
BCE406-ENVIRONMENTAL STUDIES

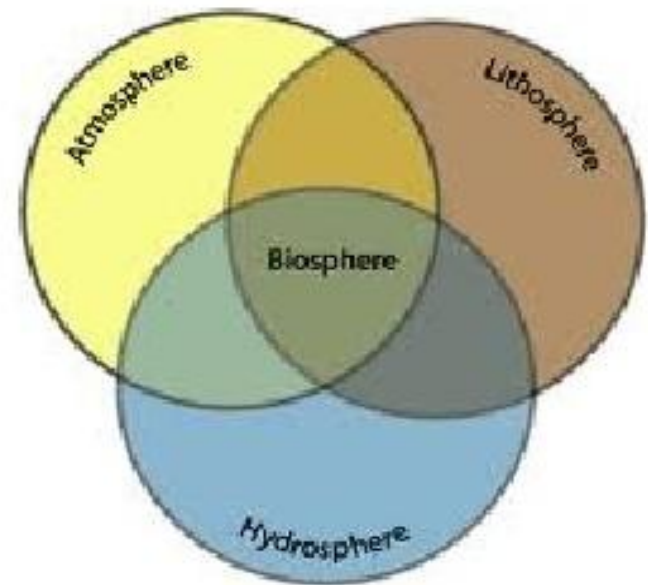
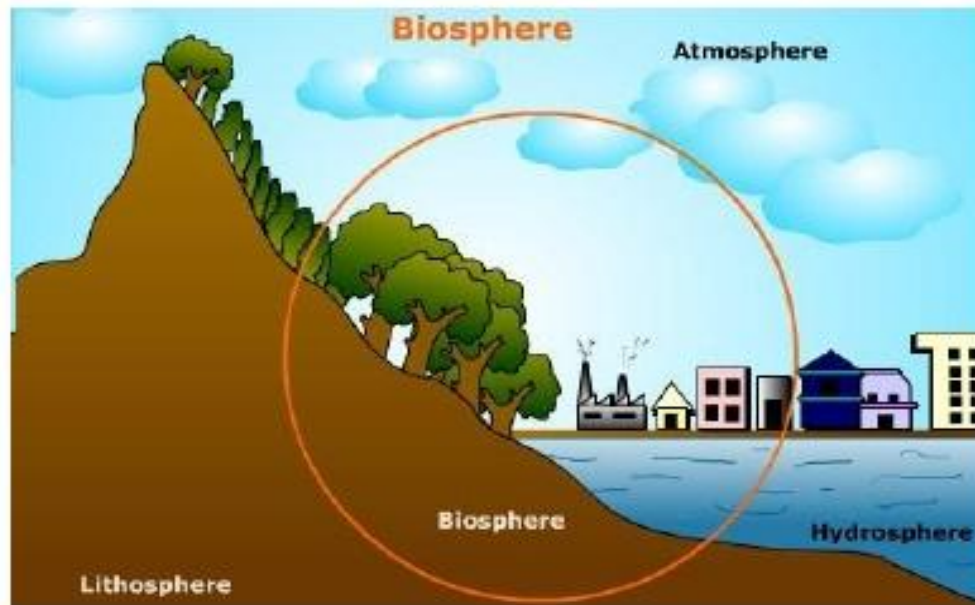
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ASST.PROF/EEE,
BIHER**

ENVIRONMENT

- *environner (Fr)*: to encircle or surround
- surrounding external conditions influencing development or growth of people, animal or plants; living or working conditions etc.
- Circumstances and conditions that surround an organism
- Social and cultural conditions that affect an individual



