Document made by Dare-Marvel(Adwait Purao)

Week 1

1. **Definition of ecology**: The study of **relationships** between **living organisms** and their **physical environment**.
2. **Definition of environment**: The **surroundings or context** within which humans, animals, plants and other **organisms exist**.
3. **Definition of development**: A process that creates **growth, progress, positive change** or **addition of physical, economic, environmental, social** and **demographic components**.
4. Major environmental problems:
    - Biodiversity loss
    - Deforestation
    - Pollution (water, air)
    - Climate change
5. **Importance of environment:** It's the **only home for humans**, providing air, food, and other necessities. All life support systems depend on environmental well-being.
6. Animate vs. Inanimate world:
    - **Animate: plants** and **animals** including humans
    - **Inanimate: objects, machines**, and the **physical world**
7. **Sustainable Development:** Development that **meets present needs without compromising future** generations' ability to meet their needs.
8. Four objectives of **UK's Sustainable Development Strategy (1999):**

- **Social progress** recognizing everyone's needs
- Effective **environmental protection**
- Prudent use of **natural resources**
- Maintaining **high & stable levels of economic growth** & **employment**

9. **Ecosystem fragility:** Large-scale Forest destruction and global change (**climate change, biological invasion, land use changes, biodiversity depletion**) contribute to ecosystem fragility.
10. **Science and Technology for Sustainable Well-being:** S&T can improve understanding of environmental issues and aid in developing solutions.
11. Levels of ecological organization:
    - Individual
    - Population
    - Community
    - Ecosystem
    - Biome
    - Biosphere
    - Ecosphere
12. Basic principles of ecology (12 principles listed in the presentation)

    1. **All levels** of **ecological organization overlap** and **interact**.

    2. Everything in **ecological system**s is **interconnected**.

    3. The **abundance** and **distribution** of **organisms** are influenced by **physical, biotic**, and **social environments**.

    4. **Biotic** communities **vary** in **species numbers, diversity**, and **ecological roles**.

    5. **Species** form **networks of relationships** that can be **beneficial or harmful.**

    6. **Different ecological communities** may **share basic organization** despite differing species.

    7. **Biological interactions** are often **multiple and cumulative**.

    8. **Synergistic interactions** can lead to **effects greater than individual contributions**.

    9. **Ecological reactions** and **interactions** may **experience delays**.

10. **Threshold effects frequently** occur in **ecological systems**.

11. Humans are subject to **ecological principles**, **despite technological dissociation** from nature.

12. **Earth** is a **finite, closed ecological system** dependent on **solar energy, requiring recycling** of all life-support materials.

13. Four basic components of ecosystems:
    - Abiotic substances
    - Producers
    - Consumers
    - Decomposers
14. **Biogeochemical cycles: hydrologic, carbon, nitrogen, phosphorus**, and **sulphur**
15. **Ecosystem homeostasis**: **Relative balance** of **nutrient cycles, energy flows**, and **species composition** in ecosystems
16. Population growth curves:
    - J-curve (exponential growth): Represents unrestricted population growth when resources are abundant.
    - S-curve (logistic growth): Shows population growth that slows and stabilizes as it approaches the environment's carrying capacity.
17. Crop rotation and High Farming:
    - **Crop rotation**: Practice of **growing different crops in sequence** on the same land to maintain soil health and fertility.
    - **High Farming**: Agricultural system that introduced innovations like **animal fodder crops (turnips, chards) and nitrogen-enriching plants (alfalfa, timothy-grass)** to improve productivity.

Week 2

1. Environmentalism Definition

- A **political** and **ethical movement** aimed at **improving** and **protecting environmental quality** by **altering harmful human activities**. It emphasizes reassessing humanity's relationship with nature, advocating for **policy changes** and the **ethical consideration** of the natural world, including non-human entities.

2. Intellectual Foundations of Environmentalism

- Divided into **Anthropocentric (Human-centered)** and **Biocentric (Life-centered)**.
- **Anthropocentric** views stress **human benefits from environmental care**, while **biocentric** views assert that **nature has intrinsic worth beyond human use**, deserving ethical consideration.

3. Historical Movements & Key Publications

- **1960s Movement**: Marked by an increased focus on **preserving wilderness** and **conserving resources** amidst the **Civil Rights, Peace**, and **Women's movements**.
- **Rachel Carson's *Silent Spring* (1962)**: Highlighted the **health risks** of **pesticides** like **DDT**, **sparking modern environmentalism** by exposing the **dangers of pollution and environmental toxins**.
- **Key Publications**:
    - ***Silent Spring* (1962)** by **Rachel Carson**: Raised awareness about **DDT** and **pesticides**.
    - ***Spaceship Earth* (1966)** by **Kenneth Boulding**: Emphasized the need for **ecological economics**.
    - ***Population Bomb* (1968)** by **Paul Ehrlich**: Warned about **overpopulation risks**.

4. Key Environmental Legislation and Policies

- **National Environmental Policy Act (NEPA) 1969**: **Established a Council** on **Environmental Quality** to foster **harmony between humanity** and the **environment**.
- **Federal Water Pollution Control Act 1972** (**Clean Water Act**): Created a framework to **regulate water pollution in the U.S.**
- **Upper Mississippi River Management Act 1986**: Focused on **managing river resources** and protecting environmental quality.

5. New Environmentalism of the 1960s

- Influenced by **scientific findings, media attention**, and increased **public pressure** through demonstrations like **Earth Day (1970)**. This era emphasized **environmental education** and **grassroots activism, leading to substantial policy changes** and the rise of environmental organizations.
- Introduction of the **Polluter Pays Principle** and the **UN Conference on Human Development**.
- **Shifted focus** from **wilderness preservation** to **addressing pollution and environmental degradation**, influenced by social movements of the time.

6. DDT and Bioaccumulation

- **DDT**, a synthetic pesticide, showed initial effectiveness against diseases like **malaria** but was later found to **bioaccumulate** in animal tissues, leading to **biomagnification** in food chains and posing **health risks** to **higher-level consumers** like birds and mammals.

7. Club of Rome's *Limits to Growth* Report (1972)

- Warned that if **population growth, industrialization**, and **resource depletion trends continued**, ecological and **economic stability** would **collapse** within **100 years**. Suggested shifting towards sustainable practices to avert this.

8. Significant Ecological Disasters

- **Amoco Cadiz Oil Spill (1978)**: Caused **extensive marine pollution off Brittany**, **France.**
- **Three Mile Island Nuclear Accident (1979)**: Highlighted the risks of nuclear energy when a **reactor** in **Pennsylvania** experienced a **partial meltdown**.

9. 1980s Scientific Findings and Protocols

- **1985**: **Ozone layer depletion** discovered, linking **chlorofluorocarbons (CFCs)** to environmental harm.
- **1987 Montreal Protocol**: Adopted to **regulate substances depleting** the **ozone layer**, showcasing global cooperation in environmental protection.

10. Emergence of Sustainable Development

- **World Conservation Strategy (1980)**: Advocated for **sustainable development** that considers **economic, ecological**, and **social factors**.
- **Brundtland Report (1987)**: **Defined sustainable development** as **progress meeting current needs** without **compromising future generations'** ability to meet their own.

11. 1980s Environmental Disasters

- **Bhopal Disaster (1984)**: Toxic **gas leak** in India **killed thousands**, highlighting industrial negligence.
- **Chernobyl Explosion (1986)**: A **nuclear accident in Ukraine** caused widespread radioactive contamination, shaping policies on nuclear safety.

12. 1990s: Business and Sustainability

- Emergence of **ISO 14001 Environmental Management Standards** in **1996** and establishment of **Marine Stewardship Council** in **1997** marked a shift towards corporate environmental responsibility.

13. Earth Summit 1992

- Set five major agreements, including the **Framework Convention on Climate Change** and **Agenda 21**, a plan for **sustainable global development**, which provided foundational frameworks for environmental policy worldwide.

14. Grassroots Environmentalism

- Aimed at **local environmental autonomy** and **citizen involvement**. Embraces **community rights**, **transparency** in environmental **decision-making**, and **laws supporting environmental justice**.

15. North-South Environmental Divide

- In the **Global North**, environmentalism is often **post-materialistic** (**quality of life focus**), while in the **Global South**, it centers around **resource conflicts** and **livelihood protection**. **Southern movements link ecological issues** with **human rights, distributive justice**, and **socio-economic survival**.

16. Environmental Justice and Racism

- Movements in the U.S. arose to address **environmental racism**, where polluting industries and waste sites disproportionately **affect minority communities**. Claims of **ecological debt** advocate compensation from developed countries for the environmental impact on poorer nations.

