

Environmental Problems, Their Causes, and Sustainability

Michael Brodskiy

Instructor: Mrs. Stansbury

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1. Environment — Everything around us
2. Environmental Science — Interdisciplinary science connecting information and ideas from:
 - Natural Sciences (ecology, biology, geology, chemistry)
 - Social Sciences (geography, politics, economies)
 - Humanities (ethics, philosophy)
3. Renewable vs. Nonrenewable
 - Resources — Anything that has been obtained from the environment to meet our needs
 - Renewable Resource — Takes several days to several hundred years to renew (Ex. Plants, Water, Air, Animals, etc.)
 - Nonrenewable Resources — A finite stock on Earth (Ex. Fossil Fuels, Ores and Metals, etc.)
4. Countries: Resource Use and Environmental Impact
 - More-developed Countries — Industrialized nations with high average income (roughly 17% of the world's population)
 - Less-developed Countries — 83% of the world's population
5. Ecological Footprints
 - Amount of biologically productive land and water needed to provide a person or area with renewable resources, and to recycle wastes and pollution
 - Ecological Deficit — Footprint is larger than biological capacity for replenishment

- IPAT — $I = PAT$
 - I is the total impact
 - P is the population
 - A is the affluence
 - T is the technology

6. Three major cultural events increased the human ecological footprint:

- Agricultural Revolution
- Industrial-medical Revolution
- Information-globalization Revolution
- There is a current need for a sustainability revolution

7. Causes of Environmental Problems:

- (a) Population growth
- (b) Wasteful/unsustainable resource use
- (c) Poverty
- (d) Price of goods does not reflect harmful environmental effects
- (e) Increasing isolation from nature

8. Human Population

- Exponential Growth — Population increases at a fixed percentage per unit time
- No one knows how many people the Earth can support indefinitely

9. Affluence

- Harmful environmental impact
 - High levels of consumption
 - High levels of pollution
 - Unnecessary waste of resources
- Beneficial environmental impact
 - Funds for developing technologies to reduce: pollution, environmental degradation, resource waste
- Affluence — Wealth; Allows to consume large amounts of resources far beyond their basic needs
- Affluenza — Unsustainable addiction to over-consumption and materialism exhibited in the lifestyle of affluent consumers in the United States and other developed countries

10. An Environmentally Sustainable Society

- Living Sustainably — Living off the Earth's natural income without depleting or degrading the natural capital that supplies it
- Environmentally Sustainable Society — Meets the current needs in a just and equitable manner without compromising future generations' ability to meet their needs
- Natural Income — Renewable resources
- The Anthropocene — A new era in which humans have become major agents of change in the functioning of Earth's life as ecological footprints have spread