

KERALA STATE CIVIL SERVICE ACADEMY

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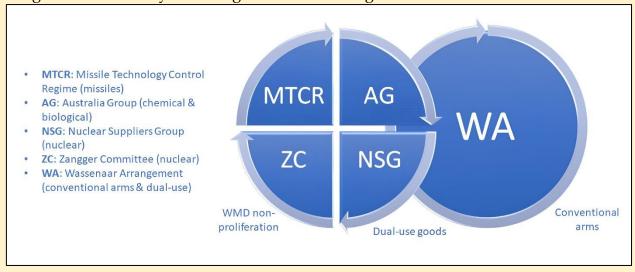
Monthly Current Affairs Magazine



WASSENAAR ARRANGEMENT (WA)

Wassenaar Arrangement in governing modern digital technologies and argues for reforming export control regimes to address challenges posed by cloud services, AI, and surveillance tools.

- Modern Internet dependence: Cloud infrastructure, dominated by few companies like Microsoft, is crucial for states but can also aid repression (e.g., in Palestine).
- Export control regimes: Agreements like the Wassenaar Arrangement aim to regulate export of sensitive goods and dual-use technologies to prevent misuse.
- Limitations of current framework:
 - Focused mainly on physical exports (devices, chips, hardware).
 - Struggles to regulate cloud services, APIs, and remotely accessed technologies.
 - Leaves loopholes for "intrusion software" and surveillance misuse.
- India's role: Joined in 2017, regularly updates control lists but faces challenges in ensuring compliance.
- Reform needs:
 - Expand definitions to cover remote access, cloud exports, and digital surveillance.
 - Introduce binding global treaties with clearer licensing and oversight.
 - Create domain-specific controls for AI and high-risk digital tools.
- Global implications:
 - Divergent national licensing can create loopholes.
 - Stronger coordination needed to prevent misuse across borders.
- Possible measures:
 - Tighter export scrutiny for cloud services.
 - Binding international commitments.
 - Technical expert committees to guide regulation.
- Conclusion: Existing arrangements are outdated; comprehensive reforms are essential to regulate 21st-century technologies without stifling innovation.



Wassenaar Arrangement (WA)

- Nature: A multilateral export control regime for conventional arms and dual-use goods and technologies.
- Established: 1996, in Wassenaar, Netherlands.
- Objective:
 - To promote transparency and responsibility in transfers of arms and sensitive technologies.
 - To prevent destabilising accumulations of weapons and technologies that could aid in proliferation or repression.



- Membership: 42 participating states (as of 2025), including India, the U.S., most EU states, Japan, etc.
- India's membership: Joined in December 2017.
- Mechanism:
 - States exchange information on transfers/denials of items listed in WA control lists.
 - It is non-binding; decisions on licensing remain at the discretion of each state.
- Scope:
 - Covers conventional arms.
 - Covers dual-use goods and technologies (civilian use but potential military/security application).
 - In 2013, scope expanded to include "intrusion software" and surveillance technologies.
- Challenges:
 - Primarily designed for physical goods, struggles to regulate cloud services, AI, and remote-access technologies.
 - o Implementation uneven across members; often influenced by political and commercial interests.

Present Issues

- The Arrangement was made when only physical items like devices, chips, and hardware were controlled. Software was not taken seriously.
- Many activities in cloud computing are unclear under the rules:
 - Using or managing software remotely may not count as an "export."
 - Different countries understand technology transfer in different ways.
- In Software-as-a-Service, users access software over the internet without installing it. The rules cannot clearly say if this is an export.
- Any country in the Arrangement can block changes, making updates slow.
- Each country follows its own export rules, which may be weak or inconsistent.
- Loopholes exist for safe research or transferring technology within a country.

India and the Wassenaar Arrangement

- India became a **Wassenaar Arrangement** participant in 2017.
- Incorporated **Wassenaar Arrangement** control lists into its SCOMET (Special Chemicals, Organisms, Materials, Equipment, and Technologies) framework.
- Engagement has largely been about gaining legitimacy in global export-control regimes, rather than driving reforms for the digital era.

Reforms Needed

Expand Scope:

- Include technologies and services that enable large-scale surveillance, profiling, discrimination, or cross-border control.
- Example: Regional biometric systems or policing-related data transfers.
- Clearly define capacity limits and allow safe, defensive uses under strict rules.

Redefine 'Export':

- Treat remote access, administration, or API calls in cloud systems as exports.
- Include end-use controls considering the user, country, legal mandate, and risk of misuse.
- Focus not just on military risks but also human rights risks from digital surveillance.

Make it Binding:

• Move from voluntary participation to a binding treaty with Minimum licensing standards, Export bans in high-risk regions and Peer-review supervision.



Global Coordination:

- Share information and align policies across countries.
- Maintain shared watchlists and real-time alerts for flagged users or entities.
- Include technical standards for cross-border interoperability.

Agility for Fast-Moving Technology:

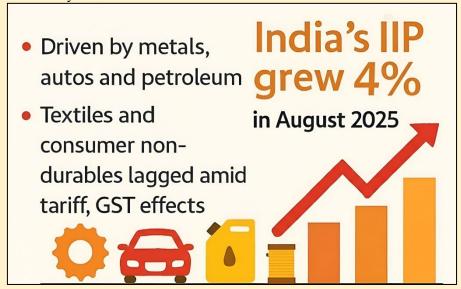
- Set up a technical committee or secretariat for quick updates and expert inputs.
- Introduce a sunset mechanism so technologies leave the control list unless renewed.
- Consider domain-specific regimes for AI, cyber weapons, and digital surveillance that can evolve faster than the main framework.

The Wassenaar Arrangement remains important for global export control but faces gaps in regulating cloud services, SaaS, AI, and digital surveillance technologies. Reforms are needed to expand scope, redefine export, enforce binding obligations, coordinate globally, and remain agile.

INDEX OF INDUSTRIAL PRODUCTION (IIP)

India's Index of Industrial Production (IIP) grew by 4.0% in August 2025, showing broad-based recovery in industrial activity.