17. Prominent Environmentalists

- **John Muir**: "**Father** of the **National Parks**"; advocated for **U.S. wilderness preservation**.
- **Aldo Leopold**: Introduced the "**Land Ethic**," emphasizing **responsible ecological relationships**.
- **Mark Dubois**: Symbolized **Northern environmental action**, **chaining himself to a river in California** to **protest dam construction**.
- **Medha Patkar**: Led protests in India, linking **environmental protection** with **social justice** and advocating for **communities displaced by development projects**.
- **Gandhi** : His philosophy **of non-violent resistance** and **critique of development** continues to inspire contemporary environmental movements in India.

18. Third World Environmentalism

- Characterized by **resource conflicts** between **peasants and industries**. It emphasizes **survival rights over natural resources** threatened by **economic elites'** development projects, highlighting the material rather than symbolic nature of Southern environmental struggles.

19. Case Study - Karnataka Pulpwoods Limited (KPL):

- Environmental conflicts in the Global South often pit rich against poor, such as **logging companies against hill villagers** or **dam builders against forest tribal communities**.

- Protests and direct action, such as the "**Kithiko-Hachiko Satyagraha**" against the **Karnataka Pulpwood Limited**, are common strategies employed by local communities.

Week 3

Ecofeminism Origins

- Coined by French feminist Françoise d'Eaubonne in 1974.
- Emerged in mid-1970s alongside the green movement and second wave feminism.
- Examines connections between women and nature, seeing environmental domination as inte rconnected with women's oppression.

Key Ecofeminist Thinkers & Their Contributions

- **Carolyn Merchant (1980):** Investigated historical women-nature linkage, argued pre-16th century Western societies had integrated social ties with nature.
- **Vandana Shiva:**
    - **Critiqued reductionist science** and **British colonial impacts** on **traditional sustainable practices** in India.
    - Shiva describes economic development as "maldevelopment," reducing women and nature to passive objects of exploitation.
- **Maria Mies (1986):** Used **Marxist-feminist** perspective to show how **capitalist patriarchy colonized women's bodies** and **labor**.
- **Ariel Salleh (1984):** Argued that **alienation from nature** cannot be separated from the sexist nature of alienation.
- **Mary Mellor (1997):** Presented a "**realist and materialist connection**" between feminism an d ecology.
- **Spiritualization of the Women-Nature Relationship**:
    - Some ecofeminists promote the **mystification and romanticization of nature** and **indigenous traditions**
    - **Starhawk** and **Spretnak** argue for a **spiritual connection** between **women** and the **cosmic** world
-

The Chipko Movement

- Started in **April 1973** in **Mandal village**, **Uttarakhand**, India.

- **Women hugged trees** to prevent them from being felled.
- Led by women who protected forests from timber contractors.
- Created controversy between different interpretations:
    - **Vandana Shiva** saw it as a **women's movement**.
    - **Ramachandra Guha** argued it was a **regional/ethnic movement** led by men.
- Became a **symbol of grassroots environmental activism**.

Types of Ecofeminism

- **Radical Ecofeminism:** Argues **patriarchal society degrades** both **nature and women**.
- **Cultural Ecofeminism: Encourages** the **association between women** and the **environment** b ased on gender roles and biology.
- **Third World Ecofeminism:** Focuses on a **materialist perspective**, particularly in the Global So uth.

Feminist Political Ecology (FPE)

- Emerged in the **1990s**.
- Addresses questions of distributive justice.
- Explores the **nexus between politics, ecology, development**, and **gender**.
- Treats women as both participants and partners in environmental preservation.

Marx's Environmental Theory

- Introduced the concept of "**social metabolism**."
- Argued **humans transform nature through labor**.
- Emphasized the **materialist connection to nature**.
- Famous quote: "**Labour is the father of material wealth, the earth is its mother**."

Key Concepts in Eco-Marxism

- **Social Metabolism:** How **humans mediate** and **control** their relationship with **nature**.
- **Dialectics of Nature: Engels'** contribution focusing on **contradictory developments**.
- **Materialism: Physical reality** is **independent** of and **prior to thought**.
- **Alienation from Nature: Capitalism separates humans** from **nature**.

Important Critiques of Capitalism

- Foster's argument that capitalism creates environmental destruction through profit-seeking.
- Capitalism treats nature as a commodity.
- Creates a "metabolic rift" between human society and nature.
- Post-WWII development of a "counter-ecological" production system.

Ecogender Studies

- Focuses on the **interconnectedness of gender oppression** and **environmental degradation**, emphasizing relationality in human-environment interactions.

Solutions Proposed

- Need for an ecological revolution.
- Move towards a steady-state economy.
- Focus on sustainable human development.
- Two-stage strategy for ecological and social revolution.

Significant Quotes

- Marx: "**All progress in capitalistic agriculture is a progress in the art, not only of robbing the labourer, but of robbing the soil.**"
- Marx: "Man lives from nature, i.e. nature is his body, and he must maintain a continuing dial ogue with it if he is not to die."

Important Books/Publications

- "**The Ecological Rift**" (2010) by **Brett Clark, Richard York, and Foster**.
- **Merchant's works** (1980, 2003).
- **Shiva's publications** (1988, 2001).

Week 4

1. Environmental Ethics

- **Definition:** Environmental ethics explores **human responsibilities towards nature**, extending traditional ethics to include the non-human world.
- **Development:** The **American wilderness movement** played a critical role, influencing the examination of **ethical duties** to the **environment.**

- **Key Thinkers: Roderick Nash and Stephen Fox** highlighted the **struggle** between **preservationists**, who **value nature for its own sake**, and **utilitarians**, who **seek to use nature as a resource**.

2. Wilderness Thinking and Cultural Attitudes

- **Roderick Nash's "Wilderness and the American Mind" (1967):** Examined **American perspectives on wilderness**, advocating an **ecocentric approach over anthropocentrism**, viewing nature as an indicator of cultural maturity.
- **Anthropocentric vs. Biocentric: Differentiates between human-centered approaches and those that recognize intrinsic value in all life.**

3. Lynn White's Critique of Judeo-Christian Views (1967)

- White argued that **Judeo-Christian beliefs** justified **human dominance over nature**, sparking discussions within Christian communities about stewardship and harmony with the environment.

4. Deep Ecology vs. Shallow Ecology

- **Arne Naess (Norwegian Philosopher): Coined the term "Deep Ecology" to emphasize ecological awareness that views humanity as part of an interconnected web, advocating for intrinsic value in all life forms.**
- **Distinctions:**
    - ***Shallow Ecology*: Human-centered, focusing on instrumental value.**
    - ***Deep Ecology*: Holistic, emphasizing interconnectedness and the intrinsic worth of nature.**

5. Deep Ecology's Philosophical Underpinnings

- **Naess'** principle of **"Simple in Means, Rich in Ends"** encourages examining **societal values** deeply, aiming for **ecological equality** and **self-realization.**
- **Key Quote: Naess emphasized, "**The essence of **deep ecology** is to ask **deeper questions,"** promoting a **materially simple lifestyle to enhance life quality.**

6. Gandhian Environmentalism

- **Influence on Indian Environmentalism:** Gandhi's ideas inspired figures like **Vandana Shiva, Anil Agarwal, and Ramachandra Guha**, who integrated Gandhian thought into environmental activism.
- **Key Works: "Hind Swaraj" (1909) criticized exploitative development models,** promoting a **harmonious existence** with nature.
- **Gandhi's Quotes: "The earth has enough for everyone's needs but not everyone's greed" underlines Gandhi's sustainable approach to resources.**

7. Village-Centric Development and Swadeshi

- **Gandhi's Model Village Vision (1937):** Advocated for **self-sufficient villages** with community resources like **wells, meeting places, and sustainable agriculture, aiming to prevent soil depletion.**
- **Swadeshi Movement:** Emphasized **self-reliance through small-scale production, opposing mass industrialization.**

8. Trusteeship and Stewardship

- **Gandhi** proposed that those **with resources** should act as **trustees, distributing wealth** for **social justice** and **avoiding environmental exploitation.**
- **Stewardship Concept:** Encourages **responsible management of resources, treating nature with respect and protection.**

9. Appropriate Technology

- **Concept Origin: Gandhi** advocated for technologies like the **spinning wheel (Charkha), symbolizing non-violent, sustainable production.**
- **E.F. Schumacher's Influence: Popularized Gandhi's** ideas as **"intermediate technology," suited to local needs** without **harmful environmental impact.**

