Environmental Management
Sem-VIII

Schema & Syllabus

Program: Final Year (Common for All Programs)										Semester: VIII			
Course: Environmental Management										Course Code: DJ19ILO8029			
Teaching Scheme (Hours / week)				Evaluation Scheme									
				Semester End Examination Marks (A)			Continuous Assessment Marks (B)					Total marks (A+ B)	
Lectures	Practical	Tutorial	Total Credits	Theory			Term Test 1		Term Test 2		Total		
				75			25		25		25	100	
				Laboratory Examination			Term work				Total Term work	--	
3	-	-	3	Oral	Practical	Oral & Practical	Laboratory Work		Tutorial / Mini project / presentation/ Journal				
				-	–	-	–		-		–		

Objectives & Outcomes

Objectives:

1. Understand and identify environmental issues relevant to India and global concerns
2. Learn concepts of ecology
3. Familiarize environment related legislations
4. Understand Environmental Auditing Procedures.

Outcomes: On completion of the course, learner will be able to:

1. Understand and identify environmental issues relevant to India and global concerns

2. Learn concepts of ecology

3. Familiarize environment related legislations

4. Understand Environmental Auditing Procedures.

Syllabus

Detailed Syllabus (Unit wise)		
Unit	**Description**	**Duration in Hours**
1	**Principles of Environmental management (EM):** Introduction of EM, Definition, Ecosystem concept, Participants in EM, Ethics and the environment, International Environmental Movement, Environmental issues relevant to India.	08
2	**Policy and Legal Aspects of EM:** Introduction to various Environmental Policies, Indian and International Environmental laws and legislation. EM system Standards: Core Elements, Benefits, Certification Body Assessment & Documentation for EMS, ISO-14000 Standards.	09
3	**Environmental Impact Assessment (EIA):-** Purpose, steps, hierarchy of EIA, Environmental Impact Statement and Impact Indicators, Evolution of IA in India and worldwide. Preliminary stages of EIA, Impact, Prediction, Evaluation and Mitigation.	09
4	**Environmental Auditing (EA):-** Objectives, Scope and Types of EA, Audit Methodology, Elements of Audit Process, Auditing of EMS.	06
5	**Environmental Management Techniques:** Environmental Monitoring and Modelling, Environmental technology Assessment and Environmental Risk Assessment, Eco-mapping.	07
	Total	39

Module-1

Principles of Environmental Management (EM)

Contents:

- Introduction of EM
- Definition, Ecosystem concept
- Participants in EM
- Ethics and the environment
- International Environmental Movement
  Environmental issues relevant to India

❖ Introduction & Definition of Environment

- Definition: Environment is the surroundings or control conditions in which all living organisms exist.
- **Our environment is everything that surrounds us, both natural and manmade.**
- **Or the total sum of surroundings of living organism, including natural forces & other living things which provide conditions for development & growth as well as of danger & damage.**
- **Or** ENVIRONMENT: THE TOTAL OF OUR SURROUNDINGS
  - All the things around us with which we interact:
  - Living things
  - Animals, plants, forests, fungi, etc.
  - Nonliving things
  - Continents, oceans, clouds, soil, rocks
  - Our built environment
  - Buildings, human-created living centers
  - Social relationships and institutions
- Thus the environment studies may vary from micro level to macro level.
- Micro Level study: In case of some local studies such as ecosystem or solid waste management
- Macro Level study: Global issues such as Green House Effect or Ozon depletion

- **Pollution:** It is deliberate or accidental contamination environment. Any manmade activity contributes to pollution with rapid urbanization & industrialization. There has been tremendous burden on natural resources.

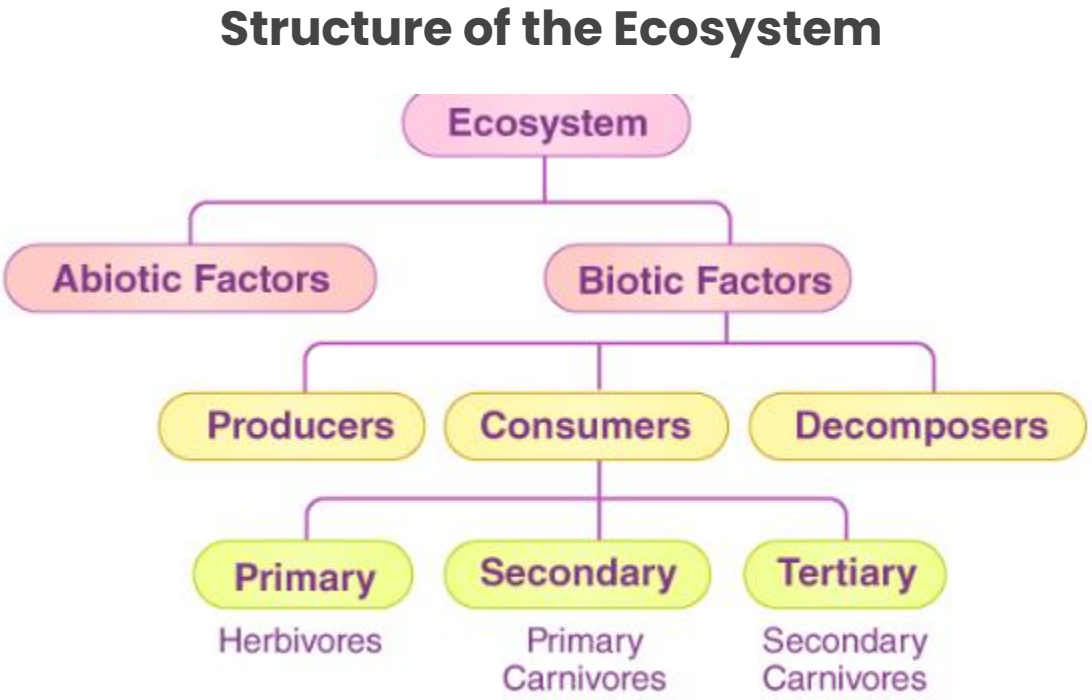
- **Types of pollutions: Air pollution, Water Pollution, Noise pollution, Land pollution**

→Every human kind must be aware about the pollution & types of pollutions.

→All the engineers are directly or indirectly have the greater concern about environment and its types. Engineers are the best dealer of the ways & means to overcome them.

What is an Ecosystem?

- An ecosystem is a structural and functional unit of ecology where the living organisms interact with each other and the surrounding environment. In other words, an ecosystem is a chain of interactions between organisms and their environment. The term “Ecosystem” was first coined by A.G.Tansley, an English botanist, in 1935.



❖ Main Features of environment

- **Environment includes basically of living organisms (Biotic Factors) & nonliving factors (Abiotic factors) & their mutual interaction.**
- **If proper balance between them then there is a healthy environment. (e.g. self sustaining ecosystem without the external interferences, especially man).**
- **Due to unbalancing between above two factors a formation of environmental science is done, which is a part of environment. (degradation of environment)**
- **(Unbalancing – e.g. when an industry discharges its waste in nearby water body, without proper treatment, there is an imbalance leading to degradation of environment & imbalanced ecology)**

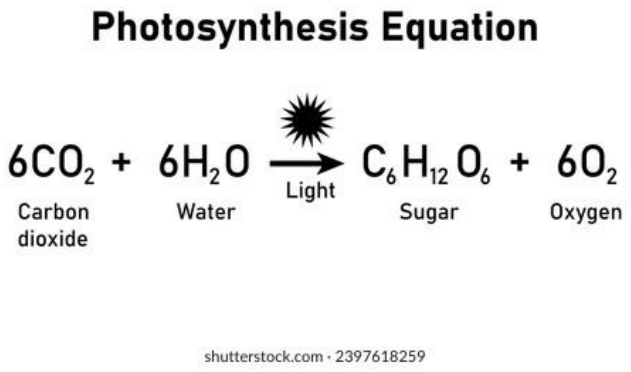
❖ Biotic form (Any living part of an environment with which an organism might interact. Ex. Animals, plants, mushrooms, bacteria, etc.)

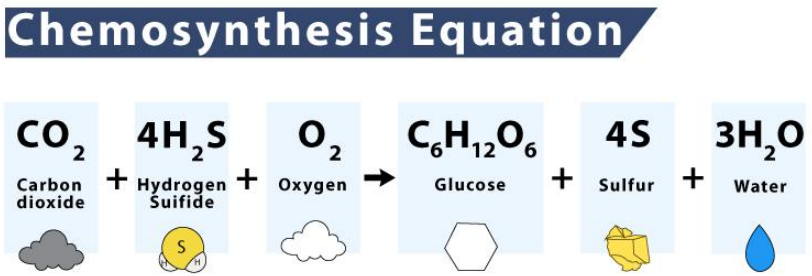
- **Autotrophs** – Organisms that capture energy from sunlight or chemicals and convert it into forms, living cells can use.
- **Heterotrophs** – can not make their own food; acquire energy from other organisms by ingesting (taking inside) them.
- **Producers** – Make their own food.
- **Primary producers** – the first producers of energy-rich compounds that are later used by other organisms.

