) uses scientific interventions to control fires, but large-scale underground fires and land subsidence persist.
- Residents lack proper documentation, transportation, and compensation, making relocation uncertain and insecure.

Conclusion

- Despite repeated government interventions, Jharia's fires, unsafe conditions and slow rehabilitation continue to threaten lives, livelihoods and long-term regional development.
- Advocates demand comprehensive surveys, judicial oversight, adequate compensation, and planned urban development to secure the future of affected residents.

HEALING MINDS : THE SAMVEDANA INITIATIVE IN DURG, CHHATTISGARH

Background

- Launched in Durg in 2022 by then district collector Pushpendra Kumar Meena.
- Builds on his earlier work in Kondagaon (2020), where he treated ~2,500 people through door-to-door campaigns.
- Aims to identify, treat and support mental health patients, especially in underserved rural areas.

Programme Features

- Door-to-door surveys covering 0.3 million households to detect mental health issues.
- Healthcare team : Doctors, PHC/CHC staff, ASHAs, and Mitans.
- Offers counselling, treatment, awareness campaigns, workplace stress management, suicide prevention, and life-skills training.
- Collaborates with NIMHANS for training healthcare workers.

Impact

- Over 10,000 patients treated under Samvedana.

- In 2024-25, 65,601 patients received mental health care in Durg; rural PHCs and CHCs handled more cases than the district hospital.
- Cases include Major Depressive Disorder, OCD, schizophrenia, with significant improvement reported.

Mental Health Context

- Chhattisgarh has a high mental health burden : 11.7% prevalence Vs. 10.6% national average.
- COVID-19 and socio-economic factors increased cases.
- Lifetime prevalence : 14.06%, treatment gap : 88.6%.
- Training of 11,000 health professionals screened 1.17 million people, diagnosing 0.1 million with mental health conditions.

Significance

- Samvedana addresses stigma, lack of awareness and inadequate access to mental health services, offering a sustainable model for rural mental healthcare.

THE WINDOW TO AVOID THE WORST CLIMATE SCENARIOS IS RAPIDLY SHUTTING

Planetary Boundaries and Climate Risk

- Nine planetary boundaries define Earth system stability; six have already been transgressed.
- Boundaries include climate change, ocean acidification, land-system change and biodiversity loss.
- Human activity drives global warming, triggering extreme events: droughts, floods, wildfires, heatwaves and storms.
- Natural systems (oceans, forests, ice sheets) currently absorb excess heat and carbon, but tipping points may reverse this, amplifying climate change.

Tipping Points

- **Critical systems at risk** : Greenland ice sheet, Atlantic Meridional Overturning Circulation (AMOC), Amazon rainforest.
- Crossing thresholds could cause irreversible changes, e.g., AMOC collapse or the Amazon turning to Savanna.
- Humanity has a short window—years to a couple of decades—to act to avoid worst-case scenarios.

Political and Communication Challenges

- Governments globally lag in addressing climate urgency, often compromising climate action for economic or security concerns.
- Scientific communication must emphasize consequences, not just probabilities, to drive meaningful action.

Role of Food Systems

- Food production is a major contributor to emissions, biodiversity loss and planetary boundary breaches.
- Transitioning to sustainable, circular, and resilient agriculture (zero-tillage, perennial crops, crop rotation, efficient nutrient use) can restore planetary health and enhance food security.

Key Message

Immediate action is required to transform food systems and reduce emissions, or tipping points may trigger self-reinforcing climate crises.

DECLINE OF FARMS AND AGEING FARMERS : A GLOBAL CHALLENGE

Current Scenario

- The average global farmer age is 55, nearing retirement; youth show declining interest in farming.
- Global agricultural employment fell from 43% in 1991 to 26% in 2023.
- In India, 2,000 farmers quit daily (Census 2011 data).

Challenges Facing Agriculture

- Farming depends on finite land and climate-sensitive crop cycles.
- It remains labour-intensive, with fewer people entering the profession.
- Rising food demand strains limited land and resources.

Trends in Agricultural Land

- Currently, one-third of the planet's land is used for cultivation.
- Global agricultural land use has peaked and started to decline in recent years—a historic shift.

Future Projections

- The number of farms worldwide is projected to drop from 616 million in 2020 to 272 million by 2100.
- Farm decline expected mainly in high and middle-income countries; low-income countries may see growth until 2070.
- Average farm size will double by the end of the century due to consolidation.

Implications

- Fewer farms may strain food security, biodiversity and local food systems.
- Small farms, though only 25% of land, produce one-third of global food—their decline could impact supply.
- Urgent need for support, education and sustainable policies for farmers to maintain productivity.

