



WHAT'S MY SHARE?

ACTIVITY 2A: LIMITS

OBJECTIVES

- ♦ to recognize the limits of non-renewable energy sources
- ♦ to explore the significance of the large share of the world's energy used by industrialized countries

MATERIALS

- ♦ masking tape — enough to make large rectangle (at least 12 ft² in area)
- ♦ lengths of string (about 30" long, one per student)
- ♦ sheets of paper (any size OK, 5-1/2" x 8-1/2" works well, one per student)

CONFIGURATION

This is a large group activity (ideal for 20-30 students).

PREPARATION

Outline a rectangle on the floor with masking tape. Distribute a piece of string and a piece of paper to each student—it's OK if some students get paper and no string and others get string and no paper.

METHOD

Have students bring string and paper to rectangle and stand around it. Explain that the rectangle represents ALL of the remaining oil in the world and they will have an opportunity to get some of it. They will be able to have as much as they can surround with their string. Their paper is to identify their claim. You will tell them when they can enter the rectangle to mark out their claim. Choose one of the paper colors and let all the students holding that color stake their claims. Do not tell them, unless they ask, that the edges of the rectangle can be part of their border, as can other people's string.

It should happen that all of the oil is gone before all of the students get a share. At this point, ask for those who have oil to stand together and ask them how they feel. Ask the ones who don't have any oil the same question. This can lead to some interesting comments. You may also want to ask who the 'have's' represent (the middle east, rich countries, the US, Russia). Then ask who the 'have not's' represent (poor countries, Japan, third world countries, people of the future, their own children).

This activity can be done in 5-10 minutes or can be extended to 15-20 minutes. Its impact far outweighs the time spent on it. It is an ideal introductory activity for any energy lesson.

** Adapted with permission from Zero Population Growth, Inc., Earth Matters: Studies for Our Global Future, 1992*

● Carol Wilson



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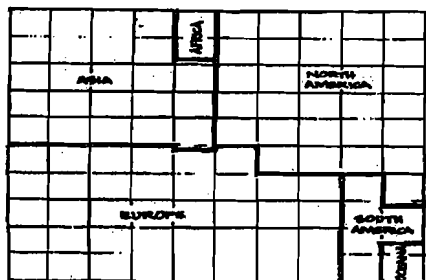
ACTIVITY 2B

OBJECTIVES

- ◆ to increase awareness that people on different continents use vastly different proportions of the world's energy
- ◆ to understand what portion of energy is used for transportation.

MATERIALS

- ◆ colored paper, 25 sheets each of 6 colors
- ◆ colored pencils (1 set/student)
- ◆ graph paper (2 sheets/student)
- ◆ chalk or tape (to mark off large rectangle)
- ◆ index cards (premarked, below)



METHOD

Students may work alone or in small groups to complete graphs of population percentage and total energy consumption. Create a second graph using the data on energy used for transportation. Compare the two graphs. Have students answer the questions listed, and ask other questions to look at the data in new ways.

You may also want to do one of several extension activities using data from Activity 2B on the Student Activity sheet, which can be done individually or in groups. Below are two suggestions.

- a) Create bar graphs or pie charts using the data provided.
- b) Use the data, and take it to a paved playground area. Have students mark off with tape or chalk a large rectangle in the hall or on the school playground. The math is easy to handle if the rectangle is divided into 100 equal squares. Divide your students into proportional groups representing the population of each continent, i.e., in a class of 25 students: 1 student represents North America, 2 represent South America, 4 represent Europe, 14 represent Asia and 4 represent Africa. Give each group of students an index card with their share of the world's energy written on the back, but tell them not to look at it until they are told to do so.

Assign each continent a color and provide stacks of colored paper for students' use. Have the student group all surround the rectangle, and then let each group go into the rectangle and mark off their share with their assigned color paper. If there is room, have the students stand in their share. The single North American will have nearly $\frac{1}{3}$ of the whole, while the 14 Asians will have less than $\frac{1}{4}$. This activity can lead to some good discussions of distribution of resources, lifestyle, needs vs wants and causes of strife among people.

WHAT'S MY SHARE?



Does everyone use the same amount of energy for everyday living or for transportation?

DIRECTIONS: You will need a pencil and a piece of graph paper for this activity. Use the information in the table below to complete graphs representing each continent's percentage of world population and energy consumption. Mark off two areas on your graph paper, each 10 squares by 10 squares. Each graph will have 100 squares. Label one graph "Population" and the other "Energy Consumption". Choose a color for each continent and use it in both graphs. In the graph labeled "Population" color the number of squares that represent the percentage of the world's population on each continent, for example, Asia has 56.2% of the world's population, so it takes up slightly more than 56 blocks. Try to color all squares for each continent in a single block. Keeping the continent colors the same, repeat the activity for the percent of energy used on the graph labeled Energy Consumption. Use the graphs to help answer the following questions.

CONTINENT	POPULATION (MILLIONS)	%	ENERGY CONSUMPTION (QUADRILLION BTUS)	%	ENERGY USED FOR TRANSPORTATION (QUADRILLION BTUS)	%
Africa	817	15.0	5.0	1.8	2.64	3.20
Asia	3046	56.2	63.8	23.3	16.38	20.40
Europe	795	14.7	103.9	37.9	26.04	20.40
Oceania	27	0.5	3.8	1.4	1.80	2.20
North America	279	5.1	82.5	30.1	28.60	35.70
South America	458	8.4	14.9	5.4	4.70	5.90
Totals*	5422	99.9	273.9	99.9	80.20	99.90

* Totals may not equal 100% due to independent rounding.

All data taken from The 1992 Information Please Environmental Almanac. Houghton Mifflin, Boston 1992

Use the graphs to help answer the following questions:

1. Which continent has the largest population? _____
2. What % of the world's energy does this continent use? _____
3. Which continent uses the largest percentage of the world's energy? _____
4. What % of the world's energy does the continent named in answer to question #3 use? _____
5. Compare the populations of the continents named in answer to questions #1 and #3.

6. Compare the energy consumption of these two continents. _____

7. Why do you think there is such a discrepancy? _____

8. Look at the graphs for North America. What do you conclude about the energy consumption here? _____

9. **CHALLENGE:** Determine how much energy is used by the average person on each continent and make a graph comparing the continents. You may be surprised at what you learn!
10. **CHALLENGE:** Now look at the energy for transportation. In each continent, what percent of the total energy used was used for transportation? _____

11. **CHALLENGE:** How much energy is used by the average person in each continent? What does this tell us about people's driving habits? _____
12. How does this percent vary from continent to continent? _____
