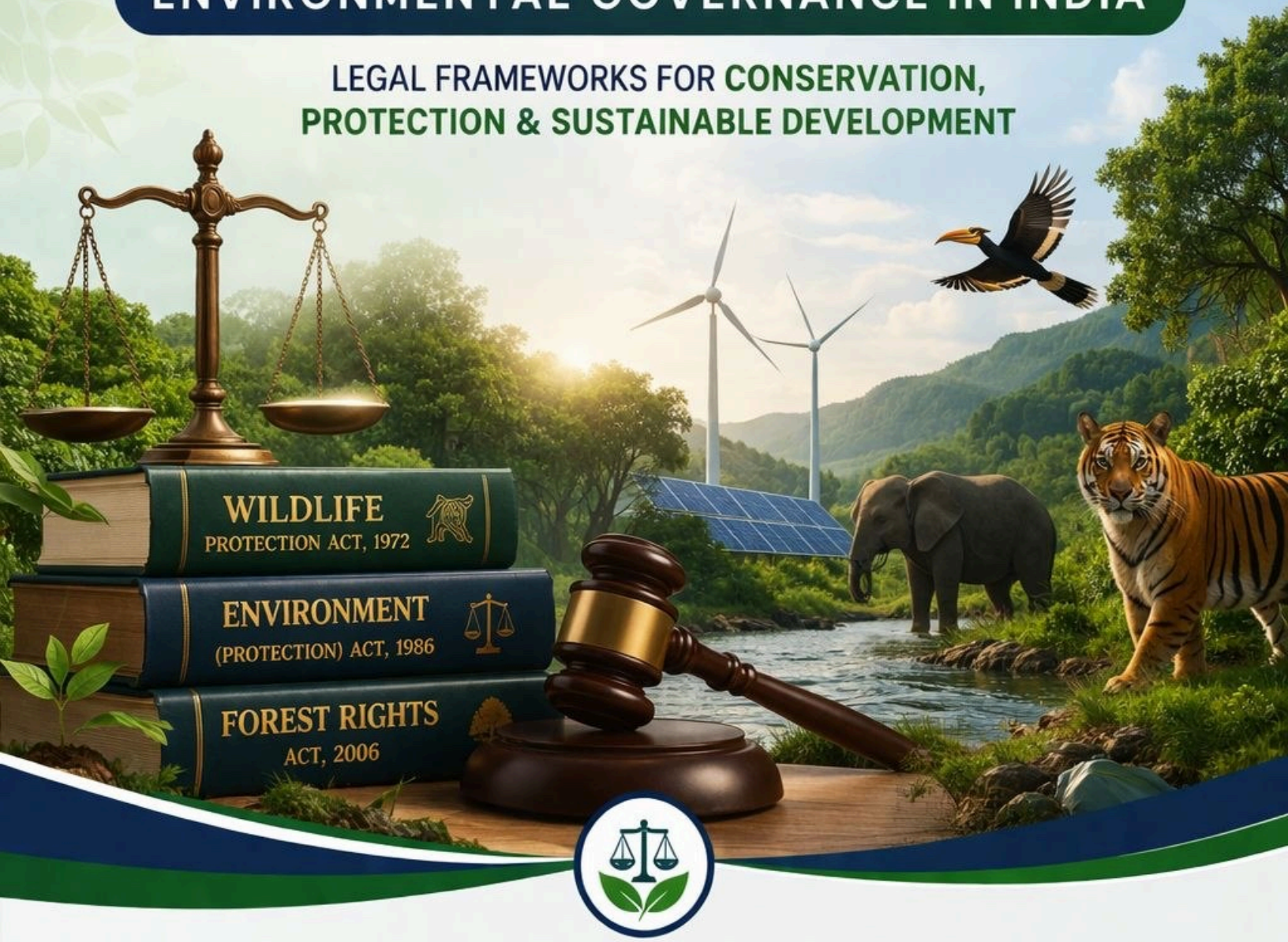
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CHAPTER ON

ACTS & POLICIES

ENVIRONMENTAL GOVERNANCE IN INDIA

LEGAL FRAMEWORKS FOR **CONSERVATION, PROTECTION & SUSTAINABLE DEVELOPMENT**



"PROTECT NATURE, EMPOWER PEOPLE, SUSTAIN THE FUTURE"

1. WILDLIFE PROTECTION ACT, 1972

Introduction

The **Wildlife Protection Act, 1972** is India's first comprehensive legislation for the protection, conservation, and management of wildlife — both flora and fauna. It was enacted in the backdrop of the **United Nations Conference on the Human Environment (Stockholm, 1972)** and rising global environmental awareness.

Prior to this Act, India relied on fragmented and weak colonial laws — the **Wild Birds Protection Act, 1887** and the **Wild Birds and Animals Protection Act, 1912** (amended 1935) — which proved grossly inadequate against rapid biodiversity loss.