10. Sarvodaya Movement

- **Principles:** Focuses on the **welfare of all beings, emphasizing basic needs** like **clean environment, food, and healthcare, reflecting holistic well-being.**
- **Ten Needs: Encompass essentials such as food, shelter, healthcare, and spiritual and cultural life, highlighting a broad view of welfare that includes nature.**

11. Arne Naess and the "Ecological Self"

- **Influence of Gandhi: Naess'** idea of **"ecological self" stems from Gandhi's vision** of **self-realization,** understanding **humanity** as part of a **vast ecological network.**
- **Bhagavad Gita's Role:** Used to **emphasize unity in nature,** reinforcing ideas of **self with Self,** aligning **ecological concerns with spiritual development.**

12. Murray Bookchin's Social Ecology

- **Definition: Social ecology,** coined by **Bookchin,** addresses **ecological issues** arising from **social hierarchies** and **power structures.**
- **Key Concepts:**
    - **Dominance over nature** stems **from human domination.**
    - Advocates for a **society based on mutual respect, rejecting hierarchical exploitation.**

13. Human-Nature Relationship in Social Ecology

- **Organic Society: Bookchin** proposed a **society without hierarchy, based on diversity and unity, where ecological and social crises are resolved together.**

Social Ecology Concepts:

1. Definition: Study of reciprocal relationship between human society and ecological infrastructure, coined by Murray Bookchin in 1964.
2. Core Principle: Ecological problems arise from deep-seated social problems and cannot be resolved without addressing social issues.
3. Bookchin's Key Ideas:

- Environmental crisis results from hierarchical organization of power
- Domination of nature stems from domination of humans by humans
- Calls for replacing mentality of domination with ethics of complementarity

4. Origins of Social Domination:

- Began with male domination of females
- Enhanced by technological changes favoring male activities
- Developed through hierarchy and class structures

5. Market System Evolution:

- Transformed from limited exchange to unlimited expansion
- Industrial capitalism led to "grow or die" mentality
- Market became impervious to moral considerations

6. Human-Nature Relationship:

- Humans are part of nature's evolution ("first nature")
- Human society represents "second nature"
- Rejects both pure anthropocentric and biocentric views

Deep Ecology Concepts:

1. Coined by Arne Naess:

- Distinguishes between shallow (anthropocentric) and deep ecology
- Emphasizes interconnectedness of all life forms
- Recognizes intrinsic value of all living beings

2. Key Principles:

- Questions deeper values of society
- Promotes ecological equality
- Advocates simple lifestyle with rich experiences

3. Criticism:

- Viewed by some as Western domination
- Considered luxury of rich nations
- Concerns about displacement of indigenous peoples

Gandhian Environmental Philosophy:

1. Core Environmental Ideas:

- "Earth has enough for everyone's need, but not greed"
- Promoted simple living and self-reliance
- Emphasized village-based economy

2. Key Concepts:

- Swadeshi (self-reliance)
- Trusteeship (responsible resource management)
- Ahimsa (non-violence towards all living beings)

3. Views on Industrialization:

- Opposed massive industrialization
- Warned against copying Western development model
- Advocated decentralized production

4. Environmental Ethics:

- Believed in intrinsic value of all creation
- Promoted harmony between humans and nature
- Emphasized moral responsibility towards environment

5. Influence:

- Inspired movements like Chipko

- Influenced thinkers like E.F. Schumacher
- Impact on Indian environmental movement

Important Connections:

1. Naess and Gandhi:

- Deep Ecology influenced by Gandhian thought
- Shared concepts of self-realization
- Similar views on simple living

2. Social Ecology and Deep Ecology:

- Both critique industrial society
- Different approaches to human-nature relationship
- Complementary perspectives on environmental crisis

3. Modern Applications:

- Influence on environmental movements
- Relevance to current sustainability debates
- Impact on environmental policy

Week 5

Section 1: The Bishnois - A Case Study in Environmental Defense

- **Guru Jambaji (born 1451 CE): Founder** of the **Bishnoi faith** in the **Marwar** region of India**. He** emphasized the **interconnectedness of nature** and **human survival,** especially after **witnessing severe droughts.**
- **29 Injunctions:** Jambaji established these **core principles,** with a strong **focus** on **environmental protection.** Key injunctions included a **ban on cutting green trees** and **harming animals/birds.**
- **Bishnoi Resistance (approx. 1750s - 300 years after Jambaji's birth):**
    - **The King of Jodhpur ordered trees to be cut from Bishnoi lands** for his new palace**.**
    - **Bishnois, led by a woman (name not mentioned in text),** peacefully **resisted by hugging trees** to protect them.
    - The **soldiers killed 363 Bishnois** who refused to let the trees be harmed**.**

- **News** of the **massacre reached the King,** who was **moved by their sacrifice.** He **granted the Bishnois state protection** for their **beliefs** and the **forest.**

- **Legacy: The Bishnois** continue to **fiercely protect trees and animals,** serving as a **powerful example of religiously motivated environmental defense in action.**

Section 2: Christianity and the Environment - A Complex Relationship

- **Lynn White Jr. and "The Historical Roots of our Ecological Crisis" (1966):**
    - **White's influential paper argued that the Judeo-Christian worldview, particularly Western Christianity,** contributed to **environmental exploitation.**
    - **Key Arguments:**
        - **Christian dualism separated humanity from nature, justifying its exploitation.**
        - **The belief that God granted humans dominion over nature encouraged its use for human ends.**
        - **Quote: "...[Christianity] not only established a dualism of man and nature but also insisted that it is God's will that man exploit nature for his proper ends... '[Western] Christianity is the most anthropocentric religion the world has seen.'"**
- **1960s-1970s - Challenges and Reinterpretations:**
    - **White's critique sparked debate and self-reflection within Christianity.**
    - **Non-Western traditions (Asian, Native American) were seen as more ecologically harmonious.**
    - **Liberal Christians sought to re-emphasize the interconnectedness of all life and responsible stewardship.**
    - **Theologians began re-examining concepts like "dominion" and "subduing the earth" in a more holistic light.**
- **New Theological Branches: The environmental movement within Christianity led to the development of fields like:**
    - **Theology of Nature**
    - **Theology of Ecology**
    - **Theology of Creation**
- **Reframing the Narrative:**
    - **Christian scholars sought to counter the perception of Christianity as anti-environmental.**

        - **They highlighted historical examples of environmental concern within Christianity.**
        - **The importance of integrating environmentalism into Christian practice became a central theme.**
- **Roderick Nash:** Historian who also **critiqued Christianity's "otherworldliness" and its potential to detach from earthly concerns.**
- **"The Missing Century" (1850-1950):** The text highlights a **need for further research into Christian environmental thought and action** during this period**.**
- **Pope John Paul II and "The Ecological Crisis: A Common Responsibility" (January 1, 1990):**
    - **This papal message addressed the growing ecological crisis.**
    - **Key Points:**
        - Emphasized the **goodness of creation and God's** entrusting of it to humanity **(Genesis 1-3).**
        - Highlighted **human responsibility for ecological balance, drawing upon the Genesis narrative of Adam and Eve.**
        - **Stressed the importance of respecting life and the dignity of all beings.**
        - **Called for a new solidarity, especially between developed and developing nations, to address the crisis.**
        - **Quote: "When the ecological crisis is set within the broader context of the search for peace within society, we can understand better the importance of giving attention to what the earth and its atmosphere are telling us: namely, that there is an order in the universe which must be respected, and that the human person, endowed with the capability of choosing freely, has a grave responsibility to preserve this order for the well-being of future generations."**

Key Concepts to Remember

- **Anthropocentrism: The belief that humans are the most important beings in the universe.**
- **Dualism: The idea of a separation between two entities, in this case, often humanity and nature.**
- **Stewardship: The responsibility to care for and manage something, often used in the context of environmental protection.**
- **Ecological Balance: The delicate balance within ecosystems that is necessary for their survival and health.**
- **Interconnectedness: The idea that all living beings and elements of nature are connected and interdependent.**

Important Dates and Names

- **1451 CE:** Guru **Jambaji's** birth year.
- **1966: Lynn White Jr.** presents **"The Historical Roots of our Ecological Crisis."**
- **1960s-1970s:** Period of **significant environmental debate** and **reinterpretation within Christianity.**
- **January 1, 1990: Pope John Paul II** delivers **"The Ecological Crisis: A Common Responsibility."**
- **Lynn White Jr., Roderick Nash, Guru Jambaji, Pope John Paul II: Key figures mentioned in the text.**

Important Quotes

- **Lynn White Jr.: "...[Christianity] not only established a dualism of man and nature but also insisted that it is God's will that man exploit nature for his proper ends... '[Western] Christianity is the most anthropocentric religion the world has seen.'"**
- **Pope John Paul II: "When the ecological crisis is set within the broader context of the search for peace within society, we can understand better the importance of giving attention to what the earth and its atmosphere are telling us: namely, that there is an order in the universe which must be respected, and that the human person, endowed with the capability of choosing freely, has a grave responsibility to preserve this order for the well-being of future generations."**

Important Books and Texts

- **Genesis: The first book of the Bible, referenced in discussions of creation and human responsibility.**
- **"The Historical Roots of our Ecological Crisis" by Lynn White Jr. (1966): A seminal paper critiquing the Judeo-Christian worldview's impact on the environment.**
- **"The Ecological Crisis: A Common Responsibility" by Pope John Paul II (January 1, 1990): A papal message addressing the ecological crisis and human responsibility.**

Week 6

1. Natural Resources: The Basics

- **Definition: Naturally occurring** substances valuable in their **relatively unmodified form**, providing the basis for human life (**Simmons 1993**). Examples: **air, water, sunlight, soil, minerals, forests, and wildlife.**
- **Types:**
    - **Renewable:** Replenished in a short period (e.g., **air, water, sunlight, forests**).

