Environmental Science 16th edition Enger Solutions Manual

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Chapter 01 Environmental Interrelationships

1. Give examples of political, economic, and biological aspects of the reintroduction of wolves to Yellowstone National Park.

Political
1. Congress passed a law to fund the elimination of wolves on public lands in the early 1900s.
2. They also passed a law to allow the reintroduction of wolves.
3. People from Wyoming and adjacent states lobbied congress to prevent the reintroduction of wolves.

Economic
1. Congress provided funding for eliminating wolves.
2. Farmers and ranchers opposed reintroduction because they feared losses of livestock to predation from wolves.

Biological
1. The conventional wisdom of the early 1900s was that elimination of wolves would improve hunting of game species.
2. Biologists recognized that the absence of wolves was causing changes to the Yellowstone ecosystem, which led to the reintroduction of wolves and restoration of the ecosystem.

Bloom's Level: 2. Understand
Section: 01.01
Topic: Environmental Science

2. Describe what is meant by an ecosystem approach to environmental problem solving.

An ecosystem approach to environmental problem solving involves recognizing and understanding the natural interactions that take in an area and integrating them with the uses humans must make of the natural world.

Bloom's Level: 2. Understand
Section: 01.01
Topic: Ecosystems, Environmental Science

3. Define sustainability.

Sustainability is the use of resources in such a way that it meets the needs of the present without compromising the ability of future generations to meet their own needs.

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Bloom's Level: 1. Remember
Section: 01.02
Topic: Sustainability

4. Give examples of several kinds of services provided by natural ecosystems.

Ecosystem services can be divided into 4 general categories with numerous examples in each category.
Provisioning services of ecosystems provide raw materials such as: food, minerals, renewable energy, and water.

Regulating services are processes such as: waste decomposition, pollination, purification of water and air, and pest and disease control.

Cultural services are esthetic values humans place on natural ecosystems and include things such as: spiritual,
recreational, and cultural benefits.

Supporting services involve processes that allow the use of natural systems to support human use and include such things as: nutrient cycling, photosynthesis, and soil formation.

Bloom's Level: 2. Understand
Section: 0103
Topic: Ecosystem Services

5. Give examples that show how social and political factors influence how environmental decisions are made.

Nearly all environmental decisions involve social and political factors. Several examples are listed below.
1. Population growth leads to decisions about the use of land to raise food.
2. International boundaries result in conflicts between countries about the appropriate use of resources that cross boundaries.
3. Health issues lead to decisions to reduce pollution and control organisms that transmit disease.
4. Globalization allows rich countries to exploit the natural resources of poor countries while preserving their own resources.
5. The need for sources of energy causes people often to use biomass or other energy sources unsustainably. Governments often allow or encourage exploitation of energy resources.
6. The movement of people from rural areas to cities creates environmental problems such as air and water pollution.

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Bloom's Level: 2. Understand
Section: 01.01-09
Topic: Environmental Issues

6. Explain why the following statement is true. There is enough food in the world to feed everyone but some people do not have enough food.

There are several factors that combine to create conditions that lead to food shortage.
1. The natural resources of the world are not equally divided.
2. Some countries have the appropriate climate, soil resources, and economic resources to raise abundant food; others lack one or more of these inputs.
3. Rapid population growth typically is coupled with poverty and the agricultural resources of a country cannot meet the food demands of its people.
4. Poor people cannot afford to buy food from countries that have surpluses.
5. Thus, although there is enough food in the world to feed everyone, some cannot afford to buy it.

Bloom's Level: 2. Understand
Section: 01.03
Topic: Food

7. Describe how solving environmental problems is made more difficult by problems with governance.

There are several aspects to this problem.
1. Often government policies are established that do not take into account environmental consequences. An example would be economic policies that encourage building on a water front that is subject to periodic flooding.
2. Often local, state, provincial, and national governments establish policies that are in conflict with one another.
3. Governments often respond to pressures by users of natural resources that encourage policies that may not be viable in the long term.

Bloom's Level: 2. Understand
Section: 01.02
Topic: Environmental Governance

8. Give examples of environmental conditions that lead to poor health and death for exposed people.

The following are common environmental conditions that affect health.
1. Air pollution.
2. Water pollution.

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3. Diseases carried by mosquitos and other organisms.
4. Diseases caused by poor diet or personal habits—obesity, smoking, excessive exposure to sunlight.
5. Unsafe travel, working, or living conditions that lead to accidents.
6. Diseases that become a problem because of environmental change or interactions between humans and animals that allow diseases of animals to be transferred to humans.

Bloom's Level: 2. Understand
Section: 01.03
Topic: Environment, Health

9. Why are wars fought over oil, water, or land?

When resources are in short supply, people often resort to war to control access to those resources.

Bloom's Level: 1. Remember
Section: 0103
Topic: Resources

10. Give examples of the environmental consequences of globalization.

The following are common examples of the consequences of globalization.
1. Spread of exotic species through world-wide commerce.
2. Huge corporations may be able to influence national governments to allow practices that are in their economic interest but are bad for the environment.
3. Many problems such as climate change are world-wide issues and require coordinated efforts by all countries of the world.

Bloom's Level: 2. Understand
Section: 01.06
Topic: Environment, Globalization

11. What is the major environmental problem related to the use of fossil fuels as an energy source?

The release of carbon dioxide from the burning of fossil fuels that is causing a warming of the planet that is causing climate change.

Bloom's Level: 1. Remember
Section: 01.05
Topic: Energy, Environment

12. In what parts of the world is energy use increasing?

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Energy use is increasing most in countries that have rapidly developing economies in Asia and South America. China, India, South Korea, Brazil, Argentina, and Mexico are examples of individual countries with rapidly expanding economies.

Bloom's Level: 1. Remember
Section: 01.02
Topic: Energy

13. Give an example of international activities that deal with worldwide environmental problems.

Many programs of the United Nations.
United Nations Conference on Environment and Development (UNCED)
The United Nation Commission on Sustainable Development
Etc.

Bloom's Level: 1. Remember
Section: 01.02
Topic: Energy

14. What parts of the world are the most urbanized?

The economically developed countries of the world are the most urbanized.
In the less developed world major portions of the population are involved in subsistence agriculture in rural areas.

Bloom's Level: 1. Remember
Section: 01.02
Topic: Energy

15. What kind of water use requires the largest percentage of water?

Irrigation accounts for about 70% of the use of the world's freshwater.

Bloom's Level: 1. Remember
Section: 01.02
Topic: Energy

16. What human activity has caused the greatest change to land-based ecosystems?

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Agricultural use of land has caused the greatest alteration in the land surface and has altered a large proportion of the world's ecosystems.

Bloom's Level: 1. Remember
Section: 01.02
Topic: Energy

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