FACTS	Details
Year Enacted	1972
Structure	Originally 6 Schedules
Constitutional Basis	Article 48A (DPSP) | Article 51A(g) (Fundamental Duty)
42nd Amendment (1976)	Shifted Forests & Wildlife to Concurrent List
Nodal Ministry	Ministry of Environment, Forest & Climate Change

Constitutional Backing

- **Article 48A (DPSP):** State shall protect and improve the environment and safeguard forests and wildlife.
- **Article 51A(g) (Fundamental Duty):** It is the duty of every citizen to protect and improve the natural environment including forests, lakes, rivers and wildlife.
- **42nd Constitutional Amendment, 1976:** Shifted 'Forests' and 'Wildlife' from State List → Concurrent List, enabling central legislation.

Objectives of the Act

- Protect **endangered species** from extinction
- Prevent **poaching, hunting** and illegal wildlife trade
- Conserve **natural habitats** and maintain ecological balance
- Create a network of **Protected Areas** across India
- Regulate trade in wildlife products under **Schedule provisions**
- Align with international commitments like **CITES**

Protected Areas — Five Types

1. Wildlife Sanctuary

- **Limited human activity** allowed inside the boundary
- Declared by **State Government**; can be de-notified by State Legislature
- Example: **Bharatpur Bird Sanctuary, Rajasthan**

2. National Park

- **Strictest protection** — no grazing, no private rights, no extraction
- Boundary can only be altered by the **State Legislature**
- Example: **Jim Corbett National Park, Uttarakhand** (India's first, 1936)

3. Conservation Reserve

- Buffer or connector zones **adjacent to protected areas**
- Declared by **State Government** after consultation with local communities

4. Community Reserve

- On **private or community land** — not government land
- Governed with **community participation**; Conservation plan prepared by Community Reserve Management Committee

5. Tiger Reserve

- Declared by **State Government** on recommendation of **NTCA**
- Consists of a **Core Zone** (inviolate) and **Buffer Zone** (eco-sensitive)

Schedules of the Act

Before 2022 Amendment (6 Schedules)	After 2022 Amendment (4 Schedules)
Schedule I & II → Highest protection; most stringent penalties	Schedule I → Highest protection (merged S-I & S-II)
Schedule III & IV → Moderate protection	Schedule II → Moderate protection
Schedule V → Vermin (can be hunted)	Schedule III → Plants (earlier S-VI)
Schedule VI → Protected Plants	Schedule IV → CITES-listed species
Hunting of S-I species: non-bailable offence	Stronger penalties; CITES alignment ensured

Institutional Framework

◆ National Board for Wildlife (NBWL)

- Chaired by the **Prime Minister of India** (apex advisory body)
- Advises the Central Government on wildlife policy and legislation
- **Standing Committee** chaired by the Minister of Environment handles clearances for projects in eco-sensitive zones

◆ National Tiger Conservation Authority (NTCA)

- Statutory body under WPA for **Project Tiger** implementation
- Evaluates, approves, and monitors **Tiger Conservation Plans**
- Coordinates **Tiger Reserve management** and human-wildlife conflict resolution

◆ Central Zoo Authority (CZA)

- Regulates and **recognizes zoos** across India
- Oversees **captive breeding programs** and exchange of animals

◆ Wildlife Crime Control Bureau (WCCB)

- Statutory body to combat **organized wildlife crime**
- Maintains **national database** of wildlife criminals
- Coordinates with **INTERPOL** and international agencies

Major Conservation Initiatives

- **Project Tiger (1973), Project Elephant (1992), Crocodile Conservation Project (1975), Project Lion, Project Cheetah (2022) and Project Dolphin (2020)**

Recent Developments (2024–2026)

- **Wildlife Rules, 2024:** Stricter licensing for captive animals and animal articles; focus on illegal trade control

- **Human-Wildlife Conflict (HWC):** Rising due to habitat fragmentation; States demanding more powers — raises federal governance issues
- **M-STrIPES:** GPS-based monitoring system for tigers in reserves
- **AI Camera Traps & Drones:** Technology-driven anti-poaching surveillance
- **30×30 Target:** Kunming-Montreal Biodiversity Framework — protect 30% land & water by 2030
- **Low conviction rate (~2–3%):** Major enforcement challenge in wildlife crime cases

Challenges

- **Human-Wildlife Conflict:** Increasing due to shrinking habitats; elephants, leopards, and tigers frequently enter human settlements
- **Illegal Wildlife Trade:** India remains a key transit and source country for wildlife trafficking
- **Weak Enforcement:** Low conviction rates, poor coordination between forest departments and police
- **Centre-State Conflicts:** States resisting Centre's authority over protected areas
- **Climate Change:** Shifting habitats and phenological mismatches threatening species survival

2. ENVIRONMENT (PROTECTION) ACT, 1986

India's umbrella environmental legislation — enacted post Bhopal Gas Tragedy

Introduction

The **Environment (Protection) Act, 1986 (EPA)** is a comprehensive **umbrella legislation** enacted under **Article 253** of the Constitution to fulfill India's obligations from the **Stockholm Conference on Human Environment (1972)**. It came into force on **19 November 1986**.