- **Non-renewable:** Cannot be replenished quickly, taking millions of years to form (e.g., **minerals like coal, petroleum, natural gas, metals**).

2. Natural Resource Management (NRM)

- **Definition:** The **sustainable utilization** of major natural resources to **provide ecosystem services** that **enhance human life quality** (**land, water, air, minerals, forests, fisheries, flora, and fauna**).
- **History:**
    - **Pre-1960s:** Indigenous peoples **practiced NRM** for **millennia**.
    - **Early 17th century: Wildlife management emerged** in Western society through **hunting** and **fishing regulations** (**Camp & Daugherty, 2002**).
    - **Late 19th century:** The term **"conservation" emerges**, emphasizing the **management** of resources like **timber, fish, game, topsoil**, and **minerals** for **economic** and **ecological reasons**.
    - **Early 1960s:** The term "**natural resource management**" first appeared in the United States (**Johnston, Gregory, Pratt, & Watts, 2000**).

3. The Urgency of Conservation

- **Population vs. Resources: Earth's total resources** are estimated to only **support 2 billion** people at the current consumption rate. With a global **population exceeding 7 billion**, we are **already using 2-3 times more resources** than sustainable (from the text).
- **Why Conserve?**
    - **Resource Depletion:** Prevent the **exhaustion** of both **renewable** and **non-renewable resources**.
    - **Biodiversity Loss:** Conserving resources helps to maintain the **balance of ecosystems** and **prevent species extinction**.
    - **Future Generations: Ensure** the **availability** of resources for **future generations**.
    - **Ecological Balance:** Maintaining the **health** and **stability** of **ecosystems** upon which all life depends.

4. Conservation Methods: A Multi-Faceted Approach

- **Governmental Regulations:**
    - Setting up **wildlife sanctuaries, national parks**, and **biosphere reserves**.
    - Enacting and enforcing **laws to protect resources** (e.g., **Wildlife Protection Act of 1972, Forest Conservation Act of 1980, Water Act of 1974, Air Act of 1981, Environment Protection Act of 1986**).

- **Community Involvement: Engaging local communities in conservation** efforts is essential for success.
- **Sustainable Practices:**
    - **The Three R's:** Reduce consumption, Reuse materials, Recycle waste.
    - **Sustainable Forestry:** Promote afforestation, prevent deforestation, and implement responsible logging practices.
    - **Soil Conservation:** Practices like **crop rotation, mulching, strip cropping**, and **dry farming** help prevent soil erosion and maintain fertility.
- **Addressing Root Causes:** Tackling underlying social and economic issues like poverty, inequality, and lack of awareness is crucial.

5. Stakeholders: Who is Involved?

- **Local Communities:** Directly dependent on resources for livelihoods.
- **Industries:** Utilize raw materials from natural resources.
- **Government:** Manages and regulates resource use.
- **Conservation Organizations:** Advocate for the protection and preservation of resources.

6. The Tragedy of the Commons (Garrett Hardin, 1968)

- **Concept:** The **overexploitation** of **shared resources** due to individuals acting in **self-interest**, ultimately leading to resource depletion.
- **Examples: Overgrazing, overfishing, pollution**.
- **Key Takeaway:** Without regulation or cooperation, shared resources are vulnerable to collapse.

7. Governing the Commons: Finding Solutions

- **Elinor Ostrom's "Governing the Commons" (1990):** Showcased **successful examples** of **communities** managing **common resources** sustainably through **local rules** and **cooperation**, **without privatization** or **top-down government control**.

8. Common Property vs. Private Property

- **Private Property:** Advocates argue it **promotes economic development** due to **clear ownership** and **incentives for investment**.
- **Common Property:** Advocates argue that community management can be efficient and sustainable if **well-regulated** and supported by **local knowledge** and institutions.
- **The Debate:** Finding the right balance between private and common property rights is crucial for sustainable resource management.

9. Forests and Livelihoods

- **Importance of Forests:** Forests provide essential resources for livelihoods, including food, fuel, medicine, and income.
- **Forest-Based Commons:** Forests are a critical source of livelihoods for many communities, especially in developing countries.
- **Challenges: Deforestation, commercialization**, and **lack of access to markets threaten forest-based livelihoods**.

10. Nontimber Forest Products (NTFPs)

- **Definition:** Products derived from forests other than timber, such as **fruits, nuts, medicinal plants,** and **game**.
- **Importance:** NTFPs are crucial for the livelihoods of many communities, providing food, income, and cultural significance.
- **Challenges:** Overexploitation, lack of market access, and competition from commercial interests threaten NTFP-based livelihoods.

11. Community-Based Natural Resource Management (CBNRM)

- **Definition:** A process where local communities gain access and use rights to natural resources, plan and participate in their management, and benefit from their stewardship.
- **Key Principles:**
    - **Local Participation:** Communities are involved in decision-making and management.
    - **Equitable Distribution: Benefits** are **shared fairly** among community members.
    - **Sustainable Use:** Resources are used in a way that ensures their long-term availability.
- **Benefits:** CBNRM can promote conservation, improve livelihoods, and enhance community capacity.

12. Gender, Forests, and Livelihoods

- **Importance of Gender Analysis:** Understanding the different roles and needs of men and women in forest management and livelihoods is crucial for effective conservation and development.
- **Challenges:** Women often face greater challenges in accessing resources, markets, and decision-making processes, and may bear a disproportionate burden of environmental degradation.

13. Rethinking Community-Based Conservation

- **Concept: Community-based conservation** (CBC) aims to **balance conservation** and **development objectives** by involving local communities in conservation efforts.
- **Challenges:** CBC faces **challenges** in **balancing competing interests**, ensuring **equitable distribution** of benefits, and **addressing power imbalances** within communities.
- **Key Takeaway:** CBC requires a nuanced understanding of **local contexts, power dynamics**, and the **needs** and **aspirations** of **different stakeholders**.

14. Including Humans in the Social-Ecological Systems

- **Concept:** Recognizing humans as integral components of ecosystems, rather than separate from them.
- **Implications:** This perspective emphasizes the need for participatory approaches to conservation and management, and for addressing the social and economic needs of local communities.

Important Figures and Dates:

- **Garrett Hardin:** Published "**The Tragedy of the Commons**" in 1968.
- **Elinor Ostrom:** Published "**Governing the Commons**" in 1990.
- **Simmons (1993):** Highlighted the **importance of natural resources** as the basis of human life.
- **Johnston, Gregory, Pratt, & Watts (2000):** First used the term "**natural resource management**" in the United States.
- **Camp & Daugherty (2002):** Documented the **emergence of wildlife management** in Western society.
- **Ingold (2000):** Introduced the concept of "**dwelling"** to describe the practical engagement of humans with their environment.

Important Books and Publications:

- **"The Tragedy of the Commons" by Garrett Hardin (1968)**
- **"Governing the Commons" by Elinor Ostrom (1990)**
- **"Natural Connections" by Western and Wright (1994)**
- **"Natural Resources as Community Assets" by Child and Lyman (2005)**

Important Concepts and Terms:

- **Natural Resources:** Substances or living organisms found within the Earth's crust that can be used for economic benefits, such as energy, industrial processes, and consumption (e.g., water, minerals, forests, fish).

