

Humans & Natural Resources



- ES 1 Packet
- What is a “**resource**”?
- How do humans “organize” resources?

What is a “**resource**”?

Anything obtained from the environment to sustain life
(food, water, shelter, mates)



What are the 3 types of resources?

Natural Resources

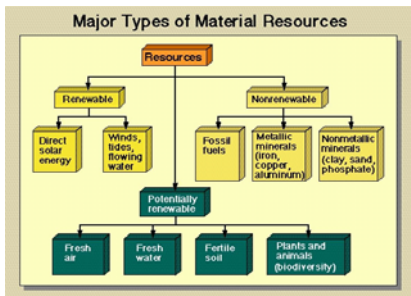
3 Types of resources:



- **Perpetual** resource
- **Nonrenewable** resource
- **Renewable** resource

Categories of Natural Resources

Page 9 - text!



Perpetual Resource

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- Solar Energy
- Will last 6 billion years!
- Naturally replenishes itself
- Essentially inexhaustible
- Very fast “renewal” rate

Nonrenewable Resources

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- Exhaustible
- Finite “limited” resource
- Very slow “renewal” rate
- Millions to billions of years required to renew through geological processes
- Only takes hundreds to thousands of years to deplete

Nonrenewable Resources

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- Includes energy resources which cannot be recycled
- Fossil Fuels:
 - Coal, Oil & Natural Gas
 - Uranium - nuclear power
- Once burned, the useful energy in these fossil fuels is gone, leaving waste heat & polluting exhaust gases

Nonrenewable Resources

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- Most of our economic growth has been fueled by cheap nonrenewable oil
- This resource is expected to be economically depleted in 40 to 80 years
- Some resource experts argue that extraction, processing & conversion to products is our greatest threat or challenge

Nonrenewable Resources

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- Metallic Mineral resources (conduct electricity & shiny) & can be recycled:
 - Iron
 - Copper
 - Aluminum

Nonrenewable Resources

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- Nonmetallic Mineral Resources
- Minerals - any hard, usually crystalline material that is formed naturally & usually too costly to recycle
 - Salt
 - Clay
 - Sand
 - Phosphates

Nonrenewable Resources

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- We extract more than 100 nonrenewable minerals from the Earth's crust
- We convert this "raw" material into many items that we use every day!
- Then we discard, reuse or recycle!

Nonrenewable Resources

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- In theory, we never completely exhaust a nonrenewable resource
- But . . . Those resources become "economically depleted" when the costs of exploiting what is left exceeds its economic value (Page 327 text)

- **What is a nonrenewable resource?**
- **List two examples?**

Case Study: Nonrenewable Resources

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- Should we allow oil & gas development in the Arctic National Wildlife Refuge (ANWR)?
- Alaska's North Slope
- Contains one-fifth of all land in the NWRS
- Crown-jewel of the system
- Page (text)
- What do you think? Discuss!
- **Journal Entry #4**

Renewable Resources

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- Can be replenished fairly rapidly (hours to decades) through natural processes
- Fresh air, surface and ground water, fertile soil, forests, polar bears and butterflies!

Renewable Resources



- Different life forms on Earth
- Biodiversity includes:
 - Species diversity
 - Genetic diversity
 - Ecological diversity
- Give us food, energy, fibers, medicines, life & tranquility!

Renewable Resources

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- Ecosystems
 - Aquatic
 - Terrestrial
- Variety of forests, deserts, grasslands, streams, lakes, wetlands, oceans
- Sustainability of these resources

Renewable Resources

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- Soil (is an ecosystem)
- Takes hundreds to thousands of years to produce one inch of topsoil
- Arable land
- Desertification

Renewable Resources

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- The Earth's life-forms and biological communities provide "natural services"
 - Cycling of nutrients
 - Recycling of materials
 - Purification
 - Natural pest control

Renewable Resources

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- Potentially renewable resources can be depleted
- Must not exceed the natural replacement rate of these resources
- Environmental degradation - can change potentially renewable resources into nonrenewable or unusable resources

• **What is a renewable resource?**

• **List two examples?**

Common Property Resources

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- Resources held in common
- Owned by no one but are available to all users free of charge
- Most are potentially renewable resources
- Clean air, fish, migratory birds, open ocean, gases of the atmosphere

Common Property Resources

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- 1968 - Garrett Hardin
- Called the degradation of common-property resources the “tragedy of the commons”
- “If I don’t use this resource, somebody else will. . . “
- “This little bit can’t possibly matter . . . “

Common Property Resources

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- Challenge: How to determine the sustainable yields of these resources?
- How do we “manage” resources that cross boundaries?
- Counties, States, nations?
- Who “owns” the atmosphere?

Common Property Resources



- Questions to think over. . .
 - How can we determine the present status of these resources?
 - How can we determine the sustainable yield?
 - How can we manage these resources worldwide? Laws?
 - What organization should oversee these resources?
 - What enforcement power should this organization have?

• **What is a common property resource?**

• **List two examples?**

Earth's Natural Resources

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- Video: National Parks
- *Write two facts about each park highlighted in this film!*