- IIP growth accelerated from 3.5% in July 2025 to 4.0% in August.
- Mining output rose sharply by 6.0%, rebounding from contraction.
- Manufacturing grew 3.8%, led by basic metals (12.2%), motor vehicles (9.8%), and petroleum products (5.4%).
- Electricity generation increased by 4.1%.
- Use-based growth:
 - Infrastructure/Construction Goods: +10.6% (highest).
 - Primary Goods: +5.2%, Intermediate Goods: +5.0%, Capital Goods: +4.4%.
 - Consumer Durables: +3.5%; Consumer Non-durables: -6.3% (weak demand).
- Growth driven by post-monsoon mining recovery, strong demand in metals, vehicles, and construction activity.



Index of Industrial Production (IIP)

- Definition:
 - The IIP measures the volume of production of a basket of industrial products in the economy.
 - It serves as a short-term indicator of industrial growth.



- Base Year:
 - Current base year: 2011–12 (revised periodically to reflect structural changes).
- Released by:
 - National Statistical Office (NSO), Ministry of Statistics and Programme Implementation (MoSPI).
 - Released monthly with a time lag of about six weeks.
- Coverage:
 - Divided into 3 major sectors:
 - 1. Mining (14.4% weight)
 - 2. Manufacturing (77.6% weight largest share)
 - 3. Electricity (8.0% weight)
 - Further classified into Use-based categories: Primary Goods, Capital Goods, Intermediate Goods, Infrastructure/Construction Goods, Consumer Durables, and Consumer Non-durables.
- Significance:
 - Acts as a proxy for industrial activity and short-term economic performance.
 - Influences monetary policy (RBI monitors it for inflation and growth signals).
 - Used by businesses, analysts, and policymakers for planning and forecasting.
- Limitations:
 - o Provisional data, often revised later.
 - Limited coverage compared to GDP or GVA.
 - Heavily manufacturing-driven, may not fully capture services-led growth in India's economy.

Core Industries

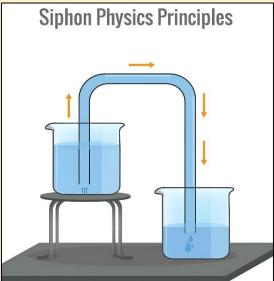
- Definition:
 - The Core Industries are the eight key industries of India that form the backbone of the economy and have a high impact on overall industrial growth.
 - They have a combined weight of 40.27% in the Index of Industrial Production (IIP).
- The Eight Core Industries (with weights in IIP):
- 1. Coal 10.33%
- 2. Crude Oil 8.98%
- 3. Natural Gas 6.88%
- 4. Refinery Products 28.04% (highest weight)
- 5. Fertilizers 2.63%
- 6. Steel 17.92%
- 7. Cement 5.37%
- 8. Electricity 19.85%
- Released by:
 - 1. Office of Economic Adviser (OEA), Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry.
 - 2. Released monthly, usually at the end of the following month.
- Significance:
 - 1. Acts as a lead indicator of industrial performance and overall GDP trends.
 - 2. Closely tracked by policymakers, RBI, and businesses to gauge economic health.
 - 3. Growth or slowdown in these industries directly affects related sectors (e.g., steel impacts construction, coal impacts power generation).



SIPHON PRINCIPLE

IISc has developed a siphon-powered desalination technology that converts saltwater into clean drinking water more efficiently than conventional solar stills.

- Uses a fabric wick with a grooved metal surface to create a siphon, moving salty water onto a heated surface.
- Continuous flushing prevents salt crystallization, avoiding blockages common in older designs.
- Water evaporates as a thin film and condenses just 2 mm away, enhancing efficiency.
- Modular design allows stacking multiple units, recycling heat for higher output.
- Produces over six liters of potable water per sq. meter per hour, much higher than standard solar stills.
- Handles high salinity (up to 20% salt) without clogging.
- Built with low-cost materials like aluminum and fabric; powered by solar or waste heat.
- Suitable for off-grid villages, disaster zones, and arid coastal areas.
- Represents a scalable, sustainable, and affordable solution for global water security.



Siphon Principle

Definition:

A siphon is a device that allows liquid to flow from a higher level to a lower level through a tube, even if the tube rises above the surface of the liquid in the higher container.

- Working Principle:
 - Relies on gravity and the difference in liquid pressure at the two ends of the tube.
 - Once the tube is filled, the liquid continues to flow because the pressure at the lower outlet is less than at the higher source.
 - The liquid column in the descending limb (heavier) pulls the liquid up the ascending limb.
- Key Conditions:
 - Outlet must be below the liquid surface of the source container.
 - The tube must be primed (filled with liquid) initially.
 - Works only until the source liquid level drops below the inlet end.
- Applications:
 - Emptying tanks, aquariums, and fuel tanks.
 - Irrigation and drainage systems.
 - Some modern technologies (like IISc's desalination system) use siphon action for fluid movement.



PM VIKAS SCHEME

Convergence for Viksit Bharat 2047: Industry Conclave on Skilling & Employment" was organized by the Ministry of Minority Affairs under the PM VIKAS scheme in New Delhi to boost inclusive development.

- Organized with support from Delhi Sikh Gurdwara Management Committee and State Institute of Hotel Management, Tripura.
- Union MoS for Minority Affairs, George Kurian, attended the conclave.
- Industry participation from 11 sectors including healthcare, aviation, electronics, tourism, and hospitality.
- Two MoUs signed:
 - o Ministry of Minority Affairs + DSGMC + Wadhwani Foundation
 - o DSGMC + SIHM Tripura
- Focus on convergence of government schemes, industry needs, and emerging technologies in skilling.
- Panel discussion stressed industry-ready, globally mobile workforce, apprenticeships, and new job roles.
- PM VIKAS scheme: blends modern skills with traditional expertise; 41 projects in 30 States/UTs, benefiting 1.34 lakh youth and artisans.
- Conclave urged industry's role in curriculum design, apprenticeships, and placements.
- Part of Viksit Bharat 2047 vision to achieve a developed, competitive India by centenary of independence.

Pradhan Mantri Virasat Ka Samvardhan (PM VIKAS)

Skill Training and Women Entrepreneurship Development project launched under PM VIKAS.

Projects have been launched at IIIT Kottayam for the training of minority candidates.