It is widely regarded as a direct **legislative response to the Bhopal Gas Tragedy (1984)**, which exposed critical gaps in India's environmental governance framework. The tragedy killed over 15,000 people and exposed the absence of any comprehensive environmental protection law.

QUICK FACTS	Details
Year Enforced	19 November 1986
Constitutional Basis	Article 253 (implementing international commitments)
Triggered By	Bhopal Gas Tragedy (1984) + Stockholm Conference (1972)
Nature of Act	Umbrella Act — integrates Water Act (1974) & Air Act (1981)
Penalty	Up to 5 years imprisonment + Fine up to ₹1 lakh
Additional Penalty	₹5,000/day for continuing offences

Why is EPA Called an 'Umbrella Act'?

- Provides a **framework law** that coordinates action across all agencies — Centre + States + Pollution Boards
- Fills gaps in the **Water Act (1974)** and **Air Act (1981)**, which covered only specific media
- Covers **all environmental components: air, water, land, biodiversity, noise, and hazardous substances**
- **Override Clause**: EPA prevails over provisions of any conflicting law

- **Relaxed Locus Standi**: Any citizen can approach court with 60-day advance notice to government
- Empowers Central Government to set **environmental quality standards** and regulate emissions/discharge

Key Powers of Central Government under EPA

- Set **environmental quality standards** for emissions, effluents, and substances
- Regulate or **restrict industrial operations** in ecologically sensitive areas
- Appoint **environmental laboratories and government analysts**
- Issue directions to any person or authority to **prevent or control environmental pollution**
- Restrict or **prohibit handling** of hazardous substances
- **Inspect and sample** industrial or any other unit for compliance

Key Institutional Mechanisms under EPA

◆ National Green Tribunal (NGT) — Est. 2010

- Specialised fast-track court for environmental disputes
- Operates under **NGT Act, 2010**, but draws jurisdiction from EPA
- India is the **1st developing nation** to establish such a tribunal

◆ Genetic Engineering Appraisal Committee (GEAC)

- Apex body for approval of **Genetically Modified (GM) crops** and organisms
- Operates under EPA; reviews environmental and biosafety risks

◆ National Ganga River Basin Authority (NGRBA)

- Declared **Ganga as National River** in 2009
- Now subsumed under **Namami Gange Programme** (2015)

Recent Developments (2024–2026)

▸ A. Environment Protection Amendment Bill, 2025

- Expands definition of 'environment' to explicitly include **ecosystems and biodiversity**
- Shift from pollution-control model → **ecosystem-based governance model**
- Enhances Central Government's powers over **environmental standards and enforcement**

▸ B. Governance & Digital Reforms

- **PARIVESH 2.0 Portal**: Digital platform for **environmental clearances**; ensures faster, transparent approvals
- **Green Credit Programme**: Market-based incentive for **tree plantation** and ecosystem restoration
- **ELV Rules, 2025**: End-of-Life Vehicles Rules; promotes **circular economy** for automobiles
- **Contaminated Sites Rules (Draft)**: Based on **Polluter Pays Principle** and Absolute Liability

▸ C. Judicial Developments

- **Ban on Ex-Post Facto Clearance**: Supreme Court declared retrospective environmental approvals invalid — strengthens rule of law
- **Polluter Pays Principle**: Applied strictly in industrial pollution and river cleaning cases by NGT
- **Active NGT Role**: Environmental compensation, industry monitoring, water body protection

▸ D. Technology Integration

- **AI-Based Monitoring**: Real-time pollution tracking with satellite data
- **GIS & Remote Sensing**: Forest monitoring and land-use change detection

- **Carbon Markets**: Linked with Energy Conservation (Amendment) Act; EPA complements India's climate framework

Drawbacks & Limitations

- **Excessive Centralisation**: Weak role of State governments in implementation
- **Limited Scope**: Does not fully cover noise pollution, radiation, or electromagnetic fields
- **Weak Public Participation**: Citizens' role limited; 60-day notice rule is often a deterrent
- **Implementation Gap**: Enforcement agencies often lack capacity and resources
- **Inter-Agency Conflicts**: Multiple bodies — CPCB, SPCBs, NGT — sometimes work at cross purposes

Key Doctrines Applied under EPA

- **Polluter Pays Principle**: The one who causes pollution bears the cost of remediation
- **Precautionary Principle**: When an activity raises threats of harm, precautionary measures must be taken even if some cause-effect relationships are not fully established
- **Absolute Liability**: Hazardous enterprises are absolutely liable for harm caused, regardless of negligence (Oleum Gas Case, 1987)
- **Sustainable Development**: Meeting present needs without compromising future generations

3. NATIONAL FOREST POLICY, 1988

Introduction

The **National Forest Policy, 1988** represents a paradigm shift in India's forest governance — from **revenue-oriented extraction → ecological conservation** and people-centric management. It recognises forests as **ecological assets, life-support systems**, and sources of livelihood for forest-dependent communities.