→Autotrophs are primary producers!

→Most engage in the process of photosynthesis.

→Chemosynthesis – chemical energy is used to produce carbohydrates in dark conditions (like the deep oceans).





- **Consumers** – organisms that rely on other organisms for energy and nutrients.

→**Carnivores** – kill and eat other animals.

→ **Hunters** – consume the bodies of dead animals.

- **Decomposers** – chemically break down organic matter (bacteria and fungi are examples).

→**Herbivores** – eat plants.

→**Omnivores** – diets include both plant and animal matter.

→ **Detritivores** – feed on detritus (small pieces of decaying matter) by grinding them into smaller pieces (earthworms and snails are examples). Often digest the decomposers living on the detritus.

❖ Abiotic factors (Nonliving part of the environment that influence the organism. Ex. Sunlight, heat, precipitation, humidity, wind, water current, soil type, etc.)

•These factors mainly consist of non living part and can be broadly classified in following functional groups

•**Climatic factors:** rainfall, light, temperature, atmospheric humidity & wind.

•**Physiographic factors:**

→Factors that have their origin in the form, behavior & structure of earth surface

→ Physical & chemical constituents of the soil(sandy, clayey), Presence of rivers, lakes, and seas, Groundwater availability , such as its structure, chemical properties etc.

Functions of Ecosystem

- The functions of the ecosystem are as follows:
  - It regulates the essential ecological processes, supports life systems and renders stability.
  - It is also responsible for the cycling of nutrients between biotic and abiotic components.
  - It maintains a balance among the various trophic levels in the ecosystem.
  - It cycles the minerals through the biosphere.
  - The abiotic components help in the synthesis of organic components that involve the exchange of energy.

Types of Ecosystem

- An ecosystem can be as small as an oasis in a desert, or as big as an ocean, spanning thousands of miles. There are two types of ecosystem:
- Terrestrial Ecosystem
- Aquatic Ecosystem

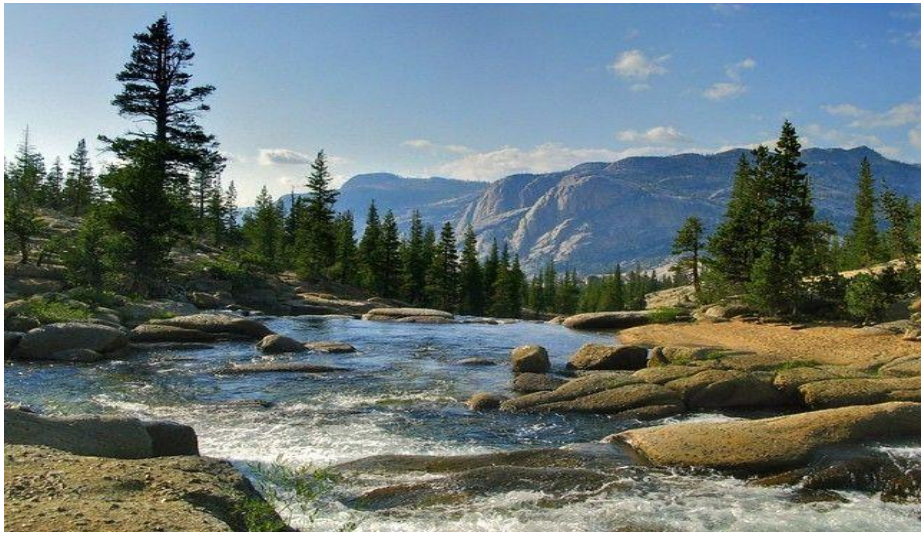
Terrestrial Ecosystem

- Terrestrial ecosystems are exclusively land-based ecosystems. There are different types of terrestrial ecosystems distributed around various geological zones. They are as follows:
- Forest Ecosystem
- Grassland Ecosystem
- Tundra Ecosystem
- Desert Ecosystem
- **Forest Ecosystem :**A forest ecosystem consists of several plants, particularly trees, animals and microorganisms that live in coordination with the abiotic factors of the environment. Forests help in maintaining the temperature of the earth and are the major carbon sink.
- **Grassland Ecosystem :** In a grassland ecosystem, the plant is dominated by grasses and herbs. Temperate grasslands and tropical or savanna grasslands are examples of grassland ecosystems.
- **Tundra Ecosystem :** Tundra ecosystems are lacking of trees and are found in cold climates or where rainfall is rare. These are covered with snow for most of the year. Tundra type of ecosystem is found in the Arctic or mountain tops.
- **Desert Ecosystem :**Deserts are found throughout the world. These are regions with little rainfall and rare plants. The days are hot, and the nights are cold.

Terrestrial Ecosystems

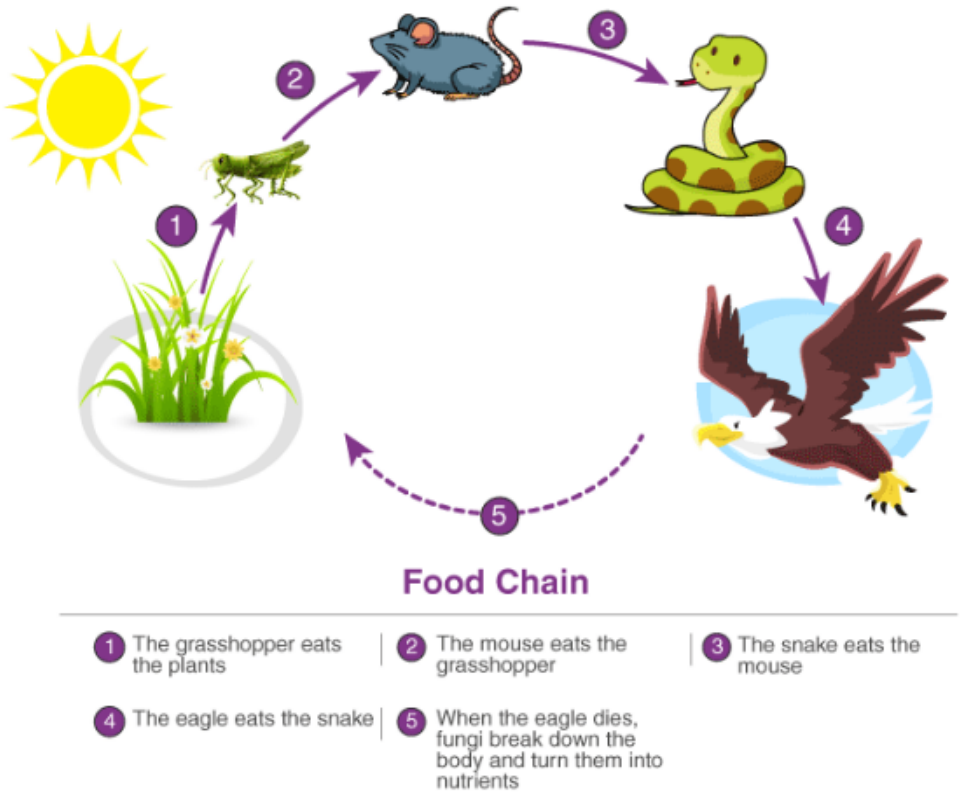
Aquatic Ecosystem

- **Aquatic ecosystems** are ecosystems present in a body of water. These can be further divided into two types, namely:
- Freshwater Ecosystem
- Marine Ecosystem
- **Freshwater Ecosystem**
- The freshwater ecosystem is an aquatic ecosystem that includes lakes, ponds, rivers, streams and wetlands. These have no salt content in contrast with the marine ecosystem.
- **Marine Ecosystem**
- The marine ecosystem includes seas and oceans. These have a more substantial salt content and greater biodiversity in comparison to the freshwater ecosystem.