About PM VIKAS

- Ministry: Ministry of Minority Affairs
- Type: Central Sector Scheme
- It converges five erstwhile schemes viz. Seekho Aur Kamao, Nai Manzil, Nai Roshni, USTTAD and Hamari Dharohar.
- Objective: Upliftment of six notified minority communities through skill development; entrepreneurship and leadership of minority women; and education support for school dropouts.
- Six officially recognized minority communities in India are: Muslims, Christians, Sikhs, Buddhists, Jains, and Zoroastrians.
- Implementation in convergence with the Skill India Mission.



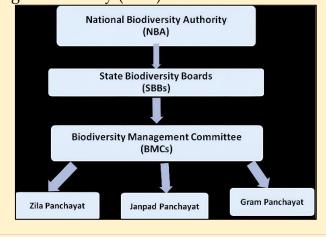
PM VIKAS (Pradhan Mantri Virasat Ka Samvardhan)

- Ministry: Implemented by the Ministry of Minority Affairs.
- Launch: Announced in 2022–23 Union Budget as an umbrella scheme.
- Objective:
 - To integrate modern skill training with India's traditional expertise.
 - Provide end-to-end support for education, skilling, entrepreneurship, and credit linkages to minority and marginalized communities.
- Key Features:
 - Combines skill development with preservation of artisanal crafts and heritage trades.
 - Offers credit assistance, training, market linkages, and digital empowerment.
 - Focus on youth, women, and artisans from minority communities.
- Impact (till 2025):
 - 41 projects rolled out across 30 States/UTs.
 - Benefited 1.34 lakh youths and artisans through transparent and efficient processes.
- Significance:
 - Enhances employability and self-reliance of minority youth.
 - Supports the vision of Viksit Bharat 2047, aligning skilling with livelihoods and dignified employment.

NATIONAL BIODIVERSITY AUTHORITY (NBA)

The National Biodiversity Authority (NBA) has sanctioned ₹82 lakh to the Andhra Pradesh Biodiversity Board for conserving the endangered Red Sanders tree under the Access and Benefit Sharing (ABS) mechanism.

- Objective: Raise 1 lakh Red Sanders saplings for farmers under the Trees Outside Forests (ToF) program.
- ABS Mechanism: Funded through benefit-sharing contributions from enterprises using Red Sanders.
- Community Involvement: Local and tribal communities, Biodiversity Management Committees, and stakeholders engaged in nursery, plantation, and care.
- Geographic Focus: Native to Southern Eastern Ghats (Anantapur, Chittoor, Kadapa, Kurnool).
- Protection Status: Endangered, threatened by smuggling; protected under Wildlife Protection Act, 1972, and listed under CITES.
- Impact: Generates rural employment, skills, and sustainable livelihoods while strengthening conservation.
- Past Efforts: NBA has already provided ₹31.55 crore to Andhra Pradesh's forest department for enforcement and protection.
- Significance: Supports India's biodiversity targets and global commitments under the Convention on Biological Diversity (CBD).





National Biodiversity Authority (NBA)

- Establishment:
 - Set up in 2003 under the Biological Diversity Act, 2002.
- Headquarters:
 - o Located in Chennai, Tamil Nadu.
- Nature:
 - A statutory autonomous body under the Ministry of Environment, Forest and Climate Change (MoEFCC).
- Functions:
 - Regulates access to biological resources and associated traditional knowledge.
 - Ensures fair and equitable benefit-sharing (ABS) arising from the use of biological resources.
 - Issues approvals for research, commercial use, IPRs, and technology transfer involving India's biodiversity.
 - Advises the Central and State Governments on matters related to biodiversity conservation and sustainable use.
 - Supports State Biodiversity Boards (SBBs) and Biodiversity Management Committees (BMCs) at local levels.
- Key Role in Conservation:
 - Implements provisions of the Convention on Biological Diversity (CBD) at the national level.
 - Promotes People's Biodiversity Registers (PBRs) to document local biological resources and knowledge.
 - Facilitates community participation in conservation and livelihood generation.

Red Sanders (Pterocarpus santalinus)

- Description:
 - A rare and highly valued endemic tree species known for its distinctive red-colored heartwood.
 - Belongs to the family Fabaceae.
- Geographic Range:
 - Found mainly in the Southern Eastern Ghats, particularly in the districts of Chittoor,
 Kadapa, Anantapur, and Kurnool in Andhra Pradesh.
- Uses & Value:
 - Heartwood is used in fine furniture, medicinal preparations, musical instruments, and as a dye.
 - High international demand makes it one of the most smuggled tree species from India.
- Threats:
 - Over-exploitation and smuggling due to high market value.
 - Habitat loss and degradation.
- Protection Status:
 - IUCN Red List: Endangered.
 - CITES: Appendix II (international trade regulated).
- Conservation Efforts:
 - National Biodiversity Authority (NBA) funds conservation under the Access and Benefit Sharing (ABS) mechanism.
 - Plantation programs and community participation promoted under Trees Outside Forests (ToF) initiatives.
 - Enforcement measures by Andhra Pradesh Forest Department to curb illegal felling and smuggling.



NATIONAL SECURITY ACT (NSA)

Climate activist Sonam Wangchuk was recently detained under the National Security Act (NSA), reigniting debate over its scope and misuse.

- **About NSA (1980):** Allows preventive detention to safeguard defence, foreign relations, security of India, public order, or essential supplies.
- **Powers:** Centre, states, District Magistrates, and Police Commissioners can authorize detention.
- Nature: Not punitive but preventive meant to stop individuals before they act.
- Safeguards:
 - Grounds of detention must be communicated within 5–15 days.
 - Review by Advisory Board of High Court judges within 3 weeks.
 - Detention can extend up to 12 months.
 - No legal representation before Advisory Board; government can withhold facts citing "public interest."
- Past use: Invoked against separatists, gangsters, and protesters.
- Controversies:
 - Criticized for misuse against dissenters and activists.
 - High-profile cases: Dr. Kafeel Khan (2020), Chandrashekhar Azad (2017), Amritpal Singh (2023).
 - Used during anti-CAA protests and in states like UP and MP against cow slaughter and habitual criminals.
- **Criticism:** Civil liberties groups see it as a draconian law often misused by governments to silence opposition rather than protect security.



WHAT IS NATIONAL SECURITY ACT?

