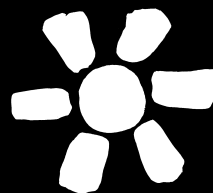


OVERVIEW

Natural resources are the basis for life. Rural dwellers are often aware of their dependence upon natural resources. Urban dwellers are often apart from the natural environment. This activity is designed to reacquaint all users with knowledge forgotten, taken for granted or possibly, never recognized.

**BACKGROUND****Forests as Renewable Natural Resources**

Natural resources are the raw materials obtained from our physical environment which we use in order to meet our wants and needs. These raw materials may be used in their natural or near-natural state, such as burning wood for heat, or they may be substantially changed to produce a product very different from the raw material, such as making paper or plastics from trees.

Natural resources can be categorized as perpetual, non-renewable or renewable. People don't always recognize perpetual resources as being resources at all. Perpetual resources are those that essentially will last forever. Examples of perpetual resources are solar energy, wind and the ocean tides.

Non-renewable resources are available only in fixed amounts. Those amounts may be large or may seem so, but once used up, they are gone forever (at least from the perspective of the human life span). Examples of non-renewable resources are fossil fuels such as coal, oil and natural gas. These resources were formed through natural processes that required millions of years. Once all currently available fossil fuels are used, additional amounts will not be available again for millions of years.

Renewable resources are resources that can be replenished through natural and/or human processes. Trees are an example of a renewable resource. Although trees die naturally or are harvested by humans, new trees naturally sprout, are reseeded or can be replanted by humans. While renewable resources can be replenished, they can also be overused or abused and the time it takes for the resource to renew is lengthened. For example, if log roads, skid trails and log landings are located or abandoned improperly, the soil can be negatively affected causing the new forest to regenerate

more slowly and young trees to be less vigorous. In extreme cases, the resource can be overused or abused to the point where it can no longer be renewed at all. An example of this would be the over-hunting of a wildlife species to the point of extinction. Over-hunting is in part what caused the extinction of the passenger pigeon. Renewable resources need to be carefully managed in order to ensure that they remain renewable.

The sustainable yield for a renewable resource is the rate at which people use that resource without reducing the ability of the resource to be renewed. The sustainable yield of any renewable resource can vary substantially from region to region and can also vary depending on how it is managed. The sustainable yield for timber would mean harvesting only the amount of trees that the forest could grow. In Pennsylvania it is estimated that timber is growing faster than it is being harvested. This means that even less than the sustainable yield is being harvested annually.

Many renewable and non-renewable resources can be recycled or reused. By recycling or reusing natural resources, we are able to decrease the demand on our natural resources. In many cases, recycling also saves energy. Despite the fact that the recycling process itself consumes energy, less energy is used than would have been needed to produce the product from the raw materials.

Paper products are an example of products being recycled now more than ever. Recycling helps keep paper out of our landfills and incinerators. Most of the paper recovered is recycled into new paper and paperboard products. While paper recycling is important, it is important to understand that paper fibers cannot be recycled indefinitely and that new fiber from trees must always be added to the papermaking cycle. Stated more clearly, even if all paper were recycled, some trees would still need to be harvested for paper.

GRADE LEVELS:

Grades 6–10

OBJECTIVES: The students will (1) be able to define natural resource, renewable resource, non-renewable resource and identify their occurrences in their environment, (2) be able to trace resources used in everyday items to their original source in the environment and (3) be able to describe how he/she feels about resource use in their community.

PENNSYLVANIA PROPOSED ENVIRONMENT & ECOLOGY STANDARDS ADDRESSED:**4.2.7**

- A. Know that raw materials come from natural resources.
- B. Examine the renewability of the resources.
- D. Describe the role of recycling and waste management.

4.4.7

- B. Explain agricultural systems' use of natural and human resources.

4.8.7

- B. Explain how people use natural resources.
- D. Explain the importance of maintaining the natural resources at the local, state and national levels.

4.2.10

- A. Explain that renewable and non-renewable resources supply energy and materials.
- B. Evaluate factors affecting availability of natural resources.
- D. Explain different management alternatives involved in recycling and solid waste management.

4.8.10

- B. Analyze the relationship between the use of natural resources and sustaining our society.
- D. Explain how the concept of supply and demand affects the environment.