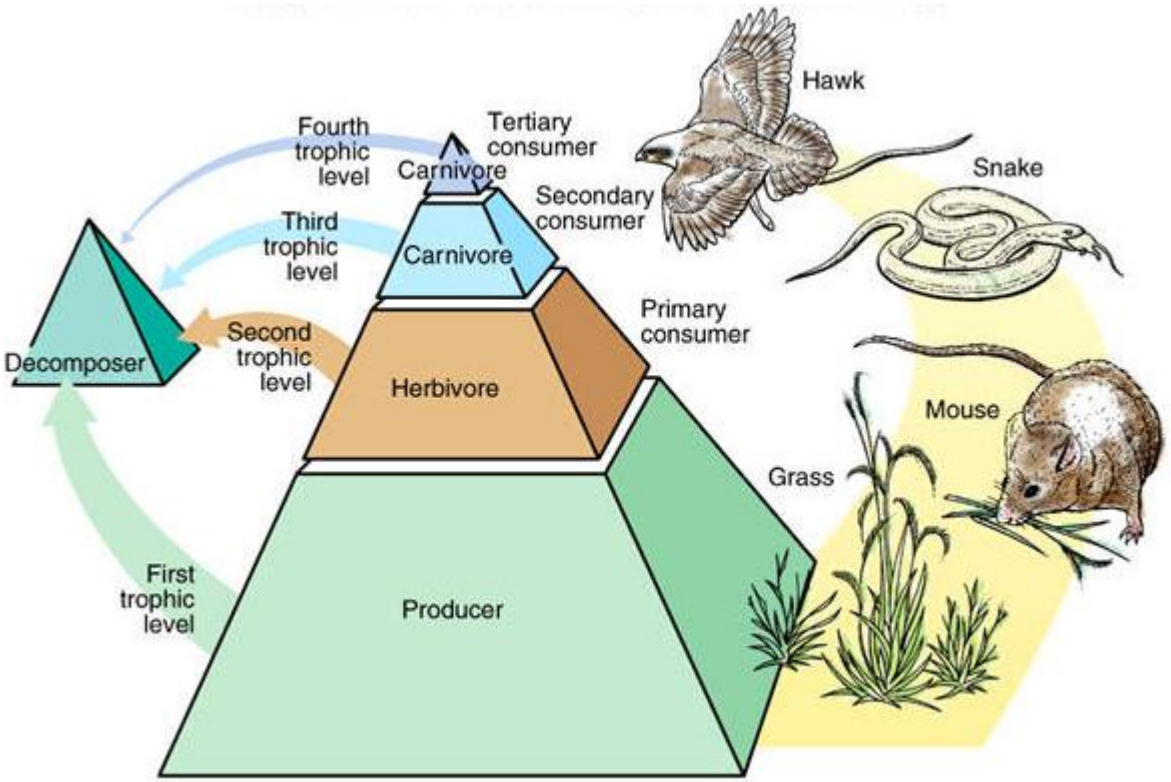
Important Ecological Concepts

- **1. Food Chain**
- The sun is the ultimate source of energy on earth. It provides the energy required for all plant life. The plants utilise this energy for the process of photosynthesis, which is used to synthesise their food.
- During this biological process, light energy is converted into chemical energy and is passed on through successive trophic levels. The flow of energy from a producer, to a consumer and eventually, to an apex predator or a detritivore is called the food chain.
- Dead and decaying matter, along with organic debris, is broken down into its constituents by scavengers. The reducers then absorb these constituents. After gaining the energy, the reducers liberate molecules to the environment, which can be utilised again by the producers.



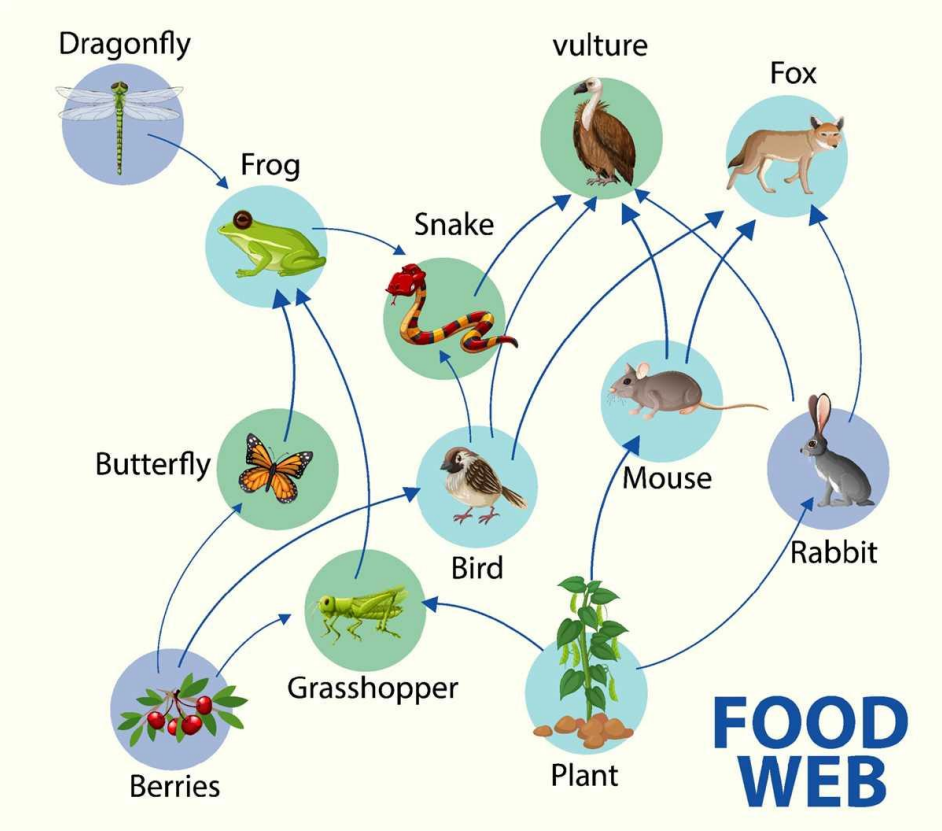
Important Ecological Concepts

- **2. Ecological Pyramids**
- An ecological pyramid is the graphical representation of the number, energy, and biomass of the successive trophic levels of an ecosystem. Charles Elton was the first ecologist to describe the ecological pyramid and its principals in 1927.
- The biomass, number, and energy of organisms ranging from the producer level to the consumer level are represented in the form of a pyramid; hence, it is known as the ecological pyramid.



Important Ecological Concepts

- **3. Food Web**
- Food web is a network of interconnected food chains. It comprises all the food chains within a single ecosystem.
- It helps in understanding that plants lay the foundation of all the food chains.



Environment Management

Participants in EM

- Environmental Management (EM) involves multiple stakeholders who contribute to sustainability, conservation, and ecological protection.
- These participants include **governments, businesses, communities, and scientific organizations**, each playing a unique role in environmental responsibility.

Participants in EM

- **1. Government & Regulatory Bodies** 🏛
- **Role:** Formulate environmental laws, policies, and enforcement mechanisms.
- **Example:**
  - **United Nations Environment Programme (UNEP)** – Develops global sustainability initiatives.
  - **Environmental Protection Agency (EPA, USA)** – Regulates pollution control and climate policies.
  - **Ministry of Environment (India, China, EU, etc.)** – Implements national environmental programs.
- **2. Corporations & Industries** 🏭
- **Role:** Adopt sustainable practices, reduce pollution, and integrate green supply chains.
- **Example:**
  - **Tesla** – Innovates electric vehicles (EVs) to reduce carbon emissions.
  - **Unilever** – Uses renewable energy in production and promotes plastic waste reduction.
  - **IKEA** – Aims for a **100% circular economy** by 2030 with sustainable sourcing.

Participants in EM

- **3. Non-Governmental Organizations (NGOs)**
- **Role:** Advocate for conservation, educate communities, and influence policies.
- **Example:**
  - **Greenpeace** – Campaigns against deforestation, pollution, and climate change.
  - **World Wildlife Fund (WWF)** – Works on wildlife conservation and ecosystem restoration.
  - **The Nature Conservancy** – Focuses on protecting forests, oceans, and freshwater sources.
- **4. Scientists & Environmental Researchers**
- **Role:** Study climate change, develop eco-friendly technologies, and analyze pollution impacts.
- **Example:**
  - **NASA Climate Scientists** – Monitor global warming trends using satellite data.
  - **IPCC (Intergovernmental Panel on Climate Change)** – Provides scientific reports on climate risks.
  - **University Research Centers** – Develop renewable energy solutions and sustainable agriculture techniques.

Participants in EM

- **5. Financial Institutions & Investors** 💰
- **Role:** Fund green projects, sustainable businesses, and renewable energy initiatives.
- **Example:**
  - **World Bank Green Bonds** – Funds climate resilience projects in developing nations.
  - **Sustainable Investment Funds** – Encourage businesses to adopt ESG (Environmental, Social, Governance) practices.
  - **Tesla's Carbon Credit System** – Allows companies to trade carbon credits for sustainability.
- **6. Consumers & General Public** 👨‍👩‍👧‍👦
- **Role:** Demand eco-friendly products, reduce waste, and support green businesses.
- **Example:**
  - **Zero-Waste Lifestyle** – Consumers using reusable bags, composting, and reducing plastic.
  - **Vegan & Plant-Based Diets** – Reducing carbon footprint by consuming less meat.
  - **Supporting Green Brands** – Buying from companies with ethical environmental policies.

Participants in EM

- **7. Educational Institutions & Academics** 🎓
- **Role:** Teach sustainability, conduct research, and train future environmental leaders.
- **Example:**
  - **Harvard University's Center for Climate, Health & Global Environment** – Conducts climate research.
  - **Schools Promoting Eco-Clubs** – Encouraging students to participate in tree-planting and recycling.
  - **Corporate Sustainability Training** – Universities offering courses in environmental management.
- **8. Media & Environmental Activists** 📢
- **Role:** Spread awareness about climate issues, expose pollution, and push for policy changes.
- **Example:**
  - **Documentaries like "An Inconvenient Truth" (Al Gore)** – Highlight climate change dangers.
  - **Greta Thunberg's Climate Movement** – Youth activism for stronger climate policies.
  - **National Geographic & BBC Earth** – Educating the public on nature conservation.

