

* Environmental Policies & Practice :-

Environmental Laws

Basic incorporation 42nd amendment 1976.

Article 48A — "State shall endeavour to protect & improve the environment and to safeguard forest & wildlife of the country".

Article 51A — "It shall be duty of every citizen of India, to protect and improve the natural environment including forest, lakes, rivers and wildlife and to have compassion for living creatures".

* Stockholm Conference / United Nation Conference on Human Environment.

— 1972

+ 27 principles evolved.

PM Indira Gandhi represented India & as a result several act came into existence such as-

- (i) EPA
- (ii) Air (Prevention & Control of Pollution) Act — 1986
- (iii) Water (Prevention & Control of Pollution) Act — 1971
- (iv) Wildlife Protection Act — 1972
- (v) Forest Conservation Act — 1980

* After 20 years of UNCED, ~~UNCED~~ UNCED took place

— 1992, Rio de Janeiro — Earth Summit

Rio Declaration

(ii) Declaration on Forest Principles

Agenda 21

(iii) CBD (Convention on Biological Diversity)

* UNC on Sustainable develop. at Rio +20,
also at Rio de Janeiro, 2012

+ green economy and to achieve sustainable develop. with poverty eradication
+ To improve international coordination for sustainable develop.

* Wildlife protection Act - 1972

defined animals as — amphibians, birds, mammals & reptiles and their young and also includes an article or object

WPA contains 66 sections and 6 schedules, provisions

- ① constitute institutional mechanism (National Board of Wildlife).
- ② Prohibition on hunting of animals specified in Schedule I to IV.
- ③ protection of animals through National Park, Wildlife Sanctuary, Conservation & community reserves.
- ④ regulate possession, access or transfer/trade in wild animals, plants, animal articles & taxidermy.
- ⑤ Penalties for contravention of Act as fine & imprisonment.

Amendments in 2002, 2006 — National Tiger Conservation Authority (NTCA), Crime Control Bureau

* Forest Conservation Act - 1980 right to manage.

amended 1988 **INDIAN FOREST** or rights are

division of the forest as - **ACT - 1927** assigned of reserve forest

- (i) Reserve forest (iii) Village forest
(ii) Protected forest (iv) private forest

↓
protected status but
are accessible to local people

↓
not under the propriety
of govt.

Main provisions of 1980s are -

- (a) De-reserve forest
- (b) Use any forest land for non forest purpose.
- (c) Lease out forest land to private agency
- (d) Cut naturally grown trees in forest land for the purpose of using it for reforestation.

Non forest purpose → agroplantation or cultivation
→ cultivation of tea, coffee, spices, rubber, palms
and horticultural crops
→ also these are any purpose other than reff-
orestation.

* Contention of act → imprisonment for a period that may extend upto 15 days.

* Water Act, 1974

64 sections, amendments 1978, 1988.

→ The main objective of this act is provide drinking water to citizens.

Other objectives, include protection & prevention of water pollution, maintenance of wholesomeness of water, establishment of boards at the centre level & state levels with power & (f)ⁿ establishments of water testing laboratories & penalties for infringement.

also, Section 2, provides definition for

* Pollution — contamination of water or alteration of the physical, chemical & biological prop. of water.

establishment of CPCB, SPCB, their constitution (f)ⁿ and power.

(f)ⁿ — CPCB (i) promote cleanliness of stream & wells in differ. region of the States.

(ii) Advise central govt for prevention & control of pollution

(iii) Technical assistance & guidelines

(iv) Compilation & publication of water & water pollution related info.

(v) establishment of laboratory

(vi) organisation of plans, training & Nation wide programmes.

Functions of SPCB :-

- (a) collection & dissemination of info.
- (b) advice to the state govt.
- (c) inspection of sewage or trade effluents
- (d) participation & research
- (e) efficient methods of disposal of waste on land
- (f) treatment of sewage and trade effluents
- (g) setting up of effluent standards

* Air Act — 1981

Chapter I provides imp. definitions

- Air pollution — means the presence of any air pollutant in the atmosphere.
- Emission — any solid, liquid or gaseous substance coming out of chimney, duct, flue or other outlet.
- Air pollutant — means any solid, liquid, gaseous substance present in atmosphere in such a conc. that may or may tend to be injurious to human beings other living creatures, plants properties & environment.

→ provisions for central & state boards for prevention & control of air pollution.

→ allows the central board to exercise the power & f^m of state boards.

→ assign powers to central and state boards.

Imp. CPCB & SPCB established under water Act, shall be deemed to be constituted under the Air Act & therefore shall exercise their powers & functions under Air Act.

