

Environmental Protection & Biodiversity Conservation

Study Notes

1. Environment (Protection) Act, 1986 (EPA)

Background

- Enacted after the **Bhopal Gas Tragedy (1984)** exposed gaps in India's environmental legal framework.
- Passed under **Article 253** of the Constitution (to implement decisions of the **1972 Stockholm Conference** on the Human Environment).
- Acts as an "**umbrella legislation**" — coordinates activities of central/state agencies under existing laws (Water Act 1974, Air Act 1981).

Key Definitions (Section 2)

- **Environment:** includes water, air, land, and their inter-relationship with human beings, other living creatures, plants, micro-organisms, and property.
- **Environmental pollutant:** any solid, liquid, or gaseous substance present in a concentration injurious to the environment.
- **Hazardous substance:** any substance that may cause harm to human beings, other living creatures, plants, microorganisms, property, or the environment.

Powers of the Central Government (Sections 3–5)

- Take all measures necessary to protect and improve environmental quality and prevent/control pollution.
- Lay down standards for quality of environment and emission/discharge of pollutants.
- Restrict areas for industries/operations.
- Lay down safeguards for handling hazardous substances.
- Establish/recognise environmental laboratories.
- Power to give directions (Section 5) — including closure, prohibition, or regulation of any industry, and stoppage/regulation of electricity, water, or other services.

Penalties (Section 15)

- Imprisonment up to **5 years** or fine up to **₹1 lakh**, or both.
- Additional fine of **₹5,000/day** for continuing violation.
- If violation continues beyond one year after conviction — imprisonment may extend to **7 years**.

Important Rules Framed Under EPA

- Hazardous Waste (Management & Handling) Rules

- Coastal Regulation Zone (CRZ) Notification, 1991/2019
- Environment Impact Assessment (EIA) Notification, 2006 (see Section 6)
- Bio-Medical Waste Management Rules
- E-Waste Management Rules
- Plastic Waste Management Rules

2. Wildlife (Protection) Act, 1972

Background

- India's primary law for protection of wild animals, birds, and plants.
- Enacted to check rapidly declining wildlife populations; provides the basis for Project Tiger (1973).
- Extends to the whole of India (J&K's own act was merged into this after Article 370's abrogation, 2019).

Structure — Schedules (originally 6; consolidated to 4 by 2022 amendment)

Schedule	Protection Level	Examples
I	Highest protection, absolute protection, harshest penalties	Tiger, Snow Leopard, Rhino, Blackbuck
II	High protection	Kohinoor beetle, Assamese macaque
III & IV (old)	Protected, lesser penalty	Some wild pigs, certain birds
V	Vermin (can be hunted)	Common crow, fruit bats, rats
VI	Prohibition of cultivation of specified plants	Beddome cycad, blue vanda, pitcher plant

Key Provisions

- **Section 2:** Definitions — "animal," "hunting," "wildlife," "habitat."
- **National Board for Wildlife (NBWL)** — chaired by the Prime Minister; advisory body on wildlife policy.
- **State Boards for Wildlife** — chaired by Chief Minister.

Provides for declaration of:

- **National Parks (Section 35)** — highest protection; no human activity allowed except with permission.
- **Wildlife Sanctuaries (Section 26A)** — some regulated human activity permitted.
- **Conservation Reserves & Community Reserves (2002 amendment)** — buffer zones/connecting corridors, involve local community participation.
- **Central Zoo Authority** — regulates zoos (established 1992).
- **Wildlife Crime Control Bureau (WCCB)** — statutory body (2006) to combat organised wildlife crime.

- Prohibits hunting of Schedule I & II species except in self-defence or if declared "man-eater"/dangerous.
- **CITES** implementation is tied to this Act (Convention on International Trade in Endangered Species).

2022 Amendment — Key Changes

- Reduced number of schedules from six to four.
- Empowered central government to designate a "Management Authority" to grant export/import permits for CITES-listed species.
- Introduced obligations for the "control of invasive alien species."
- Rationalised penalty provisions and enhanced fines significantly.

3. Forest (Conservation) Act, 1980

Background

- Enacted to check large-scale deforestation caused by state governments diverting forest land for non-forest use (agriculture, industry, etc.).
- Renamed "Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980" by the 2023 Amendment.

Key Provisions

Section 2: Restricts state governments/authorities from:

- De-reserving reserved forests.
- Using forest land for non-forest purposes without prior Central Government approval.
- Assigning forest land by way of lease to private persons.
- Clearing naturally grown trees for the purpose of using the land for re-afforestation.
- Central Government approval is granted based on recommendations of the **Forest Advisory Committee (FAC)**.
- **Compensatory Afforestation (CAMPA funds)** — when forest land is diverted, equivalent non-forest land must be afforested, and Net Present Value (NPV) is charged.

2023 Amendment — Key Changes

Act applies only to notified forest land and land recorded as "forest" in government records on or after 25 October 1980.

Exemptions introduced for:

- Land within 100 km of international borders (for national security projects, strategic linear projects).
- Small roadside amenities, railway/highway strips.
- Zoos, safaris, and eco-tourism facilities in forest areas.
- Security-related infrastructure.

Widened scope of "non-forest activity" exclusions — criticised by conservationists as potentially diluting protection (useful for current affairs linkage).

4. Endangered and Endemic Species of India

Key Terms

- **Endangered species:** at serious risk of extinction in the near future (IUCN category).
- **Endemic species:** found exclusively in one geographic region and nowhere else naturally.
- **IUCN Red List categories** (declining risk order): Extinct → Extinct in Wild → Critically Endangered → Endangered → Vulnerable → Near Threatened → Least Concern.