Participants in EM

- **10. International Organizations & Agreements** 🌎
- **Role:** Facilitate global environmental policies, treaties, and cooperative projects.
- **Example:**
  - **Paris Climate Agreement** – Countries committed to reducing greenhouse gas emissions.
  - **United Nations Sustainable Development Goals (SDGs)** – Promote sustainability worldwide.
  - **COP28 (Conference of the Parties)** – Global discussions on climate action.

Effective environmental management requires **collaboration** between governments, businesses, scientists, and communities. **Everyone has a role to play** in protecting the planet for future generations.

❖ Significance of Environment Management for Contemporary/Modern Managers

- **Significance of Environmental Management with Examples**
- Environmental management refers to the systematic approach organizations and governments take to minimize environmental impact, preserve natural resources, and promote sustainable practices. Here are 10 significant aspects of environmental management, along with suitable examples:
- **1. Resource Conservation**
- **Significance**: Helps manage natural resources like water, energy, and raw materials efficiently to ensure their availability for future generations.
  Example: Coca-Cola India implemented a water stewardship program, focusing on water conservation, replenishment, and wastewater recycling to achieve water neutrality.

❖ Following points shows the significance of EM:

- **2. Pollution Control**
- **Significance**: Reduces pollution from industrial, agricultural, and urban activities, protecting air, water, and soil quality.
  Example: The Delhi Metro Rail Corporation (DMRC) adopted CNG buses and solar panels, significantly reducing air pollution in the city.
- **3. Biodiversity Protection**
- **Significance**: Protects ecosystems and wildlife by preserving natural habitats and preventing deforestation and overexploitation.
  Example: The reforestation project in the Western Ghats of India helps restore biodiversity by planting native species and protecting endangered wildlife.

❖ Following points shows the significance of EM:

4. Climate Change Mitigation
Significance: Reduces greenhouse gas emissions and promotes renewable energy to combat climate change.
Example: Tata Power's wind and solar farms contribute to India's renewable energy goals, reducing dependence on fossil fuels.

5. Waste Management
Significance: Promotes the reduction, recycling, and proper disposal of waste to prevent land and water contamination.
Example: ITC's "Wow - Wealth Out of Waste" initiative encourages urban households to segregate and recycle waste.

❖ Following points shows the significance of EM:

6. Compliance with Regulations

Significance: Ensures organizations adhere to environmental laws and avoid penalties while maintaining ethical standards.

Example: Infosys adheres to India's energy and emissions regulations by using green buildings and achieving carbon neutrality.

7. Sustainable Development

Significance: Balances economic growth with environmental protection to ensure long-term sustainability.

Example: Suzlon Energy Limited develops wind energy solutions to provide sustainable power while preserving the environment.

❖ Following points shows the significance of EM:

8. Risk Mitigation
Significance: Identifies and mitigates risks related to environmental disasters, accidents, or resource depletion.
Example: The Chambal River Basin project focuses on preventing soil erosion and mitigating the risk of droughts in the region.

9. Corporate Social Responsibility (CSR)
Significance: Encourages companies to integrate environmental protection into their CSR initiatives, benefiting society.
Example: Mahindra & Mahindra launched the “Lifeline for Tigers” program, contributing to tiger conservation and habitat restoration.

❖ Following points shows the significance of EM:

10. Improved Public Health
Significance: Reduces environmental hazards like air and water pollution, leading to better health outcomes for communities.
Example: Clean Ganga Mission (Namami Gange) focuses on cleaning the river Ganga, improving the health and well-being of millions of people dependent on it.

So, Environmental management is critical for achieving sustainability, fostering economic growth, and ensuring a better quality of life for all. These examples highlight how effective practices can address environmental challenges and create a positive impact globally.

Exercise

- Identify any one important significance from above and prepare case study on the same

❖ Corporate Responsibilities:

Corporate environmental responsibility refers to the duties and commitments of businesses to minimize their environmental impact and promote sustainability.

- **1. Compliance with Environmental Laws and Regulations**
- **Example**: A manufacturing company adheres to the **Clean Air Act** by installing emission control systems to reduce air pollution.
- **2. Sustainable Resource Management**
- **Example**: A paper company implements a **tree-planting program** to replace the trees it uses, ensuring a continuous and balanced supply.
- **3. Pollution Prevention and Waste Reduction**
- **Example**: A beverage company replaces plastic straws with **biodegradable paper straws** to minimize plastic waste.
- **4. Energy Efficiency and Conservation**
- **Example**: A tech company like **Google** powers its data centers with **renewable energy** sources (Solar, wind,water, biomass energy) reducing fossil fuel(Petrol, Dizel, natural gas, coal) dependency.

❖ Corporate Responsibilities:

- **5. Carbon Footprint Reduction**
- **Example**: An airline company invests in **fuel-efficient aircraft** and **carbon offset programs** to minimize its carbon emissions.
- **6. Eco-Friendly Product Design**
- **Example**: An electronics company introduces **energy-efficient appliances** that consume less electricity and last longer.
- **7. Water Conservation**
- **Example**: A textile company implements **water recycling systems** to treat and reuse wastewater in production processes.
- **8. Green Supply Chain Management**
- **Example**: A retail company partners with **sustainable suppliers** who follow ethical and eco-friendly practices in production.
- **9. Corporate Social Responsibility (CSR) Initiatives**
- **Example**: A company funds **reforestation projects** or **community clean-up drives** to enhance local environmental conditions.
- **10. Employee and Community Awareness Programs**
- **Example**: A corporation conducts **eco-awareness training sessions** for employees and educates consumers about responsible consumption.

Overall Benefits of Corporate Environmental Responsibility & Sustainability

- When corporations take responsibility for **environmental management and sustainability**, they contribute to a **healthier planet, stronger economies, and better communities**.
- Below are the key benefits:
- **1. Reduction in Carbon Footprint & Climate Change Mitigation** 🌍
- ☑ **Lower greenhouse gas emissions** from energy-efficient operations.
  ☑ Increased use of **renewable energy** reduces dependence on fossil fuels.
  ☑ Sustainable practices **slow down global warming** and extreme weather events.
- **Example:** Google and Apple run on **100% renewable energy**, reducing carbon emissions significantly.

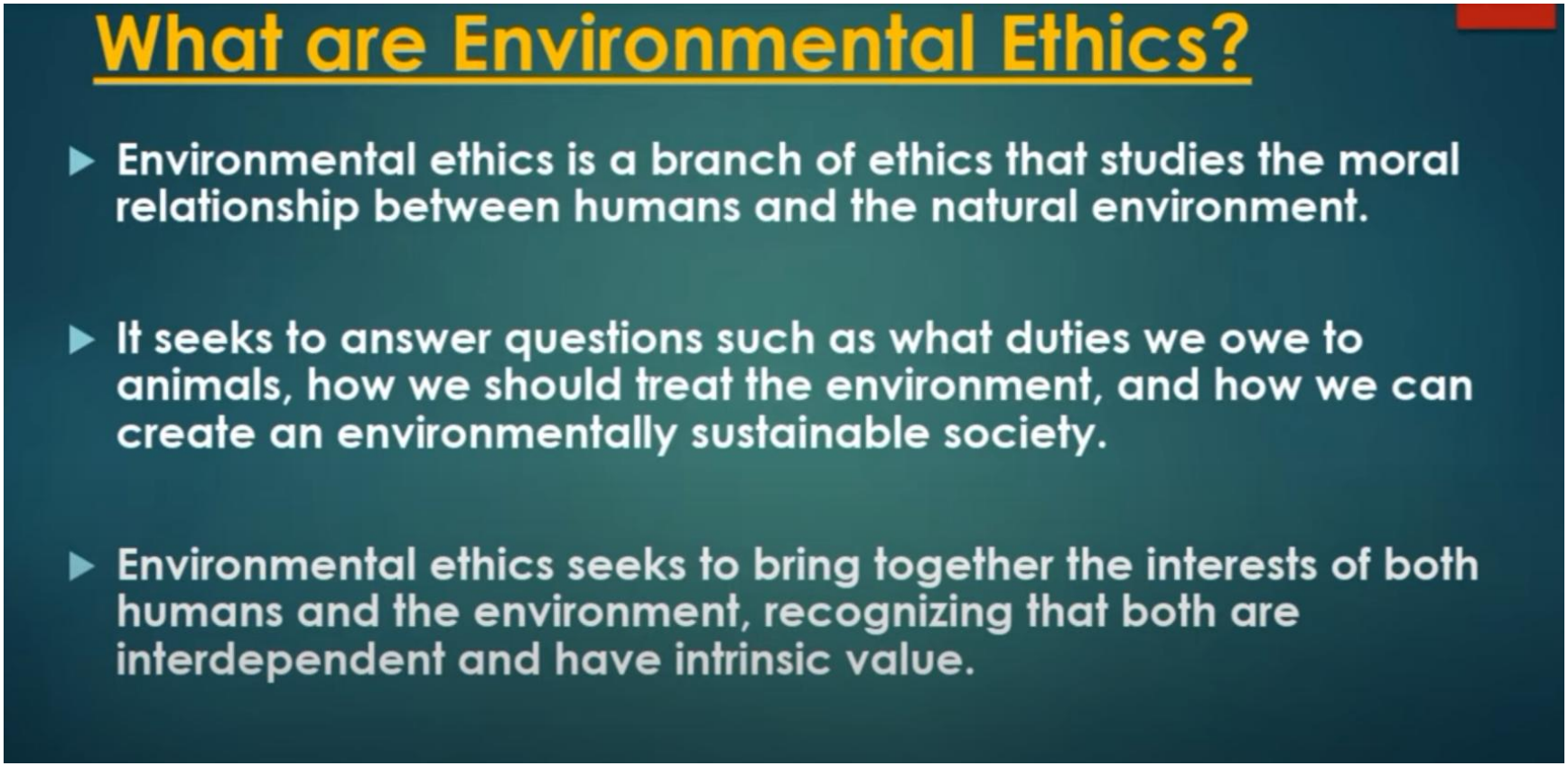
Overall Benefits of Corporate Environmental Responsibility & Sustainability