Its **principal aim** is: 'To ensure **environmental stability and ecological balance**, including atmospheric equilibrium, essential for sustaining all life forms, human, animal and plant.'

QUICK FACTS	Details
Year	1988 (replaced NFP 1952)
Forest Cover Target	33% of India's total geographical area
Key Shift	Commercial exploitation → Ecological sustainability
Key Concept	Joint Forest Management (JFM)
Constitutional Basis	Article 48A | Article 51A(g) | Concurrent List

Core Objectives

A. Ecological Stability & Biodiversity

- Conserve **natural forests** — no conversion for commercial use
- Protect **flora, fauna, genetic diversity** and the national natural heritage
- Maintain **atmospheric equilibrium** — forests as carbon sinks

B. Soil & Water Conservation

- Control **soil erosion** and land degradation across vulnerable landscapes
- Protect **catchment areas** of rivers, lakes, and reservoirs
- Prevent floods, droughts, and **reservoir siltation**

C. Forest Cover Expansion

- Increase forest and tree cover to **33%** of total geographical area (current ~24%)
- Promote **afforestation, reforestation**, and social forestry on degraded lands
- Encourage **farm forestry** and **tree pattas** (land allocation to landless for trees)

D. People's Participation

- Create a **mass movement** for forest conservation
- Special emphasis on **women's participation** in forest management
- Promote **Joint Forest Management (JFM)** — community shares both responsibility and benefits
- Provide communities: **fuelwood, fodder, timber, and Minor Forest Produce (MFP)**

Key Concepts Introduced by 1988 Policy

- **Social Forestry**: Growing trees on community, government, and panchayat lands for community use
- **Farm Forestry**: Encouraging farmers to grow trees on private agricultural lands
- **Tree Pattas**: Allocation of land to landless labourers for growing trees — innovative land rights mechanism
- **Joint Forest Management (JFM)**: Community–government partnership for protecting and managing forests
- **Minor Forest Produce (MFP)**: Non-timber forest products — bamboo, honey, lac, tendu leaves, medicinal plants

Climate Change & India's Forest Commitments

- India's **NDC Target**: Create **2.5–3 billion tonnes of CO_2 carbon sink** through forests and trees by 2030
- **Net Zero by 2070**: Forests play a critical role as carbon sinks and climate regulators
- India signed **Bonn Challenge**: Restore 26 million hectares by 2030
- **REDD+** (UNFCCC): Carbon incentives for reducing deforestation and forest degradation
- **UN Decade on Ecosystem Restoration (2021–2030)**: India active participant

Major Government Initiatives

◆ Green India Mission (GIM)

- Restore **5 million hectares** of forest/tree cover; enhance carbon sinks by 43 MT CO_2/year
- One of the 8 National Missions under **National Action Plan on Climate Change (NAPCC)**

◆ MISHTI Scheme (2023)

- Mangrove Initiative for Shoreline Habitats and Tangible Incomes
- Focus on **mangrove restoration** along Indian coastline; coastal ecosystem protection

◆ CAMPA Fund

- Compensatory Afforestation Fund Management and Planning Authority
- Utilises funds from **forest diversion** for afforestation and ecosystem restoration

◆ Nagar Van Yojana

- Development of **urban forests** in 200 cities; improves urban biodiversity and air quality

Draft National Forest Policy, 2018

- Proposes **National Forest Board** — to coordinate policy at national level
- Emphasis on **climate change mitigation** through forests
- Welcomes **private sector participation** in afforestation
- Promotes **urban forestry** and agroforestry models
- Still under consultation — **not yet officially replaced 1988 Policy**

India State of Forest Report (ISFR)

- Forest & tree cover ≈ **24–25%** of India's total area (gradual increase)
- Concern: **Decline in natural/primary forests** in some ecologically sensitive regions
- **Godavarman Case (1996)**: SC gave broad definition of 'forest' — includes all lands irrespective of ownership

4. BIOLOGICAL DIVERSITY ACT, 2002

Introduction

The **Biological Diversity Act, 2002** was enacted to fulfil India's obligations under the **Convention on Biological Diversity (CBD)**, signed at the **Rio Earth Summit, 1992**. India is among the world's 17 **mega-diverse countries**, harbouring ~7-8% of species with only 2.4% of landmass.

The Act was triggered by high-profile **biopiracy cases** — the **Neem case** (European patent on neem-based pesticide) and **Turmeric case** (US patent on turmeric's wound-healing properties) — which exposed the vulnerability of India's biological resources and traditional knowledge.