Amendment in 1987,

- Particular areas have been declared as air pollution control area.
- Every industrial operator within air pollution control area must obtain a permit from state board.
- Central & State boards are empowered to discontinue water & electric service if the industries are not following rules.
- Penalty increased from 3 months → 7 years and a fine upto max. of Rs 10,000.

CLIMATE CHANGE

Global temp. trend -

2 phases of temp. ↑

(a) (1910 - 1940) → 0.35°C ↑ in global mean temp.

(b) (1970 - present) → 0.55°C ↑

Global CO_2 emissions

Before industrial revolution → 280 ppm

1958, Mauna Loa → 315 ppm

(2000) → 370 ppm

(30% ↑ in past 100 years) while

Factors contribution :- (20,000 years ago - 200 ppm)

- ① Burning activities → fossil fuels
- ② ↓ in forest cover (Carbon sink).

various greenhouse gases → CO_2 , CH_4 , H_2O & halocarbons

* Residence time of gases - Trees = $\frac{C}{F}$
(Cency) ↓ (flux)

CO_2 = century, CH_4 → decade.

* Evidences of global warming :-

↑ in global temp by 0.8°C from 1880s.

↑ in global sea level by 10cm - 25cm.

* Effects of global warming

(a) IPCC reports → ↑ in global surface air temp. by 1°C - 3.5°C .
(2100)

(b) Sea level ↑ by 15 - 90cm

* Effects on various environmental components

- (i) Water availability → change in precipitation, Ocean current. ↑ in monsoon wetter conditions in Asia, Drought condition in USA.
- (ii) Ecosystem → 30% of global sp. at extinction. Increased coral bleaching, altitudinal shift of the sp. Wildlife risk.
- (iii) Food → negative impacts on food production, fisheries — change in oceanic currents.
- (iv) Coasts → ↑ in the floods & storms. less of approx. 30% of all coastal wetlands.
- (v) Health → ↑ in infectious diseases, Morbidity from heat waves, floods, droughts. Shift in location of disease vectors (eg → mosquito borne diseases)

* Control Measures

- (i) UNCED United Nations Conference on Environment & Development - Rio Earth Summit.
- (ii) Kyoto Protocol → 38 industrialized nations (Market)
- (iii) 1998 Conference at Buenos Aires → 106 countries (Base)

Kyoto Protocol → ↓ in GHGs by 5% by 2012.

↓
Market incentives → Carbon Credit
↓ → Carbon Tax.

emission Targets → National policies.

Climate Change

ADDITIONAL INFO.

India's
population 132.42 crore
World's
Pop. → 7.6 Billion

① Human induced Climate Change

future predictions

(a) reduction in 1 billion tonnes of CO_2 emission ~~in~~
by 2056 can be achieved by

- (i) increase the fuel economy of car from 30mpg to 60mpg
- (ii) Carbon capturing and storage across thermal power plants.
- (iii) Stop all deforestation
- (iv) doubling the energy output & consumption from Nuclear power plant.

* IPCC → Intergovernmental Panel on Climate Change
— 1988.

Effects of Climate Change —

- (i) disruption of Ocean conveyor belt.
- (ii) increase in sea level → expansion of water, melting of glacier eg → Gangotri glacier melting
Qasi glacier → Peruvian Andes
- (iii) disrupted precipitation patterns
eg → Hurricane Katrina, El Niño
- (iv) melting of polar ice sheets and threats associated with polar bear, penguins and eskimo
- (v) early onset of phenological spring.
- (vi) 15 warmest years in 1990 → 1998

Impact on human health →

- (i) The range of mosquitoes & other disease carriers are expanding
- (ii) Change in temp. & ppt. ↑ food & waterborne diseases
- (iii) Increase in sea level will cause inundation of deltas which are agricultural suitable & also proliferation of agriculture pest.

* Links among global climate change, Ozone depletion & Acid deposition -

Researchers from Ontario, Canada reported that organisms in North American lakes are more susceptible towards UV radiations exposure.

Climate ↑ and Acid deposition affect the organic matter → organic matter acts as → hence ↓
Sunscreen by absorbing Organic
UV-radiations Matter, ↑
UV penetration

International efforts

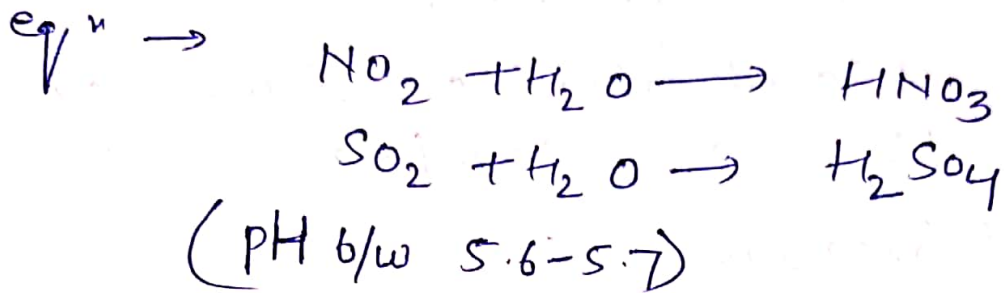
- (i) UNFCCC — UN Framework Convention on Climate Change — Rio Summit — 1992.
- (ii) Kyoto Protocol — Kyoto, Japan — International treaty, legally binding, provides operational rules on reduction of greenhouse emission.