ESTIMATED DURATION: 4 hours with discussion. Can break into two sessions after Activity C.

MATERIALS NEEDED: Activity cards A–C for each participant — Activity A: Analyze an Object, Activity B: Classification of Natural Resources and Activity C: Quantities of Natural Resources, masking tape, markers in a variety of colors, flip chart papers, local phone books for each group, pencils, natural objects such as rocks, shells, water, soil, antlers, bird's nest, cocoon,

PROCEDURES

(Indoors, then Outdoors)

Set Stage: In the next few hours (or class sessions) we will investigate our use of natural resources. We will discuss the origins of natural resources and how natural resources are classified and used.

- A. Tell each student that they have five minutes to think about their definition of the term “natural resource.” The students should then write their definitions on a piece of paper. (Background – natural resource: (1) A feature of the natural environment that is of value in serving human needs. (2) Any feature of the natural environment that requires choices be made. (3) A natural resource must be useful or of value to a culture (i.e., air, water, trees, animals) and their relationships. A natural resource must be basic or primary, not manufactured or processed.)
- B. Ask students to share their definitions of “natural resources.” Accept all answers, but do not record.
- C. Assign students to groups of three or four. Hand each group one of the natural objects that have been collected. Pass out Activity A, Analyze an Object Student Page. Have each group answer the three questions. The answers should be recorded and each group should select someone to present their findings to the rest of the class. Allow about 20 minutes.
- D. Retrieve Date: Each group will present their object and findings to the rest of the class. Lead a discussion on all of the objects listed on Activity Sheet A. Questions you might want to ask include:
- ◆ What are some of the uses of each object?
 - ◆ Which of the objects seem most important to you? Why?
 - ◆ Which object could you do without? Why?
- E. Now that the students have looked at one natural resource and have had a chance to discuss it, have them try to classify several of them. Hand out Activity Sheet B. Students should work alone on the first two parts and then move back into their original groups to complete the third task. (Background – non-renewable resources: Resources whose physical quantity does not increase signifi-

cantly with time. Since the total initial supply is limited in quantity, each use must diminish the total stock. Renewable resources: Resources whose supply becomes available for use at different intervals in time. The use of present supply flows does not diminish future flows and it is possible to maintain use indefinitely provided the usage rate does not exceed the flow rate. Renewable resources can be living organisms, soil, water or other resources that are closely associated with and affected by living organisms. Non-renewable resources are nonliving materials such as minerals and fuels.)

- F. Begin a discussion based on Activity Sheet B. Possible questions to use are:
- ◆ What are some ways you can distinguish between renewable and non-renewable resources? (This helps students examine closer the attributes they used to classify objects.)
 - ◆ What values are there in distinguishing between renewable and non-renewable resources?
 - ◆ What makes a resource renewable or non-renewable?

Transition: To apply what has been learned so far. Distribute Activity Sheet C to each student. Select a site near the school or use the school itself to complete this activity.

- G. After choosing a site, have the students look around and list all natural resources that have been used. After each natural resource, have students write how it is used, whether it is renewable or non-renewable, and the relative quantity found at your site. (You might want to explain what relative quantity means or allow the class time to discuss the term and come up with a definition.) The students should come back to the classroom for discussion after their survey is complete.
- H. Once students are back in the classroom, have them sit in their original groups and give them paper, marking pens and tape. Have each group prepare to present their findings to the rest of the class. Each group should make a visual display of the uses and relative quantities of the natural resources listed on Activity Sheet C. The displays can be made any way the group chooses.

spider web imprint, etc. Strive for variety and diversity. One object per participant.

CD ROM: Use the section on “Wood you Buy that?”

- I. Have the groups present their displays. Give each group approximately five minutes to explain their charts and displays.

EXTENSION

- Have students identify a resource that they would like more information about. Invite someone from the community to come and talk to the students about the resource.

ASSESSMENT

- ◆ Have students share their thoughts about the resources we use.
- ◆ Have the students choose one natural resource from Activity Sheet C and find out if this resource is available in the community. Where can it be bought? Where does it come from? What does it cost?
- ◆ Have students call a few of the sources they have found and ask for verification of the information they have found.