- **2. Conservation of Natural Resources** 🌱
- ☑ Sustainable sourcing helps **protect forests, water, and minerals**.
  ☑ Recycling and circular economy reduce **waste production**.
  ☑ Efficient water usage ensures **clean water availability** for future generations.
- **Example:** Unilever reduced its water footprint by **40%** in its manufacturing units.
- **3. Improved Air and Water Quality** 🌫️💧
- ☑ Less industrial pollution improves **air and water quality**.
  ☑ **Green supply chains** reduce toxic emissions from transportation and manufacturing.
  ☑ Cleaner water bodies benefit **aquatic life and human health**.
- **Example:** Tesla's **electric vehicles (EVs)** help reduce **air pollution** in cities.

Overall Benefits of Corporate Environmental Responsibility & Sustainability

- **4. Increased Corporate Profitability & Cost Savings** 💰
- ☑ **Energy-efficient buildings and machines** lower operational costs.
  ☑ Waste reduction and recycling save money on raw materials.
  ☑ Green innovations open **new revenue streams** (e.g., biodegradable packaging).
- **Example:** Walmart saves **millions annually** through energy-efficient LED lighting in stores.
- **5. Compliance with Government Regulations** 📜
- ☑ Avoids **fines and penalties** for violating environmental laws.
  ☑ Meets **carbon neutrality goals** set by international agreements (e.g., Paris Climate Agreement).
  ☑ Government incentives and tax benefits for eco-friendly initiatives.
- **Example:** IKEA follows **strict European sustainability laws** and has committed to being **climate positive by 2030**.

Environmental Ethics



Libertarian Extension:

- Libertarian extension is a type of environmental ethics that focuses on an individual's right to do whatever they want with the environment and its resources.
- This concept also stresses that an individual should not impose their own values on others and should instead respect the choices of others.
- Libertarian extension promotes an individual's right to use natural resources,

Ecological Extension:

- Ecological Extension is a type of environmental ethics that focuses on preserving the natural environment and its resources in order to maintain the balance and health of the ecosystem.
- This concept stresses the importance of humans working with nature in order to sustain it for future generations.
- Ecological Extension encourages humans to work with nature,

Conservation Ethics:

- Conservation Ethics is a type of environmental ethics that focuses on preserving natural resources for future generations by ensuring that current resources are not depleted or damaged beyond repair.
- This concept encourages individuals to use natural resources responsibly and judiciously so there will be enough for future generations.
- Conservation Ethics emphasizes sustainable use of natural resources.

Importance of Environmental Ethics

- Environmental ethics is essential for protecting the environment, species, and resources.
- It promotes sustainable practices and encourages people to become more aware of the impact their actions have on the environment.
- It helps us consider the effects our actions have on the planet and guides us in making more ethical and sustainable decisions.
- Environmental ethics also promotes better public policies and laws, which help ensure that our environment is properly cared for.

Importance of Environmental Ethics

1. **Human Need versus Greed:** To maintain a balance between sustainable development and human demands, anthropomorphic intervention to nature needs and ethical code. For example, excessive mining and deforestation in Amazon rainforest has adversely affected local as well as global climate.
2. **Stewardship:** As people's participation in stewardship increases, they start participating in policy making regarding natural resources. This requires them to understand environmental ethics.
3. **Principle of Trusteeship laid out by Mahatma Gandhi envisions humans and businesses as caretakers of resources and environment.**
4. **Legal and Constitutional Understanding:** For example, in India, laws like Environment Protection Act, Water Act etc provide legal obligation to understand our duties.
5. **Eco feminism:** Gender justice has also been a keen element of environmental ethics as seen in eco feminist movements in India. For example, Chipko Aandolan, Appiko Movement saw massive women participation.
6. **Polluter Pays Principle:** Even the National Green Tribunal and its judicial pronouncements in cases like Art of Living and damaging of Yamuna floodplains emphasises this point. This imbibes responsible behaviour.

Development versus environment debate (Aarey forest issue, Ken Betwa Link canal etc)

Consequentialism or utilitarianism: Looking at the ecosystem services provided by nature, we must preserve it. On the other hand, development projects provide benefits to large number of people.

Deontological view: Preserving all living beings is a moral duty that must override all other considerations. But it is also the duty of the authorities to consider and act upon citizen grievance.

Biocentrism : It places emphasis on preservation of biodiversity, animal rights and environmental protection. Thus it would favour conservation over development.

Thus Environmental ethics are significant to explore the dimensions of human as part of a large eco system and its components. It provides perspective and helps in resolving ethical issues related to pressing challenges.

Examples of Environmental Ethics

- Renewable energy sources are sources of energy that are naturally replenished and can be used without depleting natural resources.
- Examples of renewable energy sources include solar, wind, and hydropower. Renewable energy sources are seen as an ethical choice, as they do not cause pollution or deplete finite resources.
- Sustainable forestry practices are designed to ensure that forests are managed in a way that preserves their biodiversity and ecological integrity.
- Examples of sustainable forestry practices include selective harvesting, reforestation, and the protection of old-growth forests.

Principles of Environmental Ethics

1. Respect for the intrinsic value of nature:
2. Interdependence of species and ecosystems
3. Ecological sustainability
4. Human responsibility
5. Human equity
6. Right to know
7. Right to participate

Environmental Ethics

- **Ethics** = the study of good and bad, right and wrong
- **Ethical standards** = criteria that help differentiate right from wrong
- **Environmental ethics** = the study of ethical questions regarding human interactions with the environment

Ethical issues:-

- *The term "environmental ethics" came into being in early 1970s when the world started realizing the dangers of human actions on environment.*
- *Main reasons of such concerns were those issues ,whose effects were changing the global environment.*
- *These issues are:-*
  - *concentration of CO2 and other harmful gases, and presence of harmful elements in atmosphere due to burning of fossil fuels.*
  - *Reduced purification of atmosphere due to increased deforestation.*

Ethical issues cont...

- Spoiling quality of ingredients of environment due to industrialization, urbanization and other technological developments.
- Fast depleting natural resources due to their consumption at a much faster rate.

- Serious consequences:-
  - Green house effect and global warming.
  - Acid rain.
  - Ozone layer depletion.

17 goals of sustainable development

Ethics and the Environment

- **What is Environmental Ethics?**
- Environmental ethics is a **branch of philosophy** that examines the moral relationship between humans and the natural world. It guides how individuals, businesses, and governments should treat the environment responsibly.
- **Key Questions in Environmental Ethics:**
- ◇ Do humans have a moral duty to protect nature?
  ◇ Should businesses prioritize profits over sustainability?
  ◇ Do animals and plants have rights?
  ◇ How can we balance economic growth with environmental conservation?

Principles of Environmental Ethics

- **1. Sustainability** 
- Using resources wisely so future generations can also benefit.
- Encouraging **renewable energy, conservation, and recycling**.
- **Example:** Companies like Tesla promote electric vehicles to reduce fossil fuel use.

- **2. Responsibility** 
- Individuals and organizations are responsible for minimizing environmental harm.
- Businesses must adopt **green supply chains** and reduce waste.
- **Example:** IKEA uses only **sustainably sourced wood** to protect forests.

Principles of Environmental Ethics

- **3. Justice & Fairness** ⚖️
- Fair distribution of environmental benefits and burdens.
- Preventing environmental racism (where low-income communities face more pollution).
- **Example:** The Paris Climate Agreement ensures global cooperation in fighting climate change.