Endangered Species of India (examples)

Species	Category
Bengal Tiger	Endangered
Asiatic Lion	Endangered
Snow Leopard	Vulnerable
Great Indian Bustard	Critically Endangered
Gharial	Critically Endangered
Indian Vulture (multiple species)	Critically Endangered
Ganges River Dolphin	Endangered
Red Panda	Endangered
Nilgiri Tahr	Endangered
One-horned Rhino	Vulnerable (recovering)

Endemic Hotspots in India

India has 4 biodiversity hotspots:

1. Himalayas (Eastern Himalayas particularly rich)
2. Indo-Burma (Northeast India)
3. Western Ghats & Sri Lanka
4. Sundaland (Nicobar Islands)

Endemic Species (examples)

- **Western Ghats:** Nilgiri Tahr, Lion-tailed Macaque, Malabar Civet, Purple Frog.
 - **Northeast India:** Hoolock Gibbon, Pygmy Hog, Namdapha Flying Squirrel.
 - **Andaman & Nicobar:** Narcondam Hornbill, Andaman Wild Pig.
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5. Conservation of Biodiversity

In-Situ Conservation

Protecting species within their natural habitat.

Mechanisms in India

- **National Parks** — strictest protection, no human activity.
- **Wildlife Sanctuaries** — regulated human activity allowed.
- **Biosphere Reserves** — larger multi-use areas with core (undisturbed), buffer, and transition zones; may include national parks/sanctuaries within them. India has 18 biosphere reserves (e.g., Nilgiri, Sundarbans, Nanda Devi); several are part of UNESCO's World Network of Biosphere Reserves.
- **Sacred Groves** — community/culturally protected forest patches (traditional in-situ conservation, e.g., "Devarai" in Maharashtra, "Kavu" in Kerala).
- **Biodiversity Heritage Sites** — notified under the Biological Diversity Act, 2002.

Advantages

Species conserved in natural ecological/evolutionary conditions; co-evolved relationships (predator-prey, plant-pollinator) maintained; usually cost-effective at scale.

Limitations

Vulnerable to habitat destruction, natural disasters, poaching; requires large protected areas.

Ex-Situ Conservation

Protecting species outside their natural habitat.

Mechanisms

- **Zoological Parks / Zoos** — breeding endangered species in captivity.
- **Botanical Gardens** — living plant collections.
- **Seed Banks / Gene Banks** — e.g., National Bureau of Plant Genetic Resources (NBPGR), and India's contribution to the global Svalbard Global Seed Vault.
- **Cryopreservation** — storing gametes, embryos, tissue at very low temperatures.
- **Captive Breeding Programmes** — e.g., Gharial breeding centres, Vulture Conservation Breeding Centres.
- **Tissue Culture / In-vitro propagation** — for endangered plants.

Advantages

Controlled conditions protect species from immediate habitat threats; useful last resort for critically endangered species; enables research and eventual reintroduction.

Limitations

Limited genetic diversity over generations; artificial environment may not replicate natural behaviour; expensive; reintroduction to wild is often difficult.

Complementary Relationship

In-situ and ex-situ methods are used together — e.g., a captive-bred gharial or vulture population (ex-situ) is eventually released back into protected natural habitats (in-situ) once numbers recover.

6. Environment Impact Assessment (EIA)

Concept

- A process of evaluating the likely environmental consequences of a proposed project or development, before a decision is made to proceed.
- Aims to ensure decision-makers consider environmental impacts alongside economic/technical factors.

Legal Basis in India

- **Made statutory** under the Environment (Protection) Act, 1986.
- Governed currently by the **EIA Notification, 2006** (replaced the earlier 1994 notification), issued by the Ministry of Environment, Forest and Climate Change (MoEFCC).

Categories of Projects

- **Category A:** Larger projects; require clearance from the Central Government (MoEFCC), appraised by an Expert Appraisal Committee (EAC).
- **Category B:** Smaller projects; appraised by State Environment Impact Assessment Authority (SEIAA). Further divided into B1 (requires full EIA) and B2 (does not require EIA).

Stages of EIA Process

- **1. Screening:** determines whether the project needs an EIA (Category A vs B vs exempt) based on type/size/location.
- **2. Scoping:** Expert committee determines the detailed Terms of Reference (ToR) — what parameters/impacts must be studied.
- **3. Public Consultation:** includes public hearing at project site/nearby district, plus written responses; excludes certain projects (e.g., national defence, some small-scale industries).
- **4. Appraisal:** Detailed scrutiny by EAC/SEIAC of the application, EIA report, outcome of public consultation.
- **5. Decision:** Grant or reject Environmental Clearance (EC), often with conditions.
- **6. Monitoring:** Post-clearance compliance monitoring (self-reporting + government checks).

Key Institutions

- MoEFCC — nodal ministry.
- Expert Appraisal Committee (EAC) — Centre level.
- SEIAA / SEAC — State level.
- National Green Tribunal (NGT), 2010 — adjudicates environmental disputes, including challenges to EIA clearances.

Criticism / Current Relevance

Draft EIA Notification 2020 proposed diluting public consultation, introducing post-facto clearance for violating projects — widely opposed by environmentalists (useful for current affairs/essay linkage).

Issues: quality of EIA reports (often prepared by consultants hired by project proponents — conflict of interest), weak monitoring/compliance, time-bound clearances criticised as rushing the process.

Quick Revision Table

Law/Concept	Year	Key Body	Core Purpose
Environment (Protection) Act	1986	MoEFCC	Umbrella law post-Bhopal tragedy
Wildlife (Protection) Act	1972	NBWL, WCCB	Protect wild fauna/flora, PAs
Forest (Conservation) Act	1980 (amended 2023)	FAC	Regulate diversion of forest land
EIA Notification	2006 (under EPA 1986)	EAC/SEIAA, NGT	Assess environmental impact pre-clearance