SCOPE OF ENVIRONMENT



Atmosphere : Virtual Ocean of Air

Hydrosphere : The surface of Earth filled with any form of Water

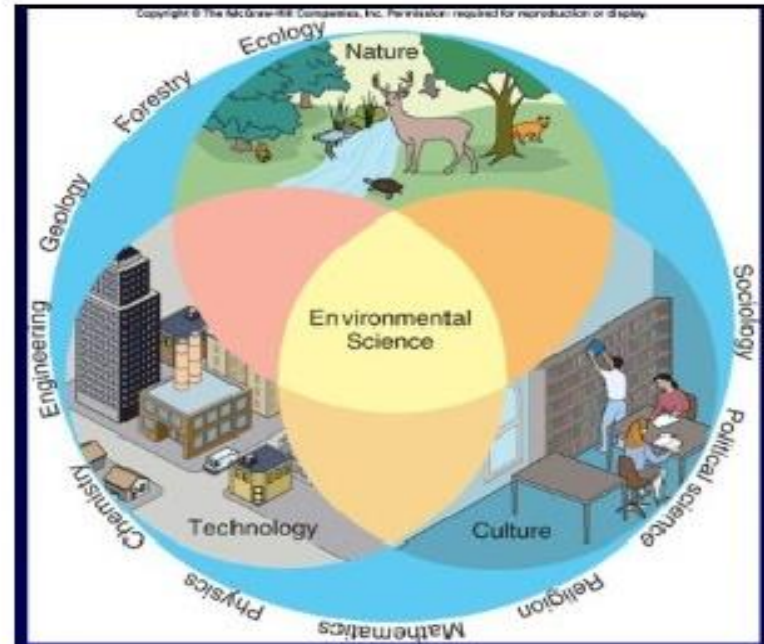
Lithosphere : Outer shell of the Earth composed of crust and the rigid outer most mantle

Biosphere : The place on earth where life exists



ENVIRONMENTAL STUDIES

- Systematic understanding of our environment
- Highly interdisciplinary
- Inclusive
- Holistic
- Mission-oriented
- Essential to study to overcome “Environmental Crisis”



OBJECTIVES OF EVS

- **Awareness:** about our environment and its allied problems
- **Knowledge:** acquire basic understanding and experience about our environment and associated problems
- **Attitude:** concern for the environment and active participation in its improvement and protection
- **Skill:** identifying and solving environmental problems
- **Participation:** providing opportunity to be involved in resolving the environmental problems



IMPORTANCE OF EVS

- The EVS enlighten us about the importance of protection and conservation of our environment
- EVS have become significant for the following reasons:
 - Environment issues being of international importance
 - Problems cropped in the wake of development
 - Explosive increase in pollution
 - Need for an alternative solution
 - Need to save humanity from extinction
 - Need for wise planning of development



BENEFITS OF EVS

- Conservation of energy and fast depleting natural resources
- Increase in economic productivity
- Imparting knowledge about waste management, treatment and disposal
- Develop social responsibility towards environment protection
- Creating awareness to control population
- Inculcating attitude and values towards understanding interdependence of nature and man and work towards sustainable development



TYPES OF ENVIRONMENT

☐ Natural Environment

The natural environment includes all living and non-living things occurring naturally on Earth.

Natural environment is often used as a synonym for habitat. For instance, when we say that, the natural environment of giraffes is the savanna.