- promulgated on **September 23, 1980** by Indira Gandhi
- The goal is to **prevent** the individual from committing a crime.
- An individual can be **detained** without a charge for **up to 12 months**
- Detained person can appeal before a high court advisory board without a lawyer

National Security Act (NSA), 1980

- The NSA, 1980 is a preventive detention law that empowers the Central and State governments to detain individuals to prevent them from acting in any manner prejudicial to the defence of India, relations with foreign powers, national security, public order, or maintenance of essential supplies and services.
- It continues India's long history of preventive detention laws, tracing back to the colonial era and the Maintenance of Internal Security Act (MISA).



Key Provisions

1. Authority to Detain:

- The Central or State government can issue detention orders.
- District Magistrates and Police Commissioners can also exercise this power when authorised.

2. Grounds of Detention:

Defence of India, security of the state, public order, and maintenance of essential supplies.

3. Duration of Detention:

• A person can be detained **up to 12 months**, though orders can be revoked earlier.

4. Communication of Grounds:

• Detainee must be informed of the grounds of detention within 5–15 days.

5. Review Mechanism:

- An **Advisory Board of High Court judges** reviews the detention within 3 weeks.
- If the Board finds "no sufficient cause," the detainee must be released.

6. Safeguards and Limitations:

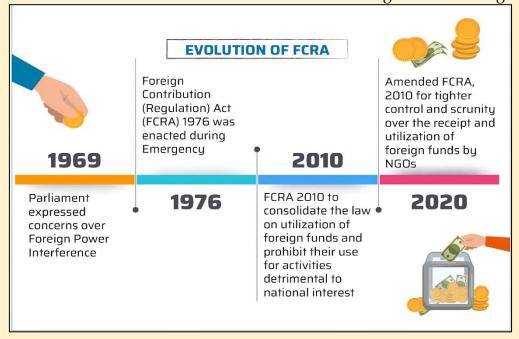
- No legal representation before the Advisory Board.
- Government can withhold facts citing "public interest."
- Preventive, not punitive meant to stop anticipated threats.

FOREIGN CONTRIBUTION (REGULATION) ACT (FCRA), 2010:

The Union Ministry of Home Affairs directed NGOs to submit applications for renewal of their Foreign Contribution (Regulation) Act (FCRA) registration at least four months before expiry.

About Foreign Contribution (Regulation) Act (FCRA), 2010:

- Nature: The Foreign Contribution (Regulation) Act (FCRA), 2010, regulates foreign contributions to protect national sovereignty and security. It governs the receipt and use of foreign contributions by individuals, associations, and companies operating in India.
- Objective: The FCRA 2010 aims to ensure that foreign donations do not compromise the nation's sovereignty or internal security.
- Amendments: Amendments were made in 2020 which brought certain changes.





About Foreign Contribution (Regulation) Amendment Act, 2020:

- Validity & Renewal: FCRA registration is valid for five years, and NGOs are required to apply for renewal within six months of the registration's expiry.
- Mandates Aadhaar: Office bearers must provide an Aadhaar or passport/OCI card for registration.
- Need for SBI account: Contributions must be received in a designated SBI branch in New Delhi.
- Puts a cap on administrative Use: Administrative expense limits were reduced from 50% to 20%.
- Suspension Extension: Initially, registration suspension can be enforced for a period of 180 days. This suspension can be further extended by an additional 180 days.
- Prohibits certain activities
 - The applicant must not represent fictitious entities.
 - The applicant should not have been involved in religious conversion activities, either directly or indirectly.
 - The applicant must not be engaged in activities related to sedition.
 - The FCRA prohibits candidates, journalists, media companies, judges, government servants, politicians, and political organizations from receiving foreign funds.
- FCRA Rules 2022
 - In July 2022, the MHA introduced changes to FCRA rules. These changes included increasing the number of compoundable offences from 7 to 12.
 - The rules also raised the limit for contributions from relatives abroad that do not require government intimation from Rs 1 lakh to Rs 10 lakh and extended the time limit for intimation of the opening of bank accounts.

CORPORATE AVERAGE FUEL EFFICIENCY (CAFE-3)

India has released draft Corporate Average Fuel Efficiency (CAFE-3) rules proposing new vehicle emission norms, with relief for small cars and incentives for EVs..

- What's new: Draft CAFE-3 norms issued by the Bureau of Energy Efficiency (BEE) for public consultation, covering all M1 category passenger cars (max 9 seats, 3,500 kg).
- Efficiency formula: Based on fleet weight with stricter targets over FY28–FY32; lighter vehicles get more relaxed targets.
- Relief for small cars: Special exemptions for models ≤1200cc engine, ≤4000mm length, and ≤900kg unladen weight → eligible for CO₂ reduction credits.
- Emissions pooling: Allows multiple carmakers to pool emissions targets, reducing compliance costs.
- EV incentives:
 - Each EV sale counts three times in compliance calculations.
 - Hybrid EVs, plug-in hybrids, and strong hybrids get multipliers.
 - EVs under 3,500 kg get special weight-based relaxation.
- Carbon Neutrality Factor (CNF): Additional relaxation based on fuel types (ethanol, CNG, biogas, hybrids).
- Penalties: Non-compliance attracts penalties under the Energy Conservation Act, 2001.
- Current norms: CAFE-2 (from FY22–23) required fleet CO₂ emissions ≤113 g/km; penalties apply for exceeding limits.
- EV charging infra: Govt plans ~72,300 stations under PM E-Drive, with subsidy support for installation across cities.



CORPORATE AVERAGE FUEL EFFICIENCY (CAFE) NORMS

Bureau of Energy Efficiency (BEE) revised draft CAFE-3 and CAFE-4 norms.

New norms have been introduced offering special relief for small cars for the first time and offering incentives for flex-fuel and strong hybrid vehicles.

About CAFE norms

- These were first notified by the Government in 2017, under the Energy Conservation Act, 2001
- ▶ Aim: To mitigate fuel consumption by lowering CO₂ emissions and to reduce oil dependency and air pollution.
- Applicability: Passenger cars with seating capacity not exceeding 9 persons including the driver and gross vehicle weight not exceeding 3,500 kg.
- These norms shall come into force from 1st April 2027 until 31st March 2032.