- **Renewable Resources:** Resources that can replenish or restore themselves naturally over time (e.g., sunlight, wind, rain, wood).
- **Non-Renewable Resources:** Resources that cannot replenish or restore themselves naturally over time (e.g., fossil fuels, minerals).
- **Sustainable Development:** Meeting the needs of the present without compromising the ability of future generations to meet their own needs.
- **Conservation:** The practice of protecting and preserving natural resources, including ecosystems, species, and habitats.
- **Community-Based Natural Resource Management (CBNRM):** A process where local communities gain access and use rights to natural resources, plan and participate in their management, and benefit from their stewardship.
- **Nontimber Forest Products (NTFPs):** Products derived from forests other than timber, such as fruits, nuts, medicinal plants, and game.
- **Social-Ecological Systems:** Systems that integrate human and natural components, recognizing the interdependence of social and ecological processes.

Potential MCQ Exam Questions :

1. What is the primary reason for conserving natural resources? a) To ensure economic growth b) To maintain ecological balance c) To provide for future generations d) To promote sustainable development

Answer: b) To maintain ecological balance

2. Which of the following is an example of a non-renewable resource? a) Solar energy b) Wind energy c) Fossil fuels d) Hydro energy

Answer: c) Fossil fuels

3. What is the main challenge facing community-based conservation efforts? a) Balancing competing interests b) Ensuring equitable distribution of benefits c) Addressing power imbalances within communities d) All of the above

Answer: d) All of the above

4. Who is credited with publishing "The Tragedy of the Commons" in 1968? a) Garrett Hardin b) Elinor Ostrom c) Simmons d) Johnston, Gregory, Pratt, & Watts

Answer: a) Garrett Hardin

5. What is the primary goal of community-based natural resource management (CBNRM)? a) To promote conservation b) To improve livelihoods c) To enhance community capacity d) All of the above

Answer: d) All of the above

6. What is the term for products derived from forests other than timber? a) Nontimber Forest Products (NTFPs) b) Timber Forest Products (TFPs) c) Forest-Based Products (FBPs) d) Wood-Based Products (WBPs)

Answer: a) Nontimber Forest Products (NTFPs)

7. Who introduced the concept of "dwelling" to describe the practical engagement of humans with their environment? a) Ingold b) Hardin c) Ostrom d) Simmons

Answer: a) Ingold

8. What is the primary reason for including humans in social-ecological systems? a) To recognize humans as integral components of ecosystems b) To promote sustainable development c) To ensure ecological balance d) To provide for future generations

Answer: a) To recognize humans as integral components of ecosystems

9. What is the term for the practice of protecting and preserving natural resources, including ecosystems, species, and habitats? a) Conservation b) Preservation c) Restoration d) Management

Answer: a) Conservation

10. What is the primary goal of sustainable development? a) To meet the needs of the present b) To ensure ecological balance c) To provide for future generations d) To promote economic growth

Answer: c) To provide for future generations

Week 7

1. Roots of Conservation & The Wilderness Ideal

- **Enclosure Movement (England, 18th-19th Century): Transformed commonly held land** into **private property**. This is KEY because it fueled the idea that private ownership was the best way to protect resources.
- **US National Parks Model (19th Century):** Captured **global attention**, spreading the idea of setting aside pristine wilderness areas, often by removing the people already living there.
- **Jim Igoe (2004):** Critiques this as **creating a social construct** of **untouched "nature," ignoring the historical presence** and **management** by **indigenous peoples**.

2. The Problem of Displacement

- **Definition:** The forced removal of people from a place, OR the restriction of their access to resources vital for their livelihood.

- **Development Displacement:** A HUGE issue – dams, roads, mines, etc. have displaced an estimated **100-200 MILLION people** since 1980 (Cernea, 2000).
- **Conservation Displacement:** Less talked about, but equally impactful. As protected areas expand, so does the displacement of communities.

3. How Displacement Happens & Why It's Harmful

- **"Fortress Conservation" (Brockington, 2002):** The dominant model, emphasizing **strict protection**, often using **force to exclude people** from protected areas.
- **Michael Cernea's IRR Model (2000):** Identifies EIGHT interlinked risks that make displacement impoverishing:
    - **Landlessness:** Loss of property, often their only asset
    - **Joblessness:** Traditional skills no longer applicable
    - **Homelessness:** Lack of adequate resettlement options
    - **Marginalization:** Social exclusion in new areas
    - **Food Insecurity:** Disrupted access to food sources
    - **Increased Morbidity/Mortality:** Stress, poor conditions
    - **Loss of Commons:** Shared resources no longer accessible
    - **Social Disarticulation:** Broken communities, loss of support

4. Conservation in India: A Case of Conflict

- **Forest Rights Act (2008):** Aimed to **correct historical injustices** by recognizing the **rights of forest-dwelling communities**. HOWEVER, it's criticized for **focusing on individual**, not community, rights, **hindering traditional management practices (Gadgil, 2008).**
- **The Sariska Tiger Reserve(Alwar , Rajasthan):** An example of **top-down conservation failing**. Local villagers argue their presence is NOT detrimental, even preventing poaching. Quote from Project Tiger Director: *"Until when the local communities will live in the reserve, the environment will be damaged. Our priority is to save the tiger... The displacement is... unavoidable."* This shows the disregard for local voices.

5. Tools for (Potentially) Less Harmful Development

- **Environmental Impact Assessment (EIA):** Legally **mandated in India since 1976-7**7. SHOULD assess a project's **environmental AND socio-economic impacts** BEFORE it's approved. Involves:
    - **Screening:** Is an EIA even needed for this project?
    - **Scoping:** What specific impacts will be studied?

- **Impact Analysis:** Predicting the consequences
- **Mitigation:** How to minimize negative effects
- **Reporting:** Making findings public
- **Review & Decision:** Approving (or rejecting) the project
- **Monitoring:** Ensuring compliance and addressing unforeseen issues

- **National Rehabilitation and Resettlement Policy (2007):** India's attempt to minimize displacement harm, at least on paper. Key aims:
  - Prioritize "**least-displacing" alternatives**.
  - Ensure a **fair compensation package**, implemented quickly.
  - **Safeguard rights of vulnerable groups (SCs, STs**).
  - Aim for a ***higher*** **standard of living post-displacement** (rarely achieved).
- **Social Impact Assessment (SIA):** Goes deeper than EIA, specifically **examining social, cultural, and economic impacts** on communities.
  - Required for projects displacing **over 400 families (plains)** or **200 families (tribal/hilly areas)**.
  - Vital for **obtaining Free, Prior**, and **Informed Consent (FPIC)** from indigenous groups.

6. Key Concepts & Critiques

- **"Primitive Accumulation" (Marx):** The process of **taking away people's means of production** (**land, tools, etc.)** to create a **workforce dependent on wages**. This is echoed in displacement, where people lose their traditional ways of life.
- **"Accumulation by Dispossession" (Harvey):** A **modern** form of **primitive accumulation**, where **wealth is concentrated** by **dispossessing** the **public** of their resources, often through neoliberal policies.
- **Critique of Conservation:** Seen as an **imperialist agenda**, **prioritizing** the **protection** of **nature over human rights** and **livelihoods**. Conservation efforts are often criticized for their top-down approach, ignoring local knowledge and management practices.

7. Land Acquisition & Rehabilitation in India

- **Land Acquisition Act (1894):** A **colonial law** that has been amended but remains contentious. Allows the **state to acquire land** for **"public purpose,"** often leading to displacement.
- **Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act (2013):** An attempt to **address past injustices** but criticized for its **exceptions and lack of implementation**.

- **Amendments & Controversies:** The 2015 amendment aimed to expedite land acquisition for strategic projects, sparking opposition for being **"corporate-friendly."**

8. Quotes & References

- **Medha Patkar: Criticizes** the **government** for **prioritizing industrial interests** over **people's rights**, leading to dispossession and lack of rehabilitation.
- **Michael Levi:** Discusses the **shift** from **state-led development** to **neoliberalism** in India, leading to a **new regime of dispossession**.

9. Key Dates

- **1972:** The **Wildlife (Protection) Act** passed in India.
- **1976-77: Environmental Impact Assessment** began in India.
- **2007: National Rehabilitation and Resettlement Policy** introduced.
- **2008: Forest Rights Act** passed.
- **2013: Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act** passed.
- **2015:** Amendment to the 2013 Act aimed to **expedite land acquisition**.

10. Key Names

- **Karl Marx:** Concept of "primitive accumulation."
- **Michael Perelman:** Three ways of primitive accumulation.
- **Dan Brockington:** "Fortress conservation."
- **Jim Igoe:** Critique of conservation as an imperialist agenda.
- **Gadgil:** Critique of Forest Rights Act implementation.
- **Medha Patkar:** Activist criticizing government policies.
- **Michael Levi:** Discusses neoliberalism and dispossession in India.