QUICK FACTS	Details
Year	2002 (operational from 2003)
Linked To	Convention on Biological Diversity (CBD), 1992
Triggered By	Biopiracy cases — Neem, Turmeric, Basmati
Three Pillars	Conservation | Sustainable Use | Fair Benefit Sharing (ABS)
Nodal Body	National Biodiversity Authority (NBA), Chennai
Key Amendment	Biological Diversity (Amendment) Act, 2023

Three-Tier Institutional Framework

1. National Biodiversity Authority (NBA)

- Headquarters: **Chennai**; statutory autonomous body
- Functions: Approves access for **foreign entities** to biological resources
- Ensures **fair and equitable benefit sharing (ABS)**; advises Central Govt on biodiversity matters
- Prevents **biopiracy** and illegal IPR (patent) claims based on Indian resources
- Notifies **threatened species** and biodiversity-rich areas

2. State Biodiversity Boards (SBBs)

- Regulate **commercial use** of biological resources by Indian nationals
- Advise State Governments on biodiversity conservation policies
- Can declare **Biodiversity Heritage Sites (BHS)** under Section 37

3. Biodiversity Management Committees (BMCs)

- At local level — **Panchayat and Municipality level**
- Prepare and maintain **People's Biodiversity Register (PBR)**: documents local biodiversity, traditional knowledge, and medicinal uses
- PBR serves as **legal evidence** for ABS and biopiracy prevention claims
- Conservation and **sustainable use** of local biological resources

Regulation of Access to Biological Resources

- Prior approval required from **NBA** for: access by foreign entities, research, commercial use, transfer of results
- Prior approval required from **SBB** for commercial use by Indian nationals
- **Exemptions**: Farmers, vaids (traditional healers), hakims, breeders using resources as commodities; approved collaborative research
- IPR (patents): Approval must be obtained **before applying for patent**, not just before grant (2023 reform)

Biodiversity Heritage Sites (BHS)

- Declared under **Section 37** of the Act
- Criteria: High biodiversity richness, endemic/rare species, cultural/ecological importance
- Examples: **Nallur Tamarind Grove (Karnataka)**, **Rujum (Meghalaya)**

Biological Diversity (Amendment) Act, 2023 — KEY REFORM

◆ Decriminalisation

- Imprisonment as punishment **removed** for most violations
- **Monetary penalties** introduced instead — more industry-friendly approach

◆ AYUSH & Traditional Knowledge

- Significant **exemptions for traditional medicine practitioners** — vaids, hakims, AYUSH sector
- Encourages domestic **bio-economy growth** and Ayurvedic/traditional medicine industry

◆ ABS Simplification

- Reduced compliance burden for **domestic research and Indian industry**
- Cultivated medicinal plants **exempt** from ABS requirements

◆ IPR Reform

- Approval required from NBA **before grant** of patent (earlier: before application)
- Reduces bureaucratic delay; streamlines **patent process**

ABS Regulations, 2025 & Digital Sequence Information (DSI)

- **Digital Sequence Information (DSI)**: Genetic data stored in digital/electronic form — new challenge in biodiversity governance
- DSI increasingly used in **biotechnology and pharmaceutical R&D** without physical access to species
- **CBD COP-16 (2024)**: Global benefit-sharing mechanism for DSI established — India active participant
- NBA share in benefit sharing: approximately **10–15%** of profits from commercial use

Criticisms & Concerns

- **2023 Amendment**: Decriminalisation may reduce deterrence and weaken enforcement
- **Weakens local community rights**: Reduced role of BMCs; risk of corporate exploitation
- **ABS dilution**: Simplification may benefit large industry more than local communities
- **PBR data protection**: Weak legal safeguards for people's biodiversity registers
- **More focus on benefit sharing** than actual conservation — imbalanced approach

5. THE SCHEDULED "TRIBES AND OTHER TRADITIONAL FOREST DWELLERS (RECOGNITION OF FOREST RIGHTS) ACT, 2006

Introduction

The **Forest Rights Act, 2006 (FRA)** is a landmark legislation aimed at correcting the **historical injustice** faced by forest-dwelling communities — particularly **Scheduled Tribes (STs)** and **Other Traditional Forest Dwellers (OTFDs)** — caused by colonial and post-independence forest policies. Colonial laws like the **Indian Forest Act, 1865**, and later amendments converted forests into **state-controlled commercial assets**, stripping communities of their customary rights. This injustice continued post-independence until the FRA sought to restore rights and integrate communities into forest governance.

