

Environmental Science 3205  
Chapter 1

An Introduction to Environmental Science

Biosphere:

A complex system of \_\_\_\_\_ that interact with each other and extend into the geosphere, atmosphere, and hydrosphere.

Need to know ...

\_\_\_\_\_: all of the rocks, minerals and ground that are found on and in Earth.

\_\_\_\_\_: the layer of gases that surround the Earth.

\_\_\_\_\_: all the water on Earth.

\_\_\_\_\_: all the living organisms on Earth.

Earth as a spaceship.

Earth is like a spaceship with limited amounts of \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

Earth is unlike a spaceship (e.g. Spaceship is much smaller, has fewer occupants).

### How Much of Planet Earth is Inhabitable?

- Urban areas cover \_\_\_\_\_  
\_\_\_\_\_.
- Farms and agricultural areas \_\_\_\_\_  
\_\_\_\_\_.
- \_\_\_\_\_  
\_\_\_\_\_

### Impacts of Human Civilization

\_\_\_\_\_  
\_\_\_\_\_

that can have a great impact on the other systems

“Impact” does not always mean “\_\_\_\_\_”.

Even though humans are only one part of the system of living things, they often have the \_\_\_\_\_  
\_\_\_\_\_.

This impact is often because of our use of \_\_\_\_\_.

## Aboriginal People, European Settlers and Today

Aboriginal or first nations cultures \_\_\_\_\_ of the "environmental system". They had the first concepts of *sustainability*, which included respect for the environment, understanding of interconnectedness, and "\_\_\_\_\_".

Early European settlers' in North America at that time, considered their environment: "\_\_\_\_\_" and as such settlers wanted to "\_\_\_\_\_" and shape their environment.

Early settlers saw the environment as a \_\_\_\_\_. This differed from the aboriginal view and led to substantial \_\_\_\_\_ of resources.

### Paradigm Shift

\_\_\_\_\_ : a way of looking at or thinking about something.

\_\_\_\_\_ : an important change that happens when the usual way of thinking about or doing something is replaced by a new and different way.

### Environmental Science and Decision Making

Environmental science draws from a variety of areas including:

\_\_\_\_\_  
\_\_\_\_\_.

Scientific knowledge is \_\_\_\_\_  
\_\_\_\_\_ of environmental decision-making.

\_\_\_\_\_  
\_\_\_\_\_, etc, all play a part.

In this context " \_\_\_\_\_ " refers to the policymaking, legislation and decision-making that occurs at all levels of government agencies.

Find two (2) examples of decision making in page 8 of your textbook:

\_\_\_\_\_  
\_\_\_\_\_

What groups may have been involved in making these decisions?

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**Common Misconceptions about Science:**

(i) science can \_\_\_\_\_

(ii) scientific knowledge is \_\_\_\_\_

(iii) science is done for \_\_\_\_\_

(iv) there is one \_\_\_\_\_

(v) science is not \_\_\_\_\_

**Some Applications of Environmental Science:**

(i) \_\_\_\_\_

a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.

(ii) \_\_\_\_\_

(iii) \_\_\_\_\_

(iv) \_\_\_\_\_

**Our Attitudes**

\_\_\_\_\_ attitudes have contributed to many of today's environmental issues

*Anthropocentric:* \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

Human-centered attitudes have influenced environmental values, attitudes and decision making: For example, ideas such as " \_\_\_\_\_ " or " \_\_\_\_\_ "

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There are different belief systems and that our view is not the \_\_\_\_\_.

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Belief systems impact how people \_\_\_\_\_ with their environment.

### **Human Population**

Identify the relationship between  
(1) human population growth,  
(2) demand for resources, and  
(3) increased consumerism.

Our resource demands go \_\_\_\_\_ our life-sustaining need for food, water, and space.