Week 8

1. Sardar Sarovar Dam Controversy

- **World Bank Report (1992):** Declared the **project flawed** and stated rehabilitation wasn't pos sible.
- **Displacement:** Over **100,000** people from **245** villages displaced.

- **Submersion:** Approximately **37,000** hectares for reservoir and **80,000** hectares for canal wor ks submerged.
- **Impact:** Affects mostly **lower socioeconomic (adivasi) communities**.

2. Narmada River Significance

- **Sacred River:** Sacred for Hindus with numerous religious monuments.
- **Different Visions: Goddess, homeland**, development resource.
- **Narmada Mai:** Called "**Narmada Mai**" (goddess) by millions.
- **Temples:** Banks lined with thousands of temples dedicated to Ganga and Siva.

3. Key Arguments & Perspectives

- **Terminology:** Both dam advocates and opponents use the same terms (sustainable develop ment, social justice, Gandhi) but with different interpretations.
- **Activist View:** Activists view the dam as sacrilege rather than sacred.
- **Criticism:** Project criticized for undermining rural poor's control over local resources.
- **Blended Perspectives:** Positions blend Gandhian, Marxist, and indigenous knowledge perspe ctives.

4. Northeast India Hydropower Projects

- **Generation Goal:** Ministry aims to generate **63,000 MW** through **168** dams.
- **Regional Characterization:** Region characterized as **"backward", "untapped potential", "res ource-rich".**
- **Displacement Argument:** Argument of "small displacement" due to low population density.
- **Impact:** Affects tribal communities dependent on forests and river ecosystems.

5. Tipaimukh Dam Case

- **Initial Design:** Originally designed in **1926** for flood control.
- **MOU Signed:** Signed with **NEEPCO** on **January 11, 2003**.
- **Submersion:** Will submerge **275.50 sq km** in **Manipur**.
- **Impact:** Affects **Barak River (Tuiroung**), critical for Hmar community's culture and economy.

6 . Mapithel Dam Controversy: The Mapithel dam project has been criticized for violating indigenous rights and failing to adhere to environmental regulations.

6. Important Quotes

- "Our **[Hmar] community** is like this **great river Tuiroung [Barak].** It has been flowing before a ny of us can remember..."
- **Nehru:** Called dams "**secular temples of modern India**".
- **Arundhati Roy:** "**The Greater Common Good**" (**1999**) criticized the project's impact on poor c ommunities.

7. Legal Framework

- **Land Acquisition Act (amended 1984)**
- **PESA Act 1996:** Requires gram sabha consultation in scheduled areas.
- **Forest Rights Act 2006**
- **Atomic Energy Act 1962:** For mining atomic minerals.

8. Environmental Impacts

- **Land Degradation**
- **Water and Air Pollution**
- **Disruption of Groundwater Tables**
- **Loss of Biodiversity**
- **Impact on Forest Ecosystems**

9. Social Impacts

- **Displacement of Indigenous Communities**
- **Loss of Cultural Heritage**
- **Disruption of Traditional Lifestyles**
- **Food Insecurity**
- **Breaking up of Social Networks**

10. Key Organizations & Reports

- **World Commission on Dams (WCD) 2000 Report**
- **North Eastern Electric Power Corporation Limited (NEEPCO)**
- **Central Water Commission (CWC)**
- **Narmada Bachao Andolan (NBA)**

11. Important Dates

- **1774:** First commercial coal mining in India.
- **1980:** Mapithel Dam approval by Planning Commission.
- **1992:** World Bank Report on Sardar Sarovar.
- **1999:** Tipaimukh hydroelectric project approval.
- **2003:** MOU for Tipaimukh dam.

12. Resistance Movements

- **Local Community Protests**
- **Environmental Activism**
- **Indigenous Rights Movements**
- **Legal Challenges through Courts**
- **International Advocacy**

Major Quotes

- **Supreme Court Statement:** "The power to acquire private property for public use is an attrib ute of sovereignty…"
- **Local Community Perspective:** "Development for us is being able to protect our hills, rivers a nd jungle."

Resistance Movements

- Local communities, supported by environmental activists, have resisted mining projects, emp hasizing the need for sustainable development.
- The Narmada Bachao Andolan is an example of a movement opposing large-scale dam constructions due to their adverse effects on local populations.

Key Books and Authors

- **"Avoiding New Poverty: Mining-Induced Displacement and Resettlement"** by Theodore E. Downing: Discusses the socio-economic impacts of mining.
- **"The Greater Common Good"**

Week 9

1. Development Approaches:

- **Trickle-Down (1960s):** Focused on **economic growth**, assuming benefits would reach everyone. **Largely ignored gender**.
- **Gender Relations in Development (Late 1970s):** Recognition that **development impacts men and women differently**.
- **Gender and Development (GAD) (Mid-1980s):** Focuses on **socially constructed roles**, **power dynamics**, and **equal opportunities** AND **outcomes for men and women**.

2. Core GAD Principles:

- **Challenging Social Constructs: Gender roles** are not natural; they are **created by society** and can be changed.
- **Mainstreaming:** Integrating **women's needs** and **perspectives** into ALL **development activities**.
- **Equality:** Both **equal opportunities (access)** and **equal outcomes (results)** are essential.

3. Development Theories:

- **Modernization Theory:** Advocate for **Western capitalist modernity** as the development model. Criticized for **marginalizing women**.
- **Underdevelopment/Dependency Theory:** Argues that **global capitalism exploits developing nation**s, reinforcing inequalities, including **gender inequalities**.
- **Neo-liberalism:** Emphasis on **free markets** and **privatization**. Criticized for **negatively impacting women** due to a lack of focus on social safety nets and support structures.

4. Waves of Feminism:

- **First Wave:** Focus on **suffrage (right to vote) for women** (**primarily white, middle-class women**).
- **Second Wave:** Broader focus on **reproductive rights, equal pay, challenging gender roles**.
- **Third Wave/Postfeminism:** Focus on **inclusivity, diverse experiences** of women (**race, class, sexuality**).

5. Critiques of Western Feminism (from a Non-Western Perspective):

- **Separation of Gender Issues:** Criticized for treating **gender issues** as **separate from** other **social** and **political struggles**.
- **Abstract Focus:** Criticized for **focusing on theoretical concepts** that may not resonate with the material realities of women in developing countries.

6. UN Agencies and WID:

- **World Bank, IMF, ILO, IBRD: Increasingly incorporate gender** into **development agendas**.
- **Women in Development (WID):** Initially focused on **integrating women into existing development models**, but later evolved to **address structural inequalities**.

7. Approaches to Women in Development:

- **Welfare Approach:** Focus on **women's reproductive roles, providing food aid, nutrition, family planning**.
- **Equity Approach:** Recognizes both **productive and reproductive roles, advocates for equal access to resources** and **opportunities**.
- **Anti-Poverty Approach:** Emphasizes **income-generating projects** for women.
- **Efficiency Approach:** Highlights the **economic benefits** of **investing in women's capabilities** and **empowerment**.

8. DAWN (Development Alternatives with Women for a New Era):

- **Formed in 1985 (Nairobi):** Offers a **Third World feminist perspective** on development.
- **Critiques of WID/GAD:** Points out **homogenization of women's experiences**, **top-down approaches**, and a lack of focus on women's agency.

9. Case Studies and Examples:

- **Green Revolution in India: Modernization in agriculture** led to unintended consequences, often **marginalizing women farmers**.
- **MNCs and Female Labor:** Multinational corporations often **exploit women's labor** by paying **lower wages** and **perpetuating gendered divisions of labor**.

10. Women and the Environment:

- **Rio Declaration (1992):** Recognizes **women's** vital **role** in **environmental management**.
- **Gender, Environment, and Development (GED):** Analyzes the complex relationship between gender, environment, and development, emphasizing women's knowledge and roles in environmental sustainability.

11. Climate Change and Gender:

- **Climate Change Exacerbates Inequality: Women** are **disproportionately affected** by climate change due to **existing inequalities** and **limited access** to resources.
- **Women's Vulnerability: Lack** of access to **land, credit, education**, and **decision-making** power makes **women more vulnerable to climate change** impacts.

- **Women as Agents of Change:** Women's knowledge and experience are crucial for developing **effective climate change mitigation** and **adaptation** strategies.

12. Sustainable Development Goals (SDGs) and Gender:

- **SDG 5: Gender Equality:** A standalone goal dedicated to achieving **gender equality** and **empowering women and girls**.
- **Gender Mainstreaming:** Integrating **gender perspectives into all 17 SDGs**, recognizing that achieving the SDGs requires addressing gender inequality.