QUICK FACTS	Details
Year	2006 (Scheduled Tribes & Other Forest Dwellers Recognition Act)
Nodal Ministry	Ministry of Tribal Affairs
Land Limit	Max 4 hectares — only for existing cultivated land
Core Authority	Gram Sabha — initiates, receives and verifies all claims
OTFD Eligibility	75 years (3 generations) residence in forest before 13 Dec 2005
Rights Nature	Heritable but NOT transferable or alienable
Appeal Structure	Gram Sabha → SDLC → DLC

Objectives

- Correct **historical injustice** suffered by forest communities under colonial and post-colonial laws
- Ensure **land tenure security** and livelihood rights
- Strengthen **food security** through access to forest land and produce
- Promote **sustainable forest management** through community participation
- Integrate **conservation with community rights** — not treat them as opposites

Four Types of Rights under FRA

A. Title Rights

- **Ownership up to 4 hectares** of land — only for land already under cultivation
- Titles are **joint titles** (including female member of household) where applicable
- Right is **heritable but NOT transferable** — cannot be sold or mortgaged

B. Use Rights

- Rights to **grazing**, collection of **Minor Forest Produce (MFP)**, fishing, and water access
- **MFP includes**: Bamboo, honey, lac, tendu leaves, mahua, medicinal plants, resin — ownership + collection + use + disposal rights
- Rights over **seasonal resource access**, intellectual property, and biodiversity

C. Relief & Development Rights

- Rehabilitation rights for those **illegally evicted** from forests before 2005
- Rights to **basic facilities**: schools, hospitals, aanganwadis, roads, drinking water, telecom towers, tanks within forest land

D. Forest Management Rights (CFR)

- Right to **protect, conserve, manage, and regenerate** Community Forest Resources (CFR)
- **Gram Sabha** empowered to regulate access, resolve disputes, and prepare conservation plans

- Key for **decentralised forest governance**

Governance Structure & Procedure

◆ Claim Filing Process

1. **Gram Sabha**: Initiates, receives, and verifies claims; passes resolution
2. **SDLC** (Sub-Divisional Level Committee): Screens and reviews claims; can reject with reasons
3. **DLC** (District Level Committee): Final decision authority; appeal lies here from SDLC rejection

- Further appeal: State-level appellate body; beyond that High Court

Significance of FRA

- **Social Justice**: Recognises rights of India's most marginalised communities; corrects centuries of injustice
- **Livelihood Security**: Access to MFP boosts income of ~200 million forest-dependent people
- **Decentralised Governance**: Gram Sabha as a forest governance institution — grassroots democracy
- **Conservation**: Community-managed forests often show better biodiversity outcomes
- **Internal Security**: Reduces tribal alienation, addresses root causes of Naxalism in central India

Challenges

- **High claim rejection rate**: Often due to technicalities — lack of documentary evidence
- **Forest bureaucracy resistance**: Forest departments reluctant to cede authority to Gram Sabhas
- **Lack of awareness**: Many eligible communities unaware of their rights
- **Risk of encroachment**: Critics argue FRA could be misused to encroach fresh forest land
- **Weak Gram Sabha capacity**: Many Gram Sabhas lack skills for preparing conservation plans

6. COASTAL REGULATION ZONE (CRZ)

Regulating India's 7,500 km coastline — ecology, economy, and community

Introduction

The **Coastal Regulation Zone (CRZ)** refers to coastal stretches influenced by tidal action, notified under the **Environment Protection Act, 1986**. First notified in **1991**, it aims to balance **environmental conservation + economic development + livelihood security** along India's 7,500 km coastline.

QUICK FACTS	Details
First Notification	1991 — under EPA, 1986
Latest Notification	CRZ Notification, 2019
Land Coverage	Up to 500 m from High Tide Line (HTL)
Marine Area	HTL to 12 nautical miles (Territorial Waters)
Nodal Body	National Coastal Zone Management Authority (NCZMA)
Based on Recommendations	Shailesh Nayak Committee (for 2019 notification)

CRZ Classification — Four Zones

▸ CRZ-I — Ecologically Sensitive Areas

- **Includes**: Mangroves, coral reefs, sand dunes, wetlands, inter-tidal zone (HTL–LTL)
- **No construction** permitted in CRZ-I areas
- Only permitted: Defence, atomic energy, pipelines, ports (essential activities)
- Strictest zone — irreplaceable ecosystems

▸ **CRZ-II — Urban Developed Areas**

- Already **substantially built-up** areas along the coast
- Construction allowed **only on landward side** of existing structures
- Must follow **existing town planning norms and building regulations**

▸ **CRZ-III — Rural / Undisturbed Areas**

- **0–200 m from HTL → No Development Zone (NDZ)**: No construction allowed
- **200–500 m → Regulated development**: Housing beyond 200 m, tourism, repairs permitted
- Reduced NDZ to **50 m** in some areas under CRZ 2019 (fishermen villages)

▸ **CRZ-IV — Marine Area**

- From Low Tide Line (LTL) to **12 nautical miles** (Territorial Waters)
- **No pollution discharge** of any kind
- **Traditional fishing** and related activities allowed

Critical Vulnerable Coastal Areas (CVCAs)

- **Sundarbans** (West Bengal) — Largest mangrove ecosystem; UNESCO World Heritage Site
- **Gulf of Kutch** (Gujarat) — Coral reefs, marine national park
- **Vembanad** (Kerala) — Ramsar Site; backwaters; under strict regulation
- **Bhitarkanika** (Odisha) — Mangroves and saltwater crocodiles