### **Renewable and Non-Renewable Resources**

\_\_\_\_\_ : are replenished naturally and over relatively short periods of time. (eg. fish, crops, cattle)

\_\_\_\_\_ : are available in limited supplies. This is usually due to the long time it takes for them to be replenished. (eg. coal, oil, natural gas)

**Human Demand:**

- \_\_\_\_\_ such as cars, motorcycles, snowmobiles, ATV's, etc.
- \_\_\_\_\_ such as videogames, computers, movies, books, etc., which utilize resources
- the use of \_\_\_\_\_ resources such as fossil fuels, electrical, and nuclear power

What are some of the resources we use in our province?

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What types of things demand energy in our lives?

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We must understand that our resource demands are driven by \_\_\_\_\_ both on a collective level and an individual level.



North American and European lifestyles have been developing (and continue to develop) \_\_\_\_\_

\_\_\_\_\_.

Lifestyle trends in Asia (the most populated areas of the world) are shifting towards a more western lifestyle. This shift will have an \_\_\_\_\_

\_\_\_\_\_.

What are ways in which humans could reduce the impact of their resource demands and consumption of energy?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## **Sustainability**

This is a human practice to \_\_\_\_\_

\_\_\_\_\_.

Ecosystems \_\_\_\_\_

\_\_\_\_\_. For example, populations stop growing when they reach their \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_.

When humans interact with the ecosystem such as by hunting animals or cutting down trees, \_\_\_\_\_  
\_\_\_\_\_.

Sustainable practices are human attempts to \_\_\_\_\_  
\_\_\_\_\_ and to help ensure the ecosystem will continue to exist and thus continue to provide the things humans want.

### **Ecological Concepts**

What is ecology? (p.9)

\_\_\_\_\_  
\_\_\_\_\_. These interactions involve energy and matter. Living things require a constant flow of energy and matter to ensure their survival.

What is an ecosystem? (glossary)

\_\_\_\_\_  
\_\_\_\_\_; e.g. a prairie ecosystem including coyotes, the rabbits on which the coyotes feed on, and the grasses on which the rabbits feed on.

What is meant by abiotic and biotic factors? (glossary)

- \_\_\_\_\_  
\_\_\_\_\_ ; e.g. sunlight, temperature, minerals, air, water.
- \_\_\_\_\_  
\_\_\_\_\_ ; e.g. plants, animals, bacteria.

**How balance is maintained in ecosystems:**

(i) energy transfer (food chains/webs, pyramids)

(ii) nutrient cycling

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ when their use comes to an end. For example, nitrogen, carbon, and oxygen from once living things are returned back into a form that can be used by other living things.

Identify example organisms within each of the three ecosystems:

- (i) freshwater: \_\_\_\_\_
- (ii) terrestrial: \_\_\_\_\_
- (iii) marine areas: \_\_\_\_\_

**What is a food chain? (glossary)**

Food Chain: \_\_\_\_\_  
\_\_\_\_\_.

Draw the example of a food chain from your textbook on p. 11.

**What is the difference between a food chain and a food web? (glossary)**

Food Web: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

(a) producers

\_\_\_\_\_ are called producers. This is because \_\_\_\_\_. They do this by using light energy from the Sun, carbon dioxide from the air and water from the soil to produce food - in the form of sugar. The process is called \_\_\_\_\_.

(b) consumers

\_\_\_\_\_ are called consumers. This is because they cannot make their own food, so they need to \_\_\_\_\_  
\_\_\_\_\_.

(c) decomposers

\_\_\_\_\_ are decomposers. They eat \_\_\_\_\_ - dead plants and animals and in the process they break them down and decompose them. When that happens, they release \_\_\_\_\_  
\_\_\_\_\_ back into the soil which will then be used by plants.

(d) herbivores

Herbivores are animals that \_\_\_\_\_.

(e) carnivores

A carnivore is an animal or plant that eats \_\_\_\_\_  
\_\_\_\_\_.

(f) omnivores

An omnivore is a kind of animal that eats \_\_\_\_\_  
\_\_\_\_\_.

(g) scavengers

Scavenger definition, an animal or other organism that feeds on \_\_\_\_\_.