Acid Rain

Robert Angus Smith coined the term Acid Rain - 1872

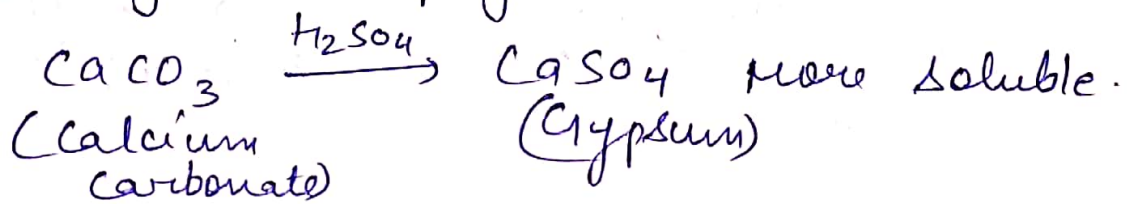
Natural cause - volcanoes, lightning

Anthropogenic - Burning of coal, Internal Engine Combustion



Effects

① effects on structures - cause degradation especially made up of CaCO_3 .



② effect on forests -

(i) death of many forests and reduce the vigor & growth rate.

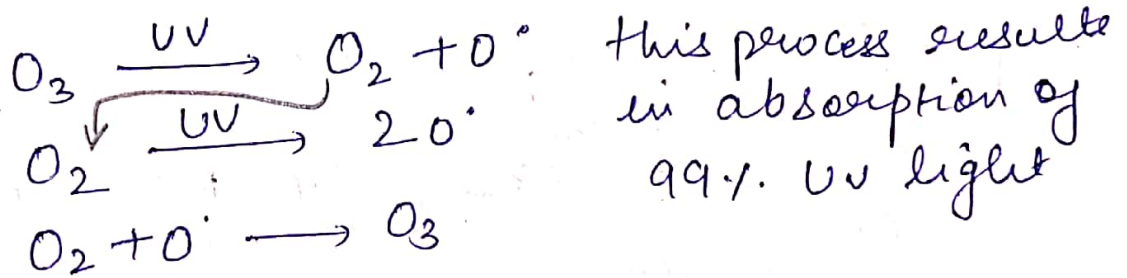
(ii) deposition of acid cause ↓ in the ability of soil to buffer → soil becomes acidic Al^{3+} released & binds with soil water affecting water uptake by plants.

(iii) reduction of calcium & Magnesium in soil

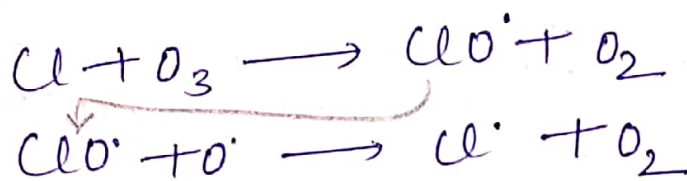
(ii) on aquatic systems -

- affect the breeding & reproduction
- inducing stress zone for aquatic life.
- affect the other factors such as DO, Nutrient
- availability & organic matter.
- Crayfish and other crustaceans cannot form their CaCO_3 exoskeleton.
- Coral bleaching.

Ozone depletion :-



Ozone destruction



factors responsible

Chlorofluorocarbons (CFCs), halons (halocarbons)

↓
ACs, Refrigerators

used ↓ in fire extinguisher

Montreal Protocol (1987) → Reduction in 50% of production of ODS

of the result of analysis on samples taken under section 26. Section 28 deals with State Air Laboratory.

Chapter V deals with funds, accounts, and audit-related issues and provisions.

Chapter VI details about penalties and procedure.

Sections 3 and 4 make it clear that the CPCB and SPCB established under the Water Act, 1974 shall be deemed to be constituted under the Air Act and therefore shall also exercise their powers and functions under the Air Act. The constitution, powers, and functions of the CPCB and SPCB under the Air Act are similar to those under the Water Act. States in which Water Act is not in force or the state government with no state boards under the Water Act shall constitute an SPCB for the prevention and control of air pollution and to exercise the powers and functions assigned under the Air Act. The state board so constituted shall consist of a chairman, representatives of the state government not more than five, members of the local authorities not more than five, two nominated representatives of the state-owned companies or corporations, and a member secretary.