CRZ Notification, 2019 — Key Reforms

- Based on **Shailesh Nayak Committee** recommendations
- **Ease of Doing Business**: Streamlined clearances for tourism and coastal infrastructure
- Reduced NDZ in some areas — supports fishermen's housing closer to coast
- Increased role of **State Coastal Zone Management Authorities (SCZMAs)**
- Enhanced focus on **climate resilience** — Coastal Vulnerability Index (CVI) for high-risk zones
- **Blue Economy linkage**: CRZ aligned with fisheries, offshore energy, coastal tourism

Blue Flag Programme

- International eco-label for beaches ensuring **clean water, safety & sustainability**
- Criteria: **33 parameters** including water quality, safety, environmental education
- India currently has **13 Blue Flag beaches** (2024)

7. SOLID WASTE MANAGEMENT RULES, 2016

Introduction

The **Solid Waste Management (SWM) Rules, 2016** replaced the Municipal Solid Waste Rules, 2000. They marked a major shift by expanding scope beyond urban areas to rural and peri-urban areas. India generates **~62 million tonnes** of solid waste per year, with only ~20% scientifically processed.

QUICK FACTS	Details
Year	2016 — under EPA, 1986
Replaced	Municipal Solid Waste Rules, 2000
Waste Generated	~62 million tonnes/year (India)

Processing Rate	Only ~20% scientifically processed
Key Principle	Polluter Pays | Extended Producer Responsibility (EPR)
New Rules	SWM Rules, 2026 — effective April 2026

Key Features

- **Mandatory Segregation at Source**: Biodegradable (wet), Dry waste, Domestic hazardous waste
- **Extended Producer Responsibility (EPR)**: Producers/brand owners must collect back non-biodegradable packaging
- **Ban on Open Burning**: Prohibited due to air pollution and public health risks
- **Decentralised Processing**: Promote composting, bio-methanation at local level
- **Waste-to-Energy (WtE)**: Ministry of Power fixes tariffs; Ministry of NRE provides subsidies
- **RDF Mandate**: Industries within 100 km must use at least 5% Refuse-Derived Fuel (RDF)
- **Informal Sector Integration**: Rag pickers and kabadiwalas included in waste management
- **Sanitary Landfill Norms**: 100 m from rivers, 200 m from ponds, 500 m from habitation, 20 km from airports

SWM Rules, 2026 — Major Reform

- **Four-way segregation**: Wet waste | Dry waste | Sanitary waste | Special care waste
- Stronger **bulk generator responsibility** and on-site processing mandates
- Introduction of **environmental compensation** (penalties for non-compliance)
- Greater focus on **Circular Economy** — waste as a resource

Key Case Studies

- **Ambikapur Model (Chhattisgarh)**: Ward-level composting and biogas; zero-waste city approach
- **Indore**: Consistently ranked cleanest city — successful waste segregation
- **Swachh Bharat Mission (Urban 2.0)**: Focus on garbage-free cities and legacy waste remediation

8. E-WASTE MANAGEMENT RULES, 2022

India — 3rd largest e-waste generator; shifting to market-based EPR system

Introduction

India is the **3rd largest e-waste generator globally** (~1.75 million tonnes in 2023-24). E-waste contains **toxic substances** (lead, mercury, cadmium, beryllium) AND **valuable metals** (gold, copper) — creating scope for **urban mining**. The 2022 Rules represent a paradigm shift from collection-based → **recycling-based targets**.

QUICK FACTS	Details
E-Waste Generation	~1.75 million tonnes (2023-24)
India's Global Rank	3rd largest generator
Recycling Rate	~40–43% (improved from <5% in 2016)
Linked Conventions	Basel Convention | Minamata Convention | Stockholm Convention

Key Features of 2022 Rules

- **EPR Certificate Mechanism**: Producers must purchase certificates issued by registered recyclers — **tradeable**, similar to carbon markets
- **Digital Compliance System**: Mandatory registration on CPCB EPR Portal — ensures traceability
- **Environmental Compensation**: Penalty funds used for recycling R&D and infrastructure
- **106 EEE Categories**: Expanded from 21 in 2016 rules — comprehensive coverage
- **Circular Economy Approach**: Focus on reuse, refurbishment, recycling, and urban mining
- **Refrigerant Management**: Added in 2023 amendment

Hazardous Components & Health Impacts

Substance	Health Impact
Lead (in circuit boards)	Neurological damage, especially in children
Cadmium (in batteries)	Kidney failure, bone disease
Mercury (in displays)	Brain damage, bioaccumulation in food chain
Beryllium (in connectors)	Lung cancer, chronic beryllium disease
Brominated flame retardants	Endocrine disruption, reproductive harm

9. NATIONAL GREEN TRIBUNAL (NGT), 2010

Introduction

The **National Green Tribunal (NGT)** was established under the **NGT Act, 2010** for effective and expeditious disposal of environmental cases. India became the **3rd country globally** (after Australia and New Zealand) and the **1st developing nation** to establish such a body. It draws constitutional basis from **Article 21** — the right to a healthy environment.