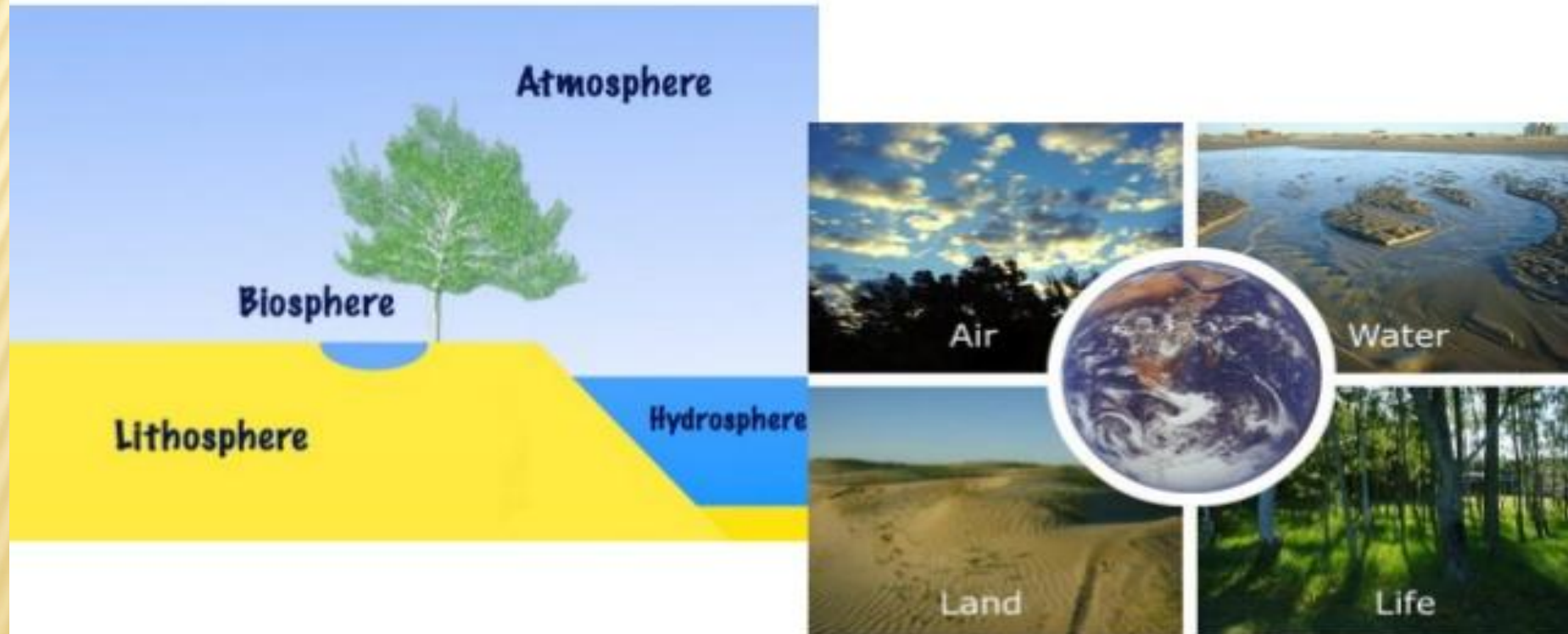


Composition Natural Environment

- i. **The Lithosphere:** The lithosphere is the rigid outermost shell of a rocky planet defined on the basis of the mechanical properties.
- ii. **The Hydrosphere:** The hydrosphere refers to the combined mass of water found on, under, and over the surface of the planet. Ocean, rivers, lakes, ponds and as a whole all the water body of the earth.
- iii. **The Atmosphere:** The atmosphere of Earth is a layer of gases surrounding the planet Earth that is retained by Earth's gravity. The atmosphere protects life on Earth by absorbing ultraviolet solar radiation, warming the surface through greenhouse effect, and reducing temperature extremes between day and night.

- iv. **The Biosphere:** The biosphere is the global sum of all ecosystems. It can also be termed the zone of life on Earth, a closed system and largely self-regulating.

The biosphere is the global ecological system integrating all living beings and their relationships

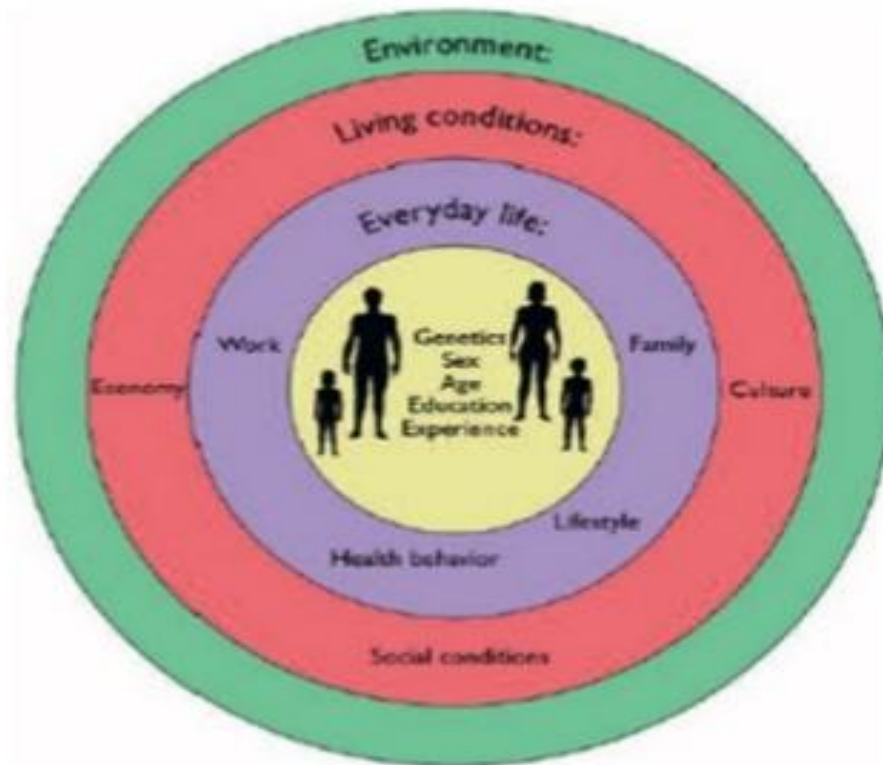


❑ Social Environment

The social environment refers to the immediate physical and social setting in which people live or in which something happens or develops.