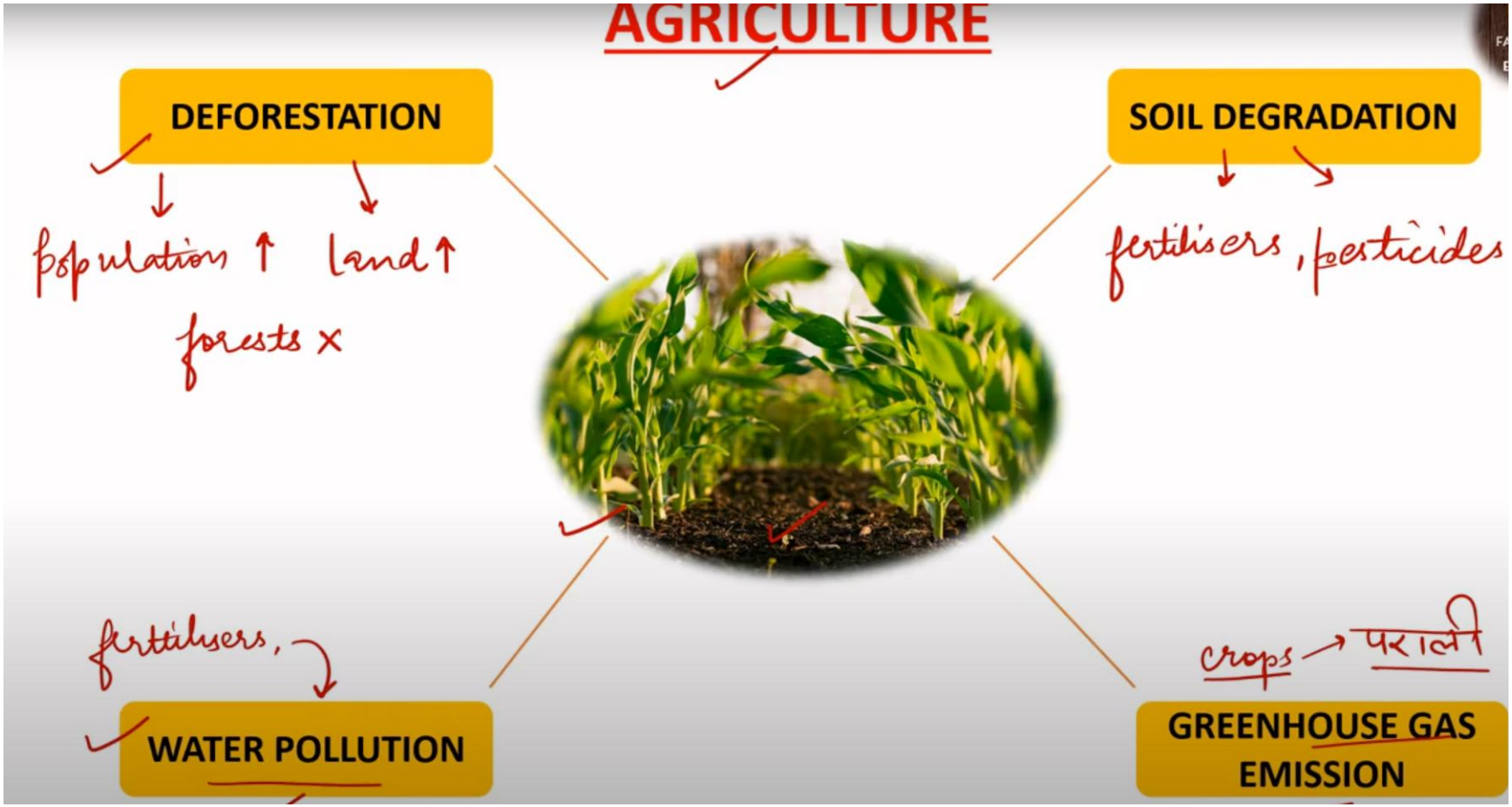
- **4. Respect for Nature** 🌳
- Recognizing the intrinsic value of **plants, animals, and ecosystems**.
- Avoiding activities that lead to **deforestation, pollution, and habitat destruction**.
- **Example:** National parks and protected areas safeguard biodiversity.

- **5. Precautionary Principle** ⚠️
- If an action may harm the environment, precautionary measures should be taken even if the full effects are not yet known.
- **Example:** Governments banning harmful pesticides before they cause irreversible damage.

Ethical Issues in Environmental Management

- **Climate Change & Corporate Responsibility** – Should businesses be held accountable for their carbon emissions?
- **Deforestation & Biodiversity Loss** – How can companies balance resource extraction with conservation?
- **Waste Management & Pollution** – Are businesses doing enough to reduce plastic waste?
- **Animal Rights & Ethical Consumption** – Should people avoid products tested on animals?
- **Environmental Justice** – Are poorer communities unfairly affected by industrial pollution?
- Ethics and the environment are deeply connected. By following ethical principles like **sustainability, responsibility, and fairness**, individuals and businesses can protect the planet while ensuring a just future for all.