QUICK FACTS	Details
Year	2010 — under NGT Act, 2010
Constitutional Basis	Article 21 (Right to Healthy Environment)
Time Limit	Disposal within 6 months
Composition	Chairperson + Judicial + Expert Members (Min 10, Max 20 each)
Tenure	5 years, no reappointment (ensures independence)
Maximum Penalty	3 years imprisonment OR Fine up to ₹10 crore, or both
Appeal	Lies to Supreme Court within 90 days
Benches	New Delhi (Principal), Bhopal, Pune, Kolkata, Chennai

Three Guiding Principles

- **Polluter Pays Principle**: The polluter bears the cost of preventing, controlling, and remediating pollution

- **Precautionary Principle**: When there are threats of harm, precautionary measures must be taken even without full scientific certainty
- **Sustainable Development**: Balance ecological sustainability with economic development needs

Seven Acts under NGT Jurisdiction

- **Water (Prevention & Control of Pollution) Act, 1974**
- **Water (Prevention & Control of Pollution) Cess Act, 1977**
- **Forest (Conservation) Act, 1980**
- **Air (Prevention & Control of Pollution) Act, 1981**
- **Environment (Protection) Act, 1986**
- **Public Liability Insurance Act, 1991**
- **Biological Diversity Act, 2002**

*Note: NGT has **NO jurisdiction** over **Wildlife Protection Act, 1972** and **Forest Rights Act, 2006**.*

Landmark Judgements

- **POSCO Case (2012)**: Halted construction in forest area — reinforced forest protection
- **Almitra H. Patel (2012)**: Banned open burning of municipal waste
- **Diesel Ban (2015)**: 10-year-old diesel vehicles banned in Delhi NCR
- **Art of Living Case (2017)**: ₹5 crore penalty for environmental damage at Yamuna floodplain
- **Great Nicobar (2024)**: Allowed project with conditions — coral transplantation, coastal erosion prevention

Recent Developments (2021–2026)

- **Suo Motu Powers (2021)**: Supreme Court allowed NGT to take up cases on its own initiative — makes NGT proactive watchdog
- **Data-Driven Adjudication**: NGT now relying on GIS, satellite data, scientific reports for evidence-based decisions
- **Pro-Development Trend**: Analysis shows ~80% recent decisions favour project developers — concern for weakening precautionary principle
- **Stronger Enforcement (2025)**: Active action on illegal sand mining, urban pollution, encroachment on water bodies

Challenges & Criticism

- **Implementation Deficit**: Orders often poorly implemented by States; biggest challenge is not adjudication but compliance
- **Jurisdictional Gaps**: No power over WPA and FRA — major environment laws outside NGT scope
- **Capacity Constraints**: Staff shortages; limited benches cause accessibility issues
- **Pro-Development Bias**: Critics argue NGT is increasingly favouring economic growth over ecology
- **Conflict with High Courts**: Jurisdictional overlap under Article 226 remains unresolved

10. ODS (REGULATION & CONTROL) RULES, 2000

Introduction

The **Ozone Depleting Substances (ODS) Rules, 2000** were notified under EPA, 1986, to regulate and phase out **Ozone Depleting Substances (ODS)** in line with India's obligations under the **Montreal Protocol (1987)** — widely regarded as the most successful environmental treaty, having phased out nearly **98% of ODS globally**.

QUICK FACTS	Details
Year	2000 — under EPA, 1986
Global Framework	Montreal Protocol, 1987
Kigali Amendment	India ratified in 2021 — HFC phase-down
HCFC-141b Ban	From January 1, 2020 (ahead of schedule)
HFC Phase-down Start	2028 (India)
Target	85% HFC reduction by 2047

Phase-Out Schedule

Substance	Phase-Out Deadline
Halons	Banned after 1 January 2001
CFCs (most uses)	Banned after 1 January 2003
Carbon Tetrachloride & Methyl Chloroform	Phased out by 1 January 2010
Methyl Bromide	Phased out by 1 January 2015
HCFC-141b (foam sector)	Banned from 1 January 2020
HCFCs (all uses)	Complete phase-out by 2040
HFCs (Kigali Amendment)	Phase-down starts 2028; 85% by 2047

Kigali Amendment & HFC Phase-Down — CRITICAL FOR UPSC

Note	Kigali Amendment bridges ozone protection with climate change mitigation — a unique dual-benefit treaty.

- India ratified **Kigali Amendment to Montreal Protocol** in **2021**
- Targets **Hydrofluorocarbons (HFCs)** — NOT ozone-depleting but have **very high Global Warming Potential (GWP)**
- India's targets: Start phase-down **2028**; 10% by 2032; 20% by 2037; 30% by 2042; **85% by 2047**
- India achieved **44% HCFC reduction** vs 35% target — exceeded expectations
- Alternative refrigerants: **Hydrocarbons (HCs)**, **Ammonia (NH_3)**, **CO_2** — zero ODP, low GWP