**SEPTEMBER
2025**

**GIST
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Topic

Legacies of Learning

ISRO'S SUCCESSFUL INTEGRATED AIR DROP TEST FOR GAGANYAAN

- On 24 August, 2025, ISRO successfully carried out the first Integrated Air Drop Test (IADT) for the Gaganyaan mission.
- The test was conducted at Satish Dhawan Space Centre (SDSC), Sriharikota.
- This test is a critical step in India's human spaceflight program, validating safety and recovery systems for crewed missions.
- The success marks a significant milestone in India's efforts to become a major player in human space exploration.
- It enhances ISRO's technical capabilities and strengthens India's reputation in the global space community.

LEGACIES OF LEARNING : PROMOTING SCIENCE THROUGH THE VISVESVARAYA INDUSTRIAL MUSEUM

- India commemorates Engineers' Day on 15 September, honouring civil engineer Sir Mokshagundam Visvesvaraya (1861–1962).
- To promote science and technology, the Visvesvaraya Industrial Museum Society of Bengaluru initiated the Bharat Ratna Sir M Visvesvaraya Industrial Museum in Cubbon Park, Bengaluru, in 1958.
- Land was provided by the Mysore State government and funds were raised through the All-India Manufacturers' Organisation.
- The museum was inaugurated on 14 July, 1962 by the Prime Minister of India.
- Initially, it showcased temporary industrial exhibits from organizations like Bharat Electronics, Indian Telephone Industries, and Hindustan Machine Tools.
- After a few months, most exhibits were reclaimed by lenders, causing the museum to become temporarily inoperative.
- The museum's legacy continues as a multi-disciplinary platform promoting science, engineering and technology education to the public.

MEGA SCIENCE OUTREACH EVENT : ONE DAY AS A SCIENTIST

- During the 119th Mann ki Baat episode on 23 February, 2025, PM Narendra Modi proposed the idea of 'One Day as a Scientist'.
- The initiative encourages children and youth to experience the life of a scientist for a day, fostering curiosity and hands-on engagement with science.
- Participants can choose any day to immerse themselves in scientific activities, promoting an experiential and interactive scientific culture in India.
- The program aims to spark interest in STEM, connect young learners with real-world scientific work and inspire future innovators.

RICING UP TO THE CHALLENGE

Overview : There are innovative ways to manage rice straw, a long-neglected agricultural residue, and highlights its potential within the circular bioeconomy framework.

Key Highlights

- Rice straw burning has been a persistent environmental issue, demanding sustainable alternatives.
- Research at TERI, New Delhi (based on a published study) investigates the properties of rice straw ash.

- Findings show rice straw residues can be repurposed for multiple applications, reducing waste and pollution.

Significance

- Contributes to sustainable waste management.
- Offers opportunities in energy, materials and agriculture.
- Strengthens the circular bioeconomy by turning residues into resources.

CURRENT STATUS OF KAWAR JHEEL AND STRATEGIES FOR REVIVING ITS CONSERVATION POTENTIAL

Overview : Kavar Jheel (Kabar Taal), in Begusarai, Bihar, is one of India's largest oxbow lakes, historically important for migratory birds, fisheries and local livelihoods. Despite legal protections, it has undergone severe degradation.

Key Highlights

- Formed by the Gandak River, rich in biodiversity.
- Declared a protected area (1972) and bird sanctuary (1989).
- Designated as Ramsar site in 2020, recognising its global ecological significance.

- Area shrank from 6,786 ha (1984) to 2,032 ha (2012) due to siltation, encroachment, pollution, and habitat loss.
- Decline in fish populations has hurt local fisheries and economy.

Significance and Way Forward

- Requires a comprehensive conservation strategy to restore ecological health.
- Measures needed : desiltation, pollution control, wetland management, community participation and sustainable livelihood integration.
- Revival is crucial for biodiversity conservation, fisheries and regional ecology.

WATER : THE ELIXIR OF LIFE

Overview : Growing water crisis, in Bengaluru's serves as a recent reminder of the urgent need to conserve this essential resource.

Key Highlights

- Groundwater depletion and climate change are disrupting India's water cycle, including reduced rainfall patterns in places like Cherrapunji.
- Although 75% of Earth is water, most of it is saline and requires desalination for human use.
- Freshwater resources are being rapidly polluted due to urbanisation and industrialisation.

Significance

- Calls for sustainable management of water resources.
- Focus need to be put on purification and conservation as key to survival.
- Urges adoption of innovative technologies like desalination and wastewater treatment.

Breakthrough in Diagnosis of Sickle Cell Anaemia

(A Hereditary Blood Disorder)

- Development of CSIR-Scan Kit
- PCR-based test using dried blood sample
- Quick, low-cost, lab-free screening
- Developed by CSIR-CCMB
- Validated by ICMR