13. Key Quotes:

- **"Women have a vital role in environmental management and development" (Principle 20, Rio Declaration 1992).**
- **"The more assets, the less vulnerability" (HDR 2007).**

Week 10

1. Climate and Climate Change:

- **Climate** is more than just the temperature; it includes **rainfall, humidity, wind patterns**, etc., **averaged** over a **long period** for a specific location.
- **Climate change** refers to **significant and lasting changes** in these **average weather patterns**, **impacting** not just **temperature**, but also phenomena like **ocean currents** and **biodiversity**.

2. Causes of Climate Change:

- While **natural processes** have always caused climate shifts, human activities since the **Industrial Revolution** (around 1750) are the dominant driver of **current warming**.
- Key human activities:
    - **Burning fossil fuels (coal, oil, natural gas):** Releases large amounts of **CO2**, the primary greenhouse gas.
    - **Deforestation:** Trees absorb CO2, so cutting them down reduces Earth's ability to remove it from the atmosphere.
    - **Livestock farming:** Animals, particularly **cattle, produce methane**, another potent greenhouse gas.

3. Effects of Climate Change:

- **Melting of Polar Ice Sheets and Glaciers:** Causes Sea levels to rise, threatening coastal communities and ecosystems.

- **Sea Level Rise:** Leads to flooding of low-lying areas, coastal erosion, and saltwater intrusion into freshwater sources.
- **Extreme Weather Events:** Climate change increases the frequency and intensity of extreme events like:
    - Floods
    - Forest fires and wildfires
    - Droughts
    - Heat waves
- **Ecosystem Disruption:** Shifting climate patterns disrupt ecosystems, leading to **species loss**, **changes** in **plant** and **animal behavior**, and altered migration patterns.

4. History of Climate Change Negotiations: (Focus on WHAT was done at each event)

- **1972: United Nations Conference on Environment, Stockholm**
    - Marked the beginning of **international environmental diplomacy**.
    - Led to the formation of the **United Nations Environment Programme (UNEP),** which plays a crucial role in coordinating global environmental efforts.
- **1988: Intergovernmental Panel on Climate Change (IPCC) Formed**
    - **Created by UNEP** and the **World Meteorological Organization (WMO)** to provide **objective** and **comprehensive scientific assessments of climate change**.
- **1992: Rio Earth Summit**
    - Landmark event where the **United Nations Framework Convention on Climate Change (UNFCCC)** was opened for signature.
    - UNFCCC: An international treaty to **stabilize greenhouse gas** concentrations in the atmosphere to **prevent dangerous human interference** with the climate system.
- **1997: Kyoto Protocol (COP 3)**
    - First **legally binding agreement** under the **UNFCCC**, committing **industrialized countries** to **reduce greenhouse gas emissions**.
    - Introduced "**flexibility mechanisms**" to help countries meet their targets.
- **2001: Marrakesh Accords (COP 7)**
    - Set **rules** for implementing the **Kyoto Protocol**.
    - Focused on **adaptation** to **climate change impacts**, particularly for developing countries.

- **2009: Copenhagen Accord (COP 15)**
    - Recognized the need to **limit global warming** to **2 degrees Celsius above pre-industrial levels**.
    - **Developed countries** pledged **financial support** to **developing nations** for climate action.
- **2015: Paris Agreement (COP 21)**
    - A landmark agreement aiming to **strengthen** the **global response** to **climate change** by:
        - **Keeping global temperature rise** well **below 2 degrees Celsius**, with efforts to **limit it to 1.5 degrees** Celsius.
        - Increasing **countries' ability to adapt** to **climate impacts**.
        - Providing **financial support** for **developing nations**.

5. Key International Bodies and Reports:

- **IPCC (Intergovernmental Panel on Climate Change):** Provides regular assessments of the science of climate change, its impacts, and potential responses.
- **UNFCCC (United Nations Framework Convention on Climate Change):** Sets an overall framework for intergovernmental efforts to tackle climate change.
- **IPCC Assessment Reports:** Released periodically, these reports synthesize the latest scientific understanding of climate change.

6. India's Climate Change Policy:

- **National Action Plan on Climate Change (NAPCC, 2008):** Outlines **India's strategy** to **address climate change**.
- **Eight National Missions:** Focus on areas like **solar energy, energy efficiency, water conservation**, and **sustainable agriculture**.

7. Eastern Himalayas and Climate Change:

- The **Eastern Himalayas** region is particularly **vulnerable to climate change** due to its **unique biodiversity**, **fragile ecosystems**, and **dependence on glacial meltwater**.

8. Convention on Biological Diversity (CBD):

- An international treaty to **conserve biodiversity**, use its **components sustainably**, and share the **benefits of genetic resources fairly**.

9. Mountain Ecosystems: - Provide essential ecosystem services, including **water supply, food security, and climate regulation**.

- Highly **vulnerable** to **climate change impacts**, including **temperature increases**, **changes** in **precipitation patterns**, and increased frequency of extreme weather events.

10. Hazards and Disasters in Eastern Himalayas:

- **Glacier Melting and Glacial Lake Outburst Floods (GLOFs):** Threaten communities and infrastructure downstream.

- **Increased Frequency of Floods, Mudflows, and Avalanches:** Due to climate change, these events are becoming more frequent and intense.

11. Drivers of Change & Ecosystem Stresses:

- **Temperature Rise and Reduced Precipitation:** Impact agriculture, water availability, and ecosystems.

- **Human Activities:** Deforestation, overgrazing, and agricultural expansion exacerbate ecosystem degradation.

12. Sensitivity of Biodiversity to Climate Change:

- The **Eastern Himalayas'** diverse climates and **complex topography** make it a **hotspot for biodiversity**.

- **Local communities** heavily depend on **agriculture** and **agroforestry**, making them **vulnerable** to climate change impacts.

13. Potential Impacts of Climate Change: - **Compound Pressures on Natural Resources:** Climate change exacerbates existing pressures on water, land, and biodiversity. - **Challenge to Adapt and Integrate Responses:** With poverty reduction strategies, to ensure sustainable development.

14. Key Climate Change Observations in Eastern Himalayas (1977-2000):

- **Temperature Increase:** 0.01°C in foothills, 0.02°C in middle mountains, 0.04°C in higher Himalayas.

- **Night-time Temperatures Increased:** Across most areas.

- **Precipitation Changes Variable:** Decreased in some areas, increased in others.

- **Glacier Retreat:** 20-30 m/year.

15. Impacts on Biodiversity and Water:

- **High Probability of Ecosystem Resilience Being Undermined:** By climate change.

- **Loss of Biodiversity Affecting Ecosystem Services:** Including water supply, food security, and climate regulation.

- **Changes in Hydrology Impacting Water Resources:** For domestic, agricultural, hydropower generation, and industrial purposes.

16. Adaptation Policy Frameworks for Climate Change:

- **Adaptation:** A **process** by which **individuals, communities**, and **countries** seek to **cope with** the **consequences of climate change**.

- **Adaptation Policy Framework (APF):** Aims to provide a **roadmap for adaptation policy-making**, focusing on **protecting and enhancing human well-being** in the face of climate change.

17. Key Principles of Adaptation Policy Framework:

- **Adaptation to Short-term Climate Variability and Extreme Events:** Serves as a starting point for reducing vulnerability to longer-term climate change.

- **Adaptation Occurs at Different Levels:** Including the local level.

- **Adaptation Policy and Measures Should Be Assessed in a Development Context:** Considering the broader development goals and needs.

- **The Adaptation Strategy and the Stakeholder Process:** Equally important for successful adaptation.

18. Vulnerability of Biodiversity to Climatic Threats:

- **Poverty and Biodiversity:** Sources of **vulnerability**, linked to the **synergy between human** and **biophysical subsystems** of mountain ecosystems.

- **Climate Variability and Change:** Directly **increase the vulnerability** of **people** through various impacts.

19. Vulnerability in the Eastern Himalayas:

- **Population Pressure and Devastation of Natural Biodiversity:** Main factors making the region highly sensitive to climate change.

- **Biodiversity at Risk:** Due to intensified resource extraction, agricultural expansion, and climate change impacts.

20. Mitigation:

- **Conservation of Forests and Soil:** Offers triple benefits of climate mitigation, biodiversity conservation, and human well-being.

- **Restoration of Degraded Landscapes:** With vegetation and agroforestry systems, can achieve carbon sequestration, reduced soil erosion, and improved water quality.

21. Summing Up:

- **Effective Conservation and Sustainable Use of Natural Resources:** Key to sound biodiversity management.

- **Humans Integral to Ecosystems:** Addressing socioeconomic wellbeing is crucial for biodiversity conservation.

- **Adaptation Strategies Must Be People-Oriented:** Protecting landscapes, ecosystems, habitats, and species while minimizing anthropogenic interferences.