The Air Act, 1981 was amended in 1987 incorporating several important features, which are as follows:

- Particular areas have been declared as "air pollution control areas" (section 19).
- Every industrial operator within the air pollution control areas must obtain a permit from the state board (section 21).
- The board has given the power to restrain persons from causing air pollution by making application to court (section 22A).
- Central and state boards are empowered to discontinue the water and electric service if the industries are not following the rules.
- Penalties have been increased from 3 months to 7 years and a fine of up to maximum of Rs. 10,000.

4.10 ENVIRONMENTAL PROTECTION ACT, 1986 *

Chapter I of the Act provides the short title, extent, and commencement, as well as **definitions**.

Chapter II deals with four sections that provide power to the central government to take measures to protect and improve (section 3), appointment of officers and their powers and functions (section 4), power to give directions (section 5), and rules to regulate environmental pollution.

Chapter III consists of 11 sections that deal with **prevention, control, and abatement of environmental pollution**, such as persons running an industry, carrying out an operation, and so on and not allowing emission or discharge of environmental pollutants in excess of the standards (section 7); persons handling hazardous substances to comply with procedural safeguard (section 8); furnishing of information to authorities and agencies in certain cases (section 9); power of entry and inspection (section 10); power to take sample and procedure to be followed in connection therewith (section 11); environmental laboratories (section 12); government analysts (section 13); reports of government analysts (section 14); penalty for contravention of the provisions of the Act and the rules, orders, and directions (section 15); offences by companies (section 16); and offences by government departments (section 17).

Chapter IV deals with miscellaneous items such as protection of action taken in good faith (section 18); cognizance of offences (section 19); information; reports or returns (section 20); members, officers, and employees of the authority constituted under section 3 to be public servants (section 21); Bar of Jurisdiction (section 22); power to delegate (section 23); effect of other laws (section 24); power to make rules (section 25); and rules made under this Act to be laid before the Parliament (section 26).

Under this Act, the central government has been empowered to take all measures necessary for the protection and improvement of the quality of environment and also for prevention, control, and abatement of pollution. The main measures include the following:

- (i) Coordination of actions by state governments, officers, and other authorities under this Act or any other law
- (ii) Nationwide plan and programmes for the prevention, control, and abatement of environmental pollution
- (iii) Laying down standards for the quality of environment in its various aspects
- (iv) Laying down standards for emission or discharge of environmental pollutants
- (v) Restriction of areas for carrying out activities of industries subject to certain safeguards
- (vi) Procedures and safeguards for the prevention of accidents and remedial measures
- (vii) Laying down procedures and safeguards for the handling of hazardous substances
- (viii) Examination of manufacturing processes, materials, and substances that are likely to cause environmental pollution
- (ix) Environmental pollution research and investigations

- (x) Inspection of any activities or a plant for the prevention, control, and abatement of environmental pollution
- (xi) Establishment of laboratories
- (xii) Collection and dissemination of information with respect to matters relating to environmental pollution
- (xiii) Preparation of manuals, codes, or guides relating to the prevention, control, and abatement of environmental pollution
- (xiv) Any matters for securing the effective implementation of the provisions of this Act that are deemed necessary by the central government

The central government may constitute authorities to exercise the power and the function of the Act. The central government has to strike a balance between economic, ecological, social, and cultural factors whenever it issues a notification.

Section V of the Act empowers the central government to provide or issue directions in writing to any person, office, or authority to close, prohibit, and regulate any industry or operation, as well as to stop or regulate water and electric supply service.

Other powers of the Act include entry for examination and testing of equipment by the central government. This Act is conceptually identical with the Air Act. Violation of this Act may amount to a fine of up to 1 lakh. Section 24 provides that any offence under this Act is also an offence under any other Act; the offender will be punished only under the other Act such as Water Act, Air Act, and so on. Section 19 provides any person the right to move to court complaining about an office or person, provided that notice of not less than 60 days is given to the government of his intention to file a complaint. This is also called citizens' suit provision. Submission of environmental audit report has been made mandatory to all the operators for every financial year. The Act has also made the public participation in the environmental impact assessment mandatory since 1997. Guidelines given for the impact assessment were again modified in 2006, giving relaxation for obtaining environmental clearance. It also confers rules for the coastal area management for the control and prevention of environmental pollution.

4.11 PUBLIC LIABILITY INSURANCE ACT, 1991

This law was enacted to provide immediate relief to the victims of an accident that occurs while handling hazardous substances. The Act imposes no-fault liability upon the owner of the hazardous substance and requires the owner to compensate the victims irrespective of the neglect or default on her part. The Public Liability Insurance Act (PLIA) specifies the maximum compensation limit with respect to injury, death,