Corporate Average Fuel Efficiency (CAFE) Norms

- Definition:
 - CAFE norms are fuel efficiency and emission standards that automobile manufacturers must follow for their fleet, aimed at reducing fuel consumption and lowering carbon dioxide (CO₂) emissions.
- Origin in India:
 - Introduced by the Bureau of Energy Efficiency (BEE) under the Energy Conservation Act, 2001.
 - CAFE-1: Notified in 2011, effective from 2017.
 - CAFE-2: Implemented from 2022-23, targeting 113 g/km CO₂ fleet average.
 - CAFE-3 (Draft, 2025): Proposes stricter norms for FY28-FY32 with new incentives for small cars and EVs.



Key Features:

- o Applies to all M1 category cars (passenger vehicles ≤9 seats, ≤3,500 kg).
- Uses a formula based on average fleet weight; heavier cars allowed slightly higher emissions than lighter cars.
- Manufacturers must ensure that their entire fleet average meets prescribed targets.
- Penalties: Non-compliance attracts fines under the Energy Conservation Act, 2001.
- Special Provisions in Draft CAFE-3:
 - Relief for small cars (≤1200 cc engine, ≤4000 mm length, ≤900 kg weight).
 - Pooling option: Carmakers can pool emissions with other firms.
 - EV incentives:
 - Each EV sale counts as 3 vehicles in compliance calculation.
 - Hybrid & CNG cars get partial credits.
 - o Carbon Neutrality Factor (CNF): Additional credits for ethanol, CNG, and biogas fuel use.
- Objective:

To align India with global climate commitments, reduce oil dependence, encourage electric mobility, and cut vehicular CO₂ emissions.

CHHATH PUJA

PM Modi, in *Mann ki Baat*, praised the RSS on its centenary journey and highlighted the government's push for Chhath Puja's inclusion in UNESCO's intangible cultural heritage list.

- On RSS:
 - Praised founder K.B. Hedgewar for fighting against "intellectual slavery."
 - Appreciated RSS's century-long role in national service, sacrifice, and discipline.
 - Emphasized "nation-first" spirit in every RSS worker's contribution.
- On Chhath Puja:
 - o Govt making efforts for UNESCO Intangible Cultural Heritage recognition.
 - Said recognition would help spread Chhath's cultural and spiritual values worldwide.
- Other mentions:
 - Recalled **Bhupen Hazarika's birth centenary**
 - Expressed condolences on the passing of singer **Zubeen Garg**.
- Significance:
 - Strengthening cultural pride, heritage recognition, and linking traditions with India's global image.

Chhath Puja

- Nature of Festival: An ancient Hindu Vedic festival dedicated to the Sun God (Surya) and Chhathi Maiya (Usha, the wife of the Sun God).
- Observed in: Primarily in Bihar, Jharkhand, Eastern Uttar Pradesh, and the Mithila region of Nepal; also celebrated by diaspora communities.
- Timing: Held twice a year most prominently after Diwali (October-November, Kartika month), known as Chhath Mahaparva.
- Rituals:
 - Lasts four days with strict rituals including fasting, holy bathing, and offering *Arghya* (water and prayers) to the rising and setting Sun.
 - Devotees observe Nirjala Vrat (fast without water) as part of the worship.
 - Celebrated on riverbanks and water bodies, symbolizing purity.
- Cultural significance:
 - Emphasizes gratitude to nature, ecological balance, and solar energy.
 - Promotes social harmony and collective participation.
- Global recognition: India is making efforts to get Chhath Puja inscribed in UNESCO's Intangible Cultural Heritage list.





India & UNESCO Intangible Cultural Heritage (ICH)

- Convention: UNESCO's *Convention for the Safeguarding of the Intangible Cultural Heritage* (2003) aims to preserve cultural practices, traditions, and knowledge systems.
- India's Status: India ratified in 2005; as of 2025, India has 15 elements inscribed on UNESCO's ICH Representative List.

India's ICH Elements (as of 2025):

- 1. **Kutiyattam, Sanskrit theatre** Kerala 2008
- 2. **Tradition of Vedic Chanting –** Across India 2008
- 3. **Ramlila, the traditional performance of the Ramayana** North India 2008
- 4. **Ramman, religious festival and ritual theatre** Uttarakhand 2009
- 5. Chhau dance Jharkhand, West Bengal, Odisha 2010
- 6. **Kalbelia folk songs and dances** Rajasthan 2010
- 7. Mudiyettu, ritual theatre and dance drama Kerala 2010
- 8. **Buddhist chanting of Ladakh –** Ladakh 2012
- 9. **Sankirtana, ritual singing, drumming and dancing –** Manipur **–** 2013
- 10. Traditional brass and copper craft of utensil making among the Thatheras of Jandiala Guru Punjab 2014
- 11. Nowruz Celebrated in India by Parsi community (shared with other countries) 2016
- 12. **Yoga** Across India 2016
- 13. **Kumbh Mela** Haridwar, Prayagraj, Ujjain, Nashik 2017
- 14. **Durga Puja in Kolkata** West Bengal 2021
- 15. Garba of Gujarat Gujarat 2023



ASTROSAT

India's first space-based observatory AstroSat has completed 10 years since its launch in 2015, continuing to provide valuable astronomical data..

- Launch: AstroSat launched on September 28, 2015, by PSLV-C30 (XL) rocket from Satish Dhawan Space Centre, Sriharikota.
- Mission life: Originally designed for 5 years, but continues to function effectively after a decade.
- Significance: India's first dedicated multi-wavelength space observatory, comparable to NASA's Hubble.



- Discoveries:
 - Observed FUV photons from galaxies 9.3 billion light years away.
 - Enabled studies on black holes, neutron stars, and Proxima Centauri.
 - Provided insights across the electromagnetic spectrum (UV to X-rays).
- Payloads (5 instruments):
 - Ultra Violet Imaging Telescope (UVIT)
 - Large Area X-ray Proportional Counter (LAXPC)
 - Cadmium-Zinc-Telluride Imager (CZTI)
 - Soft X-ray Telescope (SXT)
 - Scanning Sky Monitor (SSM)
- Collaborative effort: Developed by ISRO in partnership with major Indian institutions (IUCAA, TIFR, IIA, RRI, several universities) and international partners (Canada & U.K.)