Human and Environment Interaction



ENERGY PRODUCTION

FACILITATE TO EDUCATE

fossil fuel – Burn → coal

AIR POLLUTION

MINING

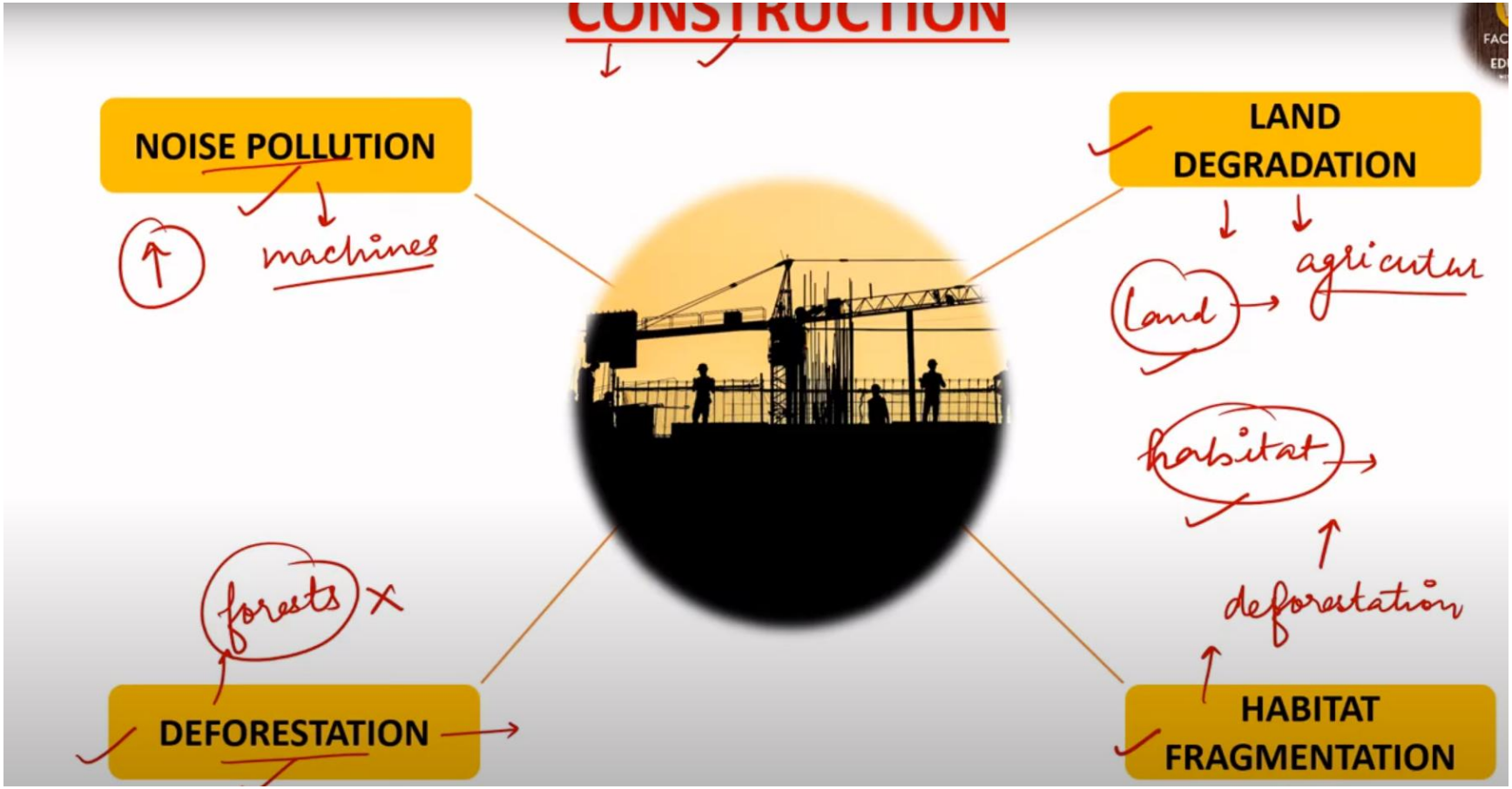
coal → soil degr

CO_2 → ↓ acidify

CLIMATE CHANGE

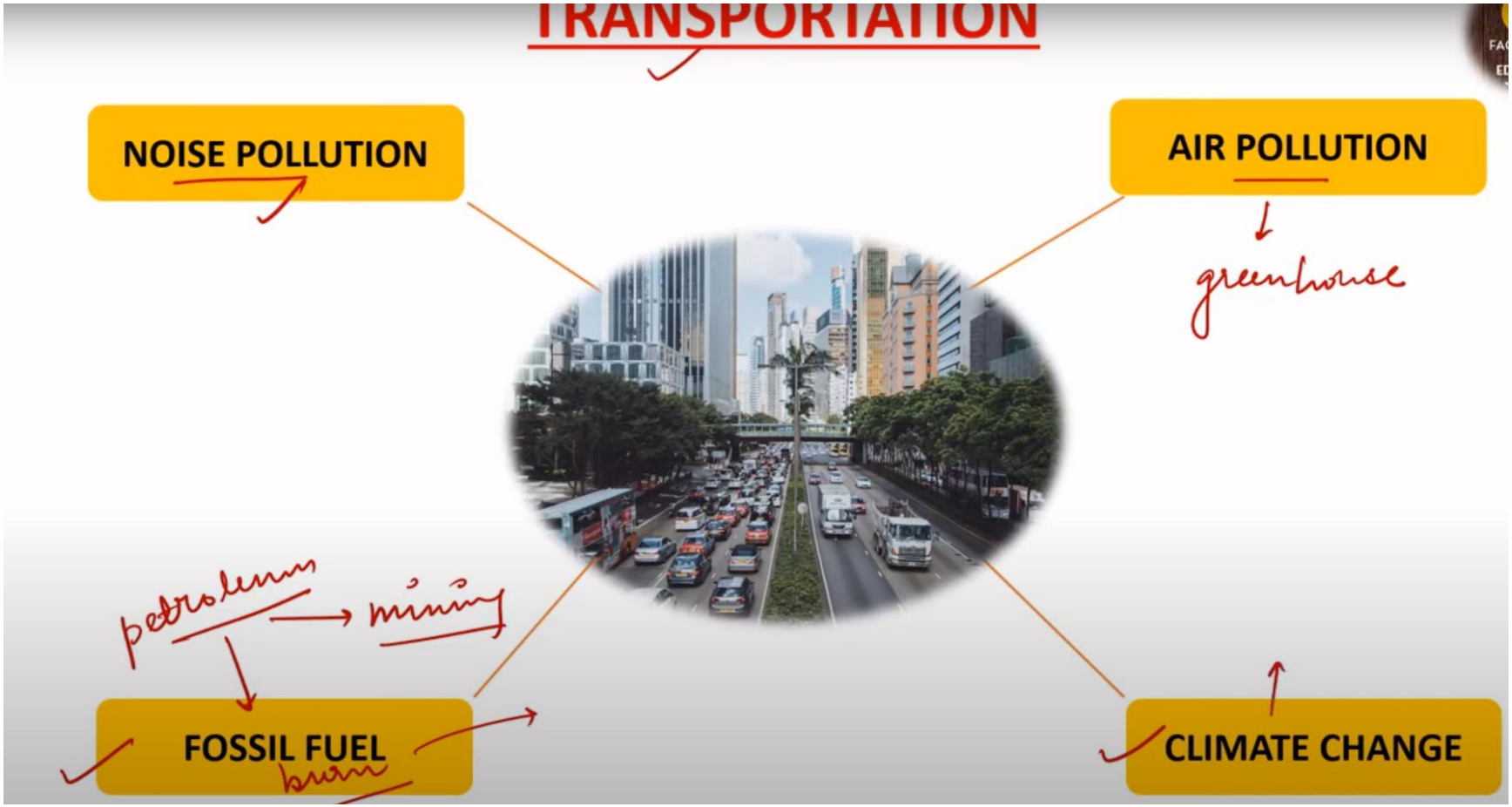
death ← OCEAN ACIDIFICATION

Construction

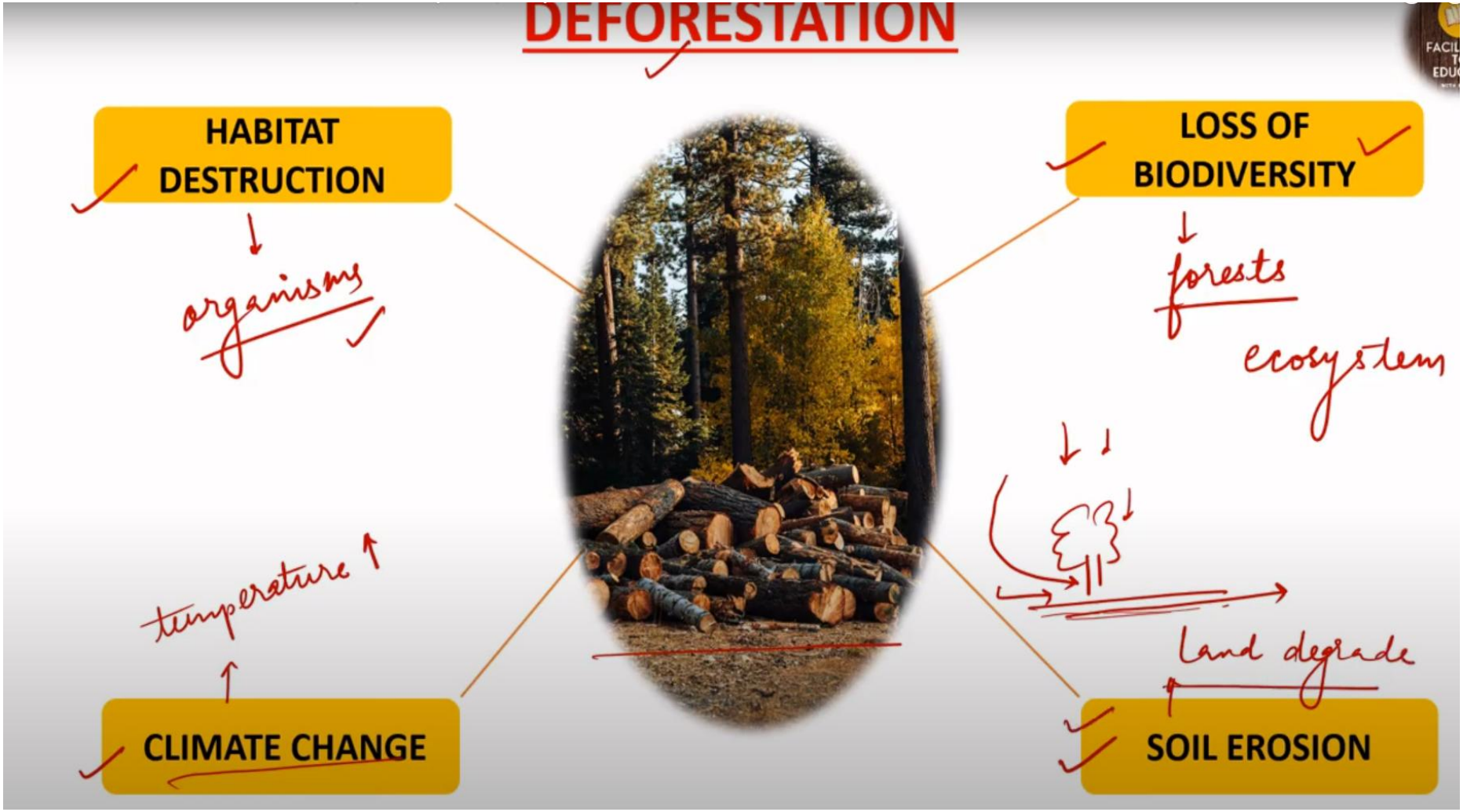


Industrial Activities

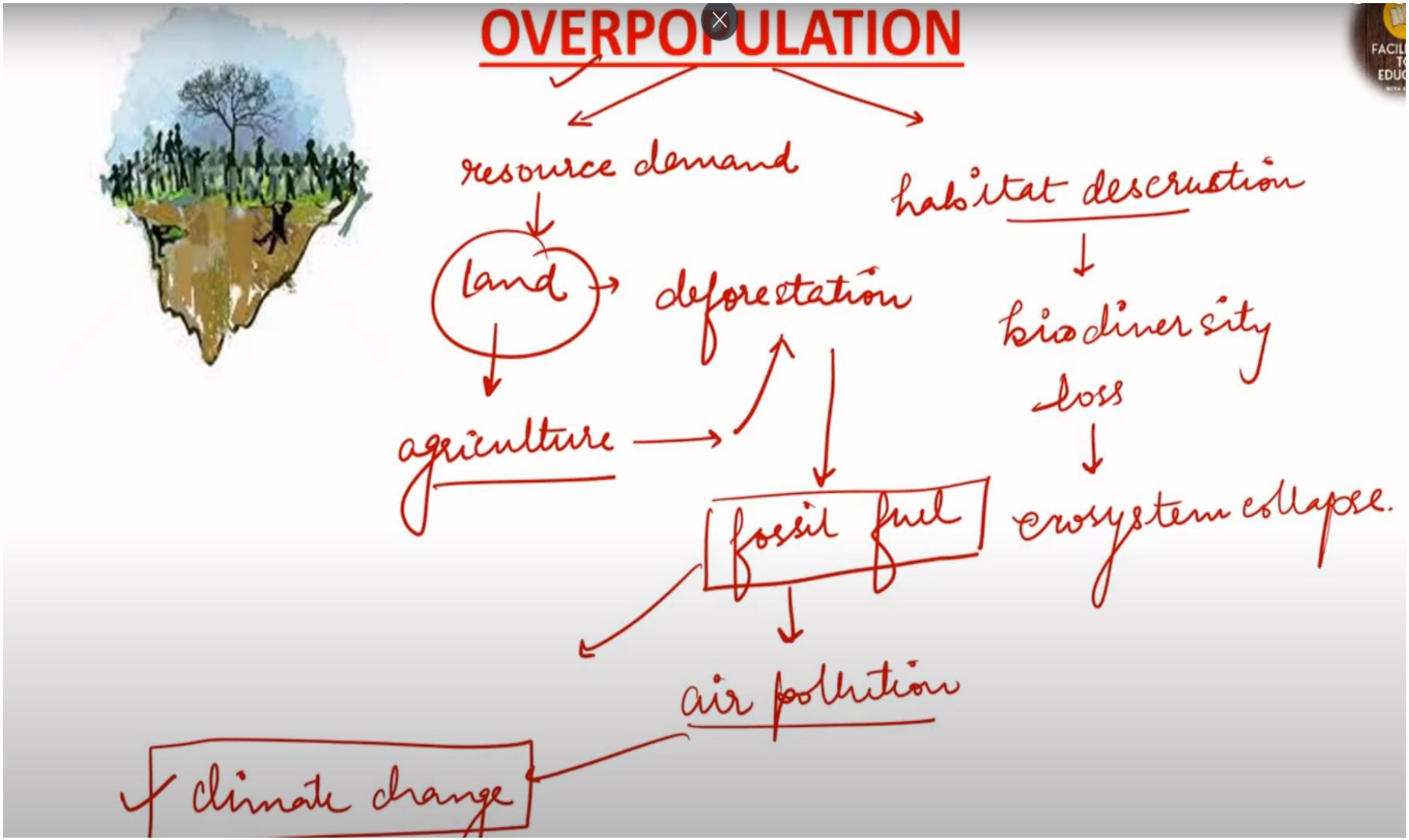
Transporation



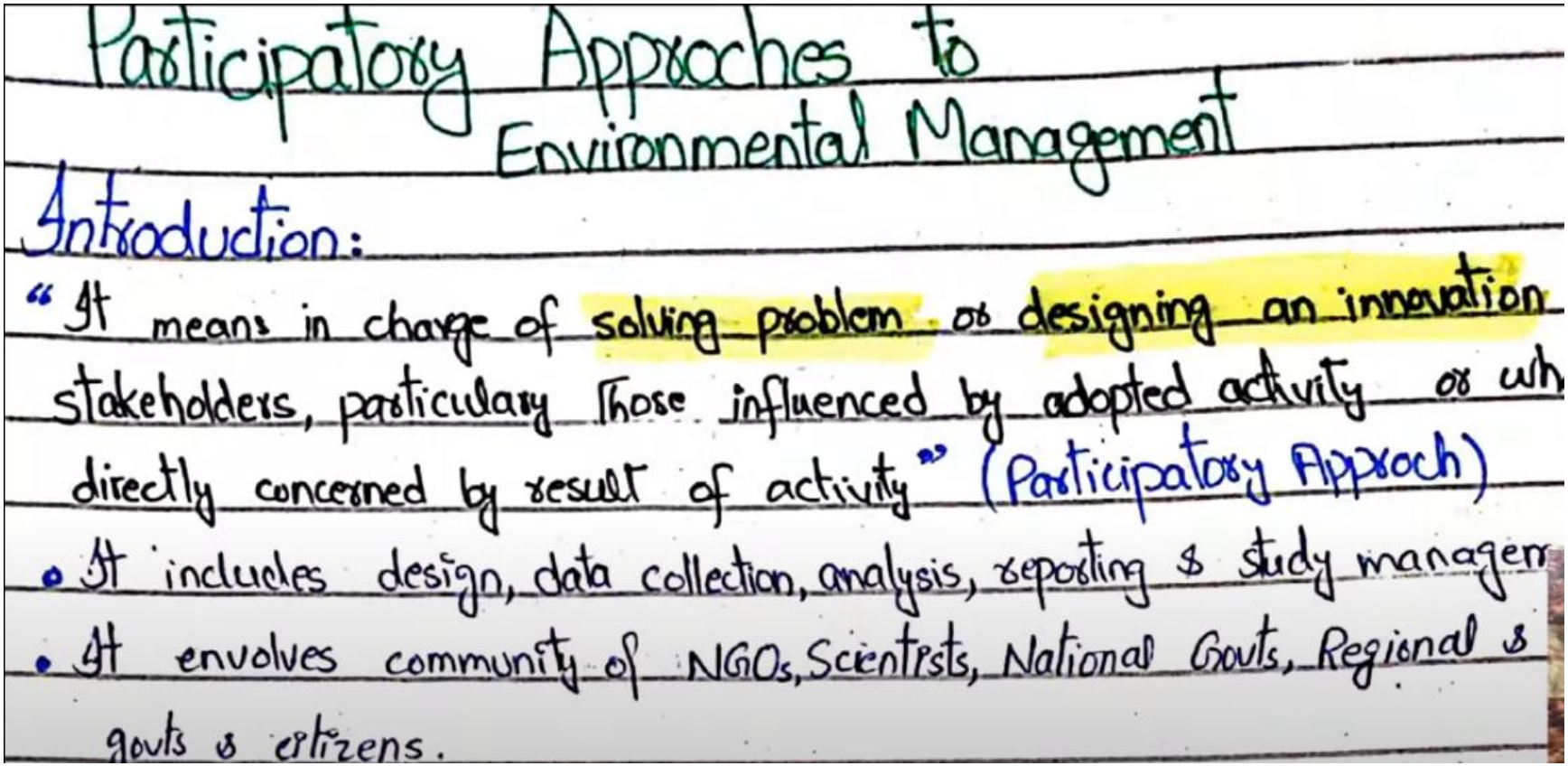
Deforestation



Over Population



Participants in Environment Management



Approches to Environmental Management

i) State Led Approch

ii) Participatory Approch (PEM)

Conditions for successful PEM

- It must offer clear benefits to both govts. & community.
- Required Legislation & by-laws must allow it.
- Adequate support services must be provided.

Background:

- Public participation included in environmental Management in The "Fifth Action Program on The Environment Launched by The European Commision in 1993"
- International treaties, conventions & Agreements promote Public participation.
- The Aarhus Convention, 1998 is example of PEM.
- Local Agenda 21 encouraged Local participation in decision making.

Environmental Movement

7 Major Environmental Movements in India

- Bishnoi Movement
- Chipko Movement
- Save Silent Valley Movement
- Jungle Bachao Andholan
- Appiko Movement
- Narmada Bachao Andholan (NBA)
- Tehri Dam Conflict

Bishnoi Movement

Year: 1700s

Place: Khejarli, Marwar region, Rajasthan state.

Leaders: Amrita Devi along with Bishnoi villagers in Khejarli and surrounding villages.

Aim: Save sacred trees from being cut down by the king's soldiers for a new palace.

Chipko Movement

Year: 1973

Place: In Chamoli district and later at Tehri-Garhwal district of Uttarakhand.