It includes the culture that the individual was educated or lives in, and the people and institutions with whom they interact.

The interaction may be in person or through communication media, even anonymous or one-way and may not imply equality of social status.



Social environment includes culture, language, social condition, health, profession, living condition, economic capability of the people in a certain area

Natural resources: vital to human survival

Natural resources = substances and energy sources needed for survival



Renewable natural resources

- Sunlight
- Wind energy
- Wave energy
- Geothermal energy

- Fresh water
- Forest products
- Agricultural crops
- Soils

Nonrenewable natural resources

- Crude oil
- Natural gas
- Coal
- Copper, aluminum, and other metals

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- **Renewable resources:**
 - Perpetually available: sunlight, wind, wave energy
 - Renew themselves over short periods of time: timber, water, soil
 - These can be destroyed
- **Non-renewable resources:** can be depleted
 - Oil, coal, minerals

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MAJOR GLOBAL ENVIRONMENTAL PROBLEMS

From http://www.pref.kyoto.jp/intro/21cent/kankyo/contents_e/globe_prob/index.html

- Global Warming
- Ozone Layer Depletion
- Acid Rain
- Deforestation
- Loss of Biodiversity
- Water Pollution
- Desertification
- Waste disposal
- Rapid population growth
- Depletion of non-renewable energy sources
- Food and Water shortage



NEED FOR PUBLIC AWARENESS

- Important to understand that natural environment and man-made environment are interdependent
- Essential to make the public aware of the formidable consequences of the Environmental Degradation (be it local or regional or global)
- reformative measures if not undertaken, would result in the extinction of life.
- Environmental protection is every individual's obligation and duty
- And so, Environmental consciousness needs to be propagated at all levels



GREEN TECHNOLOGY


- Advancement in science and technology led to indiscriminate exploitation of exhaustible resources and expulsion of hazardous chemical and synthetic wastes in the environment.
- This has created extraordinary technical, health, economic, environmental, political and social problems.
- **Green Technology or Clean Tech**, encompasses a continuously evolving group of methods and materials, from techniques for generating energy to non-toxic cleaning products



- **Green Technology or Clean Tech**, is the development and application of products, equipment and systems used to conserve the natural environment and resources, which minimize and reduces the negative impact of human activities.
- Criteria of Green Tech products, equipments or systems:
 - It minimizes the degradation of the environment
 - It has zero or low green house gas (GHG) emission
 - It is safe for use and promotes healthy and improved environment for all forms of life
 - It conserves the use of energy and natural resources
 - It promotes the use of renewable resources.



GOALS OF GREEN TECH

- **Sustainability** - meeting present needs of society without compromising the ability of future generations to meet their own needs
 - **"Cradle to cradle" design** - ending the "cradle to grave" cycle of manufactured products, by creating products that can be fully reclaimed or re-used.
 - **Source reduction** - reducing waste and pollution by changing patterns of production and consumption.
 - **Innovation** - developing alternatives to technologies - whether fossil fuel or chemical intensive agriculture - that have been demonstrated to damage health and the environment.
 - **Viability** - creating a center of economic activity around technologies and products that benefit the environment, speeding their implementation and creating new careers that truly protect the planet.
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GREEN TECH SUBJECT AREAS

- **Energy** development of alternative fuels, new means of generating energy and energy efficiency
- **Green building** encompasses everything from the choice of building materials to building location
- **Environmentally preferred purchasing** government purchasing of products whose contents and methods of production have the smallest possible impact on the environment
- **Green chemistry** invention, design and application of chemical products and processes to reduce & eliminate the use and generation of hazardous substances
- **Green nanotechnology** application of green chemistry and green engineering principles to materials at nano-scale
- **Green computing** designing, manufacturing, using, and disposing of computers & associated subsystems, effectively with minimal or no impact on the environment

EXAMPLES OF CLEAN TECH

- Un-leaded petrol, sulphur free coal, CNG, LPG, Bio-fuels, hybrid vehicles
- Air pollution control equipments like catalytic converters, electrostatic precipitators, flue-gas desulphurization units etc.
- Genetically engineered crops which require less chemical pesticides due to their genetic resistance to diseases and pests
- Solar energy, hydro energy, ocean energy, geothermal energy, wind energy as alternatives
- Recycling of waste paper, metal, glass, flyash, slag, red-mud etc.





Thank
you!!