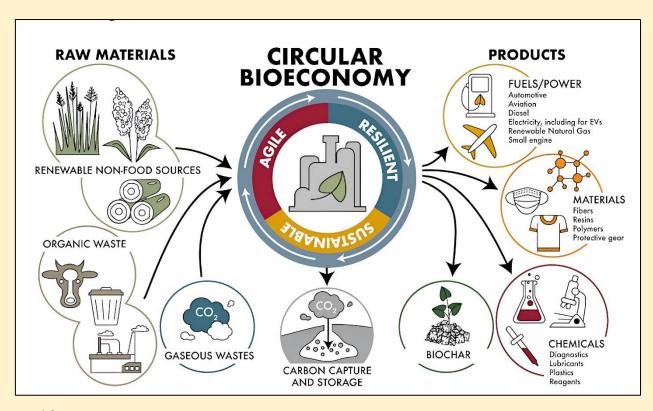
REIMAGINING BIO ECONOMY THROUGH LANDSCAPES

Context:

India stands at a critical juncture where traditional growth models must evolve into a green, resilient economic pathway to address climate risks, ensure competitiveness, and sustain livelihoods. This has given rise to the new concept of bioeconomy.

What is bioeconomy?

- Bioeconomy is an economic system that uses renewable biological resources—like plants, animals, forests, and microorganisms—to produce food, materials, chemicals, and energy, reducing dependence on fossil fuels and promoting sustainability.
- It combines biotechnology, biomass utilization, and circular economy principles to create eco-friendly goods and services.
- Examples: Biofuels, Bioplastics, etc.



Data on bioeconomy

- India's bioeconomy expanded from \$10 billion in 2014 to \$165.7 billion in 2024, a 16-fold increase in 10 years.
- It contributes 4.25% of India's GDP.
- The growth is supported by **over 10,000 bio-economy start-ups**.
- The **industrial bioeconomy** (biofuels and bioplastics) accounts for 47% of the sector's value.
- **Pharmaceuticals** contribute around **35**%, while research, IT, clinical trials, and bioinformatics are rapidly emerging.
- India has achieved 20% ethanol blending in petrol.
- The country is the **third-largest pharmaceutical producer by volume** globally.
- The bioeconomy is expected to create **35 million jobs by 2030**.
- Rural per capita spending grew at 9.2% from August 2023 to July 2024, outpacing urban growth of 8.3%.

The green economy is becoming **inevitable and imminent** for job creation, environmental returns, competitiveness, and climate resilience.



Challenges and Disparities

• Rural region

 Climate disruptions impact inflation, worsening the rural bioeconomy context, especially pressures from losses in agriculture, fluctuations in energy demand, and disrupted supply chains.

Regional Inequities

- Maharashtra, Karnataka, Telangana, Gujarat, and Andhra Pradesh account for twothirds of bioeconomy value, while eastern and northeastern states together contribute less than 6% despite rich agricultural and forest resources.
- States like Madhya Pradesh, Chhattisgarh, Bihar, Odisha, and Jharkhand have untapped potential in ethanol, biomass power, agri-waste, and non-timber forest products.

Gender Gaps

 Women hold only 11% of jobs in rooftop solar. Women's representation in key roles remains particularly low: 1% in operations and maintenance, and 3% in construction and commissioning

Urban-Rural Divide

- Urban areas dominate green investments, EV infrastructure, and solar rooftops, while rural regions lag in clean energy access, water-saving irrigation, and sustainable livelihoods.
- Digital divide limits rural participation in smart grids, carbon markets, and green tech solutions.

Policy & Regulatory Bottlenecks

 The BioE3 policy was rolled out in 2024 to promote the bioeconomy, but regulatory frameworks remain fragmented, and it remains a very urban-centric, industrial-scale economy.

Green Transition and Rural Challenges

- A rapid green shift can disproportionately impact rural areas, coal workers, MSMEs, and small-scale manufacturers dependent on traditional energy sources.
- Trade offs
- Road transport dominates freight movement, with food miles contributing nearly 3 gigatonnes of CO₂ annually, creating a trade-off between emissions and food security.
- Biodiversity supports over 200 million livelihoods, but policies and markets often promote monocropping of wheat and paddy over crop diversification.
- India's push for ethanol blending creates a trade-off in the maize supply chain, affecting animal feed availability.

Hence a just transition requires targeted skill-building, reskilling, and local bioeconomic diversification to prevent social and environmental harm. This can be achieved using landscape approach.

Landscape Approach

- Green growth needs a model that integrates sustainability, climate action, and social
 inclusion while addressing regional disparities and unlocking potential in less-developed
 states.
- Landscapes should be treated as interconnected systems of landforms, water resources, biodiversity, markets, and local institutions to assess ecological and human benefits.
- A shared landscape understanding enables improvement of air and water quality, climate regulation, habitat support, food and water security, and livelihoods.
- Transition requires participatory pathways from village (nano) to wider landscape (macro) levels for effective planning and monitoring.



Way Forward

- Leverage 2.5 lakh PRIs, 12 million women-led institutions, and local authorities in planning, execution, and monitoring of green transitions.
- Promote circular economy, green energy, and bioeconomy with gender-inclusive policies for leadership and technical roles.
- Encourage local entrepreneurship, such as small-scale oil extraction or biomass-based enterprises, to enhance local production and consumption.
- Integrate ecosystem valuation into economic strategies and policies for better resource management.
- Adopt measures like green budgeting, targeted fiscal incentives, green government procurement, and active involvement of gram panchayats and community-based organisations.
- Strengthen waste management, create financing and O&M support for decentralised renewables, coordinate policies across departments, and increase R&D spending for green innovations.

A landscape-driven growth model can balance ecological regeneration, economic resilience, and social equity. Such an approach will help India achieve its climate goals, sustainable development targets, and new engines of green growth, ensuring wellbeing for both people and ecosystems.

SOILIFICATION

Researchers in Rajasthan successfully grew wheat in desert land using an indigenous bioformulation-based soilification technology, showing potential to stop desertification and boost agriculture in arid regions.



What is desert soilification technology that has been used in arid lands in Rajasthan to enhance productivity and stop deserting?

- Experiment site: Conducted by Central University of Rajasthan (CUoR) at Banseli village,
 Ajmer district.
- **Technology:** Used desert 'soilification' with indigenous bioformulation to convert desert sand into soil-like structure.
- Water efficiency: Wheat required only 3 irrigations (vs. 5–6 normally) due to high water retention.