Leaders: Sundarlal Bahuguna, Gaura Devi, Sudesha Devi, Bachni Devi, Chandi Prasad Bhatt, Govind Singh Rawat, Dhoom Singh Negi, Shamsher Singh Bisht and Ghanasyam Raturi.

Aim: The main objective was to protect the trees on the Himalayan slopes from the axes of contractors of the forest.

Save Silent Valley Movement

Year: 1978

Place: Silent Valley, an evergreen tropical forest in the Palakkad district of Kerala, India.

Leaders: The Kerala Sastra Sahitya Parishad (KSSP) an NGO, and the poet-activist Sughatha kumari played an important role in the Silent Valley protests.

Aim: In order to protect the Silent Valley, the moist evergreen forest from being destroyed by a hydroelectric project.

Jungle Bachao Andholan

Year: 1982

Place: Singhbhum district of Bihar

Leaders: The tribals of Singhbhum.

Aim: Against governments decision to replace the natural sal forest with Teak.

Appiko Movement

Year: 1983

Place: Uttara Kannada and Shimoga districts of Karnataka State.

Leaders: Appiko's greatest strengths lie in it being neither driven by a personality nor having been formally institutionalised. However, it does have a facilitator in Pandurang Hegde. He helped launch the movement in 1983.

Aim: Against the felling and commercialization of natural forest and the ruin of ancient livelihood.

Narmada Bachao Andholan (NBA)

- **Year**: 1985
- **Place**: Narmada River, which flows through the states of Gujarat, Madhya Pradesh and Maharashtra.
- **Leaders**: Medha Patker, Baba Amte, Adivasis, farmers, environmentalists and human rights activists.
- **Aim**: A social movement against a number of large dams being built across the Narmada River.

Tehri Dam Conflict

Year: 1990's

Place: Bhagirathi River near Tehri in Uttarakhand.

Leaders: Sundarlal Bahuguna

Aim: The protest was against the displacement of town inhabitants and the environmental consequence of the weak ecosystem.