Week 11

Environmental Challenges in Himalayas

- **Depletion** of **forest cover, biodiversity loss**, **declining farm productivity**.
- **Hydrological imbalance** and **soil erosion** affecting hill people's economy.
- Study by **Ramakrishnan** et al. (**1996**) highlighted these **interconnected problems.**

Indigenous Knowledge

- More preserved in high-altitude remote Himalayan villages due to isolation.
- Used for **resource management** and **biodiversity conservation**.
- Traditional practices **favor balance between utilization** and **regeneration**.

Traditional Forest Management Systems

- **No restrictions** on collecting **wild edibles, deadwood**, and **leaf litter**.
- **Community-based harvesting** of **medicinal plants** and **bamboos**.
- Social sanctions allowing only **smallholders** and **landless people** to **market forest resources**.

Government Forest Classification

- **National Parks:** All consumptive resource uses strictly prohibited.
- **Wildlife Sanctuaries:** Traditional **hunting banned**; **limited plant resource** use allowed.
- **Reserve Forest:** More liberal concessions to local communities.
- **Community Forests:** Managed by Forest Council or village headman.

Kuki Tribe and Traditional Beliefs

- Located in **Northeast India**.
- Pre-Christian period: **Practiced animism**.
- Believed in **Chung Pathien** (Supreme God) and **supernatural spirits**.
- Conversion to Christianity began in late 19th century.

Sacred Animals in Kuki Culture

- **Mithun (Bos frontalis):** Used in **sacred oath-taking ceremony** called **siel-meilah**.
- **Sacred Pig (Vohpi):** Essential for **social obligations** and **religious performances**.
- **Sacred Fowl (Ahcha):** Used in **divination rituals**.

Sacred Plants in Kuki Culture

- **Se (Oak tree):** Used for **ritual posts**.
- **Thiing (Ginger):** Considered protective against **harmful influences**.
- **Khaopi (Fiber):** Used in **making ritual ropes**.
- **Pat (Cotton):** Used in **soul-binding rituals**.
- **Ai (Wild turmeric):** Used in **divination**.
- **Gopi (Bamboo):** Essential for **religious ceremonies**.
- **Um (Gourd):** Used for **storing sacred seeds**.

Important Scholars and Their Works

- **Lynn White (1967):** Argued **that Judeo-Christian attitudes** promoted **"man's mastery over Nature."**
- **Dwivedi & Tiwari (1987) and Gottleib (1997):** Studied **relationship between culture, religion , and environment**.
- **Geertz (1973), Milton (1998), Posey (1999):** Studied **different cultural interpretations** of the world.

Impact of Modernization

- Western education and market economy undervalued traditional ecological knowledge.
- Christian evangelization led to abandonment of traditional practices like Indoi.
- Young generations devalued traditional culture (Rist and Dahdouh-Guebas 2006).

Traditional Religious Practices

- **Thiempu (priests)** acted as intermediaries between **spirits and humans**.
- Performed **phuisap (incantations)** and various rituals.
- **Indoi (house magic/household god)** symbolized connection between **humans and nature**.

Sacred Groves

- Preserved threatened plants and animals.
- Contained rare, endangered, and endemic species.

- Religious beliefs and taboos helped in conservation.
- Currently facing degradation due to changing perceptions.

Environmental Conservation

- Traditional societies maintained holistic view of socio-ecological systems.
- Cultural and religious values protected ecosystems.
- Indigenous knowledge systems helped in sustainable resource use.
- Modern development led to decline in traditional conservation practices.

Week 12

1. **World Commission on Environment and Development (WCED)**: Established in 1983, it emphasized the importance of traditional knowledge and the rights of indigenous communities in sustainable development.
2. **Rio Declaration (1992)**: Acknowledged the vital role of indigenous peoples in environmental management and sustainable development.
3. **Life Projects**: Indigenous communities pursue unique life projects that reflect their histories and reject universal development visions imposed by external forces.
4. **Development Projects**: Often disregard indigenous perspectives and impose external frameworks that may not align with local realities.
5. **Vertical vs. Horizontal Threads**: **Vertical threads** connect **people** to their **specific histories** and **landscapes**, while **horizontal threads** represent **broader, abstract connections**.
6. **Sustainable Development Perspectives**: Western views often prioritize economic growth, while indigenous perspectives emphasize reciprocity and giving back to the environment.
7. **Barriers to TEK**: Cultural disruptions from colonization hinder the use of traditional knowledge in sustainable development.
8. **Jhumming Practices**: Not just agricultural activities, but integral to Kuki identity, involving spiritual and cultural dimensions.

Indigenous Knowledge and Ecology

- Traditional societies maintain close connectivity with Nature, viewing themselves as part of t he cultural landscape.
- There's a **symbiotic relationship** between **nature and culture**.
- **Traditional Ecological Knowledge (TEK)** is **culturally** and **spiritually based**, founded on gener ations of **observation within ecosystems**.

- **Indigenous** peoples have their own **'effective science'** and **resource-use practices** (**Sillitoe 1998**).

Land and Identity for Kukis

- Land means **identity, culture, heritage**, and is part of their **social fabric**.
- Land is the **foundation** of Kuki **social, cultural, and economic systems**.
- Kukis consider land as **'Mother Earth'** and guardian.
- Land includes **village territory, rivers, streams,** and **forest land**.
- Rivers define social boundaries.

Kuki Land Use System

- Primarily based on **jhumming (shifting cultivation)**.
- Jhumming is both an **agricultural activity** and a **way of life**.
- Land-use system and forest management based on traditional knowledge.
- Kuki villages are **self-sufficient** within their territory.

Forest Use by Kukis

- Forests are **culturally significant** and multi-dimensionally appropriated.
- Kukis rely on **hunted, collected**, and **gathered food and resources**.
- Kuki **folklore** is full of references to the **forest**.
- Forests provide **medicinal plants** and **herbs**.
- They have **sophisticated knowledge** of their environment, including **plant names** and **proper ties.**

Traditional Farming Systems

- Different from modern agriculture in crop diversity and biodiversity.
- Use **organically managed multi-species cropping**.
- Designed to **fit into specific socio-ecological systems**.
- Jhumming is essentially an **agroforestry practice**.

Debate on Jhumming and Conservation

- Ecologists argue jhumming causes **deforestation**.
- **Anthropologists** argue it's part of **traditional ecological knowledge**.

- Jhumming involves **rotational cultivation** and **learned practices**.

Kuki Traditional/Indigenous Knowledge

- Integrates **spirits, humans,** and **natural phenomena**.
- Core of rituals and environmental understanding.
- **Rituals** in jhumming keep **local environmental knowledge alive**.

Rituals in Kuki Life

- Integral to **jhum cultivation** and **socio-cultural life**.
- **Reflect reciprocity** and **respect** towards creation.
- Example: **Hun ritual, linked to work on land and seasons**.

Specific Rituals in Jhum Fields

- **Lou-munsan:** Performed **before clearing land** to **test suitability**.
- **Twikhuh thoina:** Performed **after clearing**, especially **if water sources found**.
- **Daiphu:** For **good health and prosperity** in **cultivation**.
- **Chang-nungah poh:** Ritual for **rare, non-sprouting paddy**.
- **Chang-lhakou: Pleasing** the **souls of paddy, performed** by village **thiempu (priest)**.

Relevance of Indigenous Knowledge

- **Reflects biocentric worldview** predating scientific understanding.
- Continues to be relevant for **conserving Himalayan landscape**.
- Science needs to validate Kuki indigenous knowledge.

Key Concepts and Quotes

- "TEK is the **culturally and spiritually based way** in which **indigenous peoples** relate to their e cosystems." (**Brosius 1997**)
- "For indigenous people... it is in their **relationships** with the **land**, in their **business** of dwellin g, that their history unfolds." (**Ingold 2000**)
- **Saltman (2002)** defines the **relationship** between **land and identity** as "the **dynamic arena** w ithin which social realities are acted out in **individual cognition** and **perception**."

Important Books/Studies Mentioned

- **Rappaport's** "**Ritual Regulation of Environmental Relations among a New Guinea People**" (1967)

- **Rappaport**'s "**Pigs for the Ancestors: Ritual in the Ecology of a New Guinea People**" (1968)

Conclusion

- Kukis have maintained a unique relationship with their environment for centuries.
- Indigenous knowledge continues to be relevant for conservation.
- Local people are best suited to protect their ecosystem and biodiversity.
- Combining scientific and indigenous knowledge perspectives could produce a more compreh ensive understanding of natural and cultural environments and sustainable development pot entials.