- **Key features:** Bioformulation enhanced water retention, improved soil structure, stimulated microbial activity, and increased crop stress resistance.
- Pilot results: 13 kg wheat seeds yielded 26 kg harvest per 100 sq. metres in April 2025.
- **Higher yield:** Experimental field with bajra, guar gum, and chickpea showed 54% higher yield in bioformulation-amended sand.
- **Support:** Facilitated by Krishi Vigyan Kendra (KVK) and Rajasthan Horticulture Department.
- **Impact:** Reduced water input, higher productivity, and potential to curb desertification in Thar desert region.
- Future plan: Expand technology to crops like millet and green gram in Rajasthan's dry regions.

Soilification

Meaning:

Soilification is a process of transforming loose, infertile sand (desert soil) into soil-like material that can support plant growth.

How it works:

- Uses polymers, bioformulations, or natural binders to cross-link sand particles.
- Improves soil aggregation and water retention capacity.
- Enriches the substrate with microbial activity to provide nutrients and resilience to crops.

Key Objectives:

- Convert arid, barren desert land into productive agricultural fields.
- Reduce irrigation demand by retaining more water in sandy soils.
- Combat desertification and land degradation.

Applications:

- Tested in Rajasthan's Thar Desert for wheat, bajra, guar gum, and chickpea cultivation.
- Used in dry and semi-arid regions globally (China, Middle East, Africa) to reclaim deserts.

• Significance:

- Provides a sustainable land restoration method.
- Helps ensure food security in desert-prone countries.
- Supports climate change adaptation by reclaiming degraded lands.

DECOMMISSIONING MIG 21

India has formally decommissioned the MiG-21 jets after six decades of service, marking the end of an iconic era in the Indian Air Force.

- **Key Statement:** Defence Minister Rajnath Singh called MiG-21 a "symbol of India-Russia ties" and a lesson for future indigenous platforms.
- Aircraft: Last MiG-21 jets belonged to No. 23 Squadron (Panthers).
- Ceremony: Included symbolic switch-off of six MiG-21s and handing over of aircraft documents to Air Chief.
- **Attendees:** Senior IAF officials, veterans, pilots, engineers, and technicians who worked with MiG-21.
- **Tribute Performances:** Surya Kiran aerobatic team, Tejas, and Jaguar fighter jets performed aerial manoeuvres.
- Legacy: Played crucial roles in 1971 war, Kargil conflict, Balakot air strike, and Operation Sindoor.
- **Impact:** Reduced IAF's effective fighter squadron strength to **29**, the lowest since 1960s.
- Future Outlook: Govt emphasized success of indigenous platforms like LCA-Tejas and upcoming Advanced Medium Combat Aircraft (AMCA).





MiG-21 Fighter Aircraft

- Full Name: Mikoyan-Gurevich MiG-21.
- Origin: Developed by the Soviet Union (first flew in 1956).
- **Induction in India:** Entered Indian Air Force (IAF) service in 1963, becoming the first supersonic fighter jet of India.
- **Service Duration:** Served for over 60 years, the longest-serving combat aircraft in IAF history.
- Role in Wars:
 - 1971 India-Pakistan War: Played a decisive role, including shooting down enemy aircraft.
 - Kargil War (1999): Actively used in ground attack and support missions.
 - Balakot Air Strike (2019): MiG-21 Bison piloted by Wing Commander Abhinandan Varthaman engaged in aerial combat.
 - Operation Sindoor and other missions.
- **Variants in India:** MiG-21FL, MiG-21M, MiG-21MF, and upgraded MiG-21 Bison.
- Legacy:
 - Known as the "backbone" of the IAF for decades.
 - Symbol of India-Russia defence cooperation.
 - Provided combat experience to generations of IAF pilots.



TEJAS MK 1A AIRCRAFT

Context India has signed its largest-ever contract for indigenous fighter jets with HAL to procure 97 Tejas Mk1A aircraft for the IAF."

- **Deal Value:** ₹62,370 crore
- Date Finalized: 25 September 2025
- Aircraft Ordered:
 - o 68 single-seat Tejas Mk1A
 - 29 twin-seat Tejas Mk1A
- **Delivery Timeline:** From 2027, spread over six years
- Indigenous Content: Over 64%
- Key Features:
 - UTTAM AESA radar
 - Advanced Electronic Warfare (EW) systems
- Impact:
 - Boosts IAF squadron strength
 - Generates employment opportunities
 - Strengthens India's defence manufacturing ecosystem
 - Advances Aatmanirbhar Bharat (self-reliance in defence)



Tejas Mk1A

- **Type:** Lightweight, single-engine, 4.5 generation multirole fighter aircraft.
- **Developer**: Designed by Aeronautical Development Agency (ADA) and manufactured by Hindustan Aeronautics Limited (HAL).
- Category: Indigenous aircraft under India's Light Combat Aircraft (LCA) program.



Key Features

- Avionics & Radar: Equipped with UTTAM AESA (Active Electronically Scanned Array) radar.
- Electronic Warfare: Advanced EW suite with self-protection jammers and countermeasures.
- **Weapons Capability:** Can carry BVR (Beyond Visual Range) missiles, precision-guided munitions, and air-to-air/air-to-ground missiles.
- Airframe: Composite materials for reduced weight and radar cross-section.
- **Refueling:** In-flight refueling capability.
- **Indigenous Content:** Over 60–65% indigenous systems, contributing to Aatmanirbhar Bharat.

Operational Role

- Designed for air-to-air combat, ground attack, and reconnaissance missions.
- Enhances IAF squadron strength, replacing older MiG-21 aircraft.

INDIA ADDS TWO MORE WETLANDS TO RAMSAR LIST

India has recently added two more wetlands from Bihar to the Ramsar list of wetlands of international importance. This increases India's total Ramsar sites to 93, the highest in Asia and third globally. The new sites are Gokul Jalashay in Buxar district and Udaipur Jheel in West Champaran district. These additions reflect India's growing commitment to wetland conservation and biodiversity protection.

Ramsar Convention and Its Importance

The Ramsar Convention, adopted in 1971 in Ramsar, Iran, is an international treaty for wetland protection. It aims to conserve wetlands and promote their wise use. Currently, 172 countries are members.

Wetlands are crucial for water regulation, flood control, and supporting biodiversity. They also provide resources like food and raw materials.





India's Progress in Ramsar Site Designation

India's Ramsar sites increased from 26 in 2012 to 93 in 2025. These sites cover over 1.36 million hectares. Since 2020, 51 wetlands were added, showing accelerated conservation efforts. India ranks third worldwide after the UK and Mexico in the number of Ramsar sites.

Details of Gokul Jalashay Wetland

Gokul Jalashay is an oxbow lake on the southern edge of the Ganga river. It acts as a natural buffer during floods, protecting nearby villages. The wetland supports over 50 bird species. Local communities depend on it for fishing, farming, and irrigation. Villagers annually clean the wetland during a traditional festival to maintain its health.

Details of Udaipur Jheel Wetland

Udaipur Jheel is another oxbow lake surrounding a village. It hosts over 280 plant species, including Alysicarpus roxburghianus, a herb endemic to India. The wetland is a winter habitat for about 35 migratory bird species, including the vulnerable common pochard. This marks its importance for biodiversity conservation.

Role of Wetlands in Ecology and Livelihoods

Wetlands regulate the hydrological cycle and reduce flood risks. They provide habitats for diverse flora and fauna. They also support livelihoods through fishing, agriculture, and raw materials. Protecting wetlands is vital for climate resilience and sustainable development.

MUNICIPAL SOLID WASTE (MSW) MANAGEMENT RULES IN 2000

India marks 25 years since its first Municipal Solid Waste (MSW) Management Rules in 2000. Despite evolving regulations and infrastructure, many cities still face severe waste management issues.

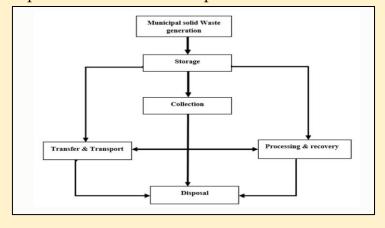
The upcoming 2025 draft Solid Waste Management (SWM) Rules aim to address these challenges with new goals like four-way source segregation and digital monitoring. However, systemic weaknesses remain a barrier to success.

Historical Context and Regulatory Evolution

India's MSW Rules originated from a Supreme Court order in 2000. Since then, the framework expanded with the 2016 SWM Rules and additional regulations for plastic, e-waste, biomedical, hazardous, and construction waste. These aimed for cleaner cities through mandatory segregation and landfill bans. Yet, implementation gaps persist.

Current Waste Management Challenges

Cities like Delhi, Bengaluru, and Gurugram struggle with overflowing landfills and dysfunctional treatment plants. Public spaces remain littered despite infrastructure investments.





Weak local governance, poor contract management, and low public trust undermine progress. Many treatment facilities receive mixed waste, reducing efficiency and increasing pollution.

Source Segregation - Myth and Reality

The 2016 Rules mandated 100% source segregation within two years, but this target proved unrealistic. Comparisons with cleaner cities abroad show that timely collection and strict antilittering enforcement matter more than high segregation rates.

Indian cities often report inflated segregation figures that do not match on-ground realities due to lack of reliable waste data.

Systemic Issues and Data Deficiency

Waste characterisation data is scarce and irregular, leaving municipalities ill-equipped to design effective systems. Poor data leads to mixed messaging, where citizens are urged to segregate waste before proper handling systems exist.

This results in re-mixing of waste during transport and treatment, undermining facility performance and increasing landfill pressure.

Phased and Localised Approach to Waste Management

One-size-fits-all strategies fail in India's diverse urban contexts. A phased approach with realistic targets is essential. Priority should be on improving waste characterisation, robust collection and transport, and managing homogeneous waste streams like horticulture and construction debris separately. Strict enforcement of anti-littering rules can encourage public participation and reduce unmanaged waste.

Role of Governance and Leadership

Effective waste management depends on empowered local governance and committed leadership. Without these, even the best rules remain aspirational. The new draft SWM Rules for 2025 include digital portals and circular economy integration but require practical implementation aligned with local realities to succeed.

SAUDI-PAKISTAN DEFENCE AGREEMENT

Recent developments in 2025 have seen Saudi Arabia Pakistan formalise a Strategic Mutual Defence Agreement. This pact states that any aggression against one will be treated as aggression against both. The deal has caused concern in New Delhi, given India's tense relations with Pakistan. The agreement emerges amid heightened military and diplomatic tensions in South Asia and shifting alliances in West Asia.

Context of the Saudi-Pakistan Defence Agreement

The pact was signed after a major terror attack in Jammu and Kashmir in April 2025, which led to intense military exchanges between India and Pakistan. India sought global support to isolate Pakistan but faced limitations.

The Saudi-Pakistan deal strengthens Islamabad's position internationally. It also comes as India and Saudi Arabia maintain a complex diplomatic relationship, with recent high-level meetings attempting to manage rising tensions.



Geopolitical Implications Beyond South Asia

The pact reflects broader shifts in West Asia, especially after the 2023 Hamas-Israel conflict. Saudi Arabia's strategic calculations now focus on autonomy and multipolarity.

Riyadh is realigning away from reliance on the United States and revisiting traditional alliances. Pakistan's nuclear capability and military expertise remain valuable to Saudi security concerns, especially amid regional conflicts like Yemen and tensions with Iran.

Historical and Strategic Background

Relations between Saudi Arabia and Pakistan have fluctuated over the years. In 2015, Pakistan declined to join Saudi Arabia's campaign in Yemen, causing strain.

However, Saudi Arabia has long valued Pakistan's military experience, particularly against India. The new pact restores and deepens this partnership. It also signals Riyadh's intent to diversify its strategic partnerships amid changing global power dynamics.

Impact on India's Regional Strategy

The defence agreement challenges India's efforts to diplomatically isolate Pakistan. It marks the limits of India's influence in West Asia. The pact puts stress on the enduring religious and ideological bonds between Saudi Arabia and Pakistan, centred on Sunni Islam.

It also questions India's cautious strategic approach. Experts suggest India must adapt quickly and engage more decisively to maintain its regional standing.

Changing Global and Regional Order

The pact exemplifies the move towards multipolarity and strategic autonomy by key states like Saudi Arabia. It also reflects Pakistan's ability to leverage its nuclear status amid global uncertainties.

India's pursuit of a peaceful, idealistic foreign policy may need recalibration in this evolving context. The agreement serves as a reminder that regional and global alliances are fluid and often driven by complex geopolitical interests.

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