

# SHOPPING AT THE GLOBAL RESOURCE BANK

## INTRODUCTION:

As people around the world work to meet their basic needs and improve their lives, they make choices that have an impact on the environment. These impacts vary, depending on peoples' activities, their standards of living, and the types of goods and services to which they have access. In Part 1 of this activity, students participate in a simulation to develop an image of how people's options for meeting their needs vary depending on personal buying power. They will also consider how people's actions may modify the physical environment and how such modifications may affect the ability of people to meet their basic needs. In Part 2, students analyze maps to identify connections among wealth, quality of life, carbon dioxide emissions, and changes to the local and global environment.

**Grade Level:**

Part 1: 3-12; adaptable to lower grades  
Part 2: 9-12

**Time Required:**

Part 1: One class period  
Part 2: One class period

**Standards Addressed:**

Geography standards

14.

*Knows and understands how human actions modify the physical environment.*

16.

*Knows and understands the changes that occur in the meaning, use, distribution, and importance of resources.*

Science standards

F, grades 5-8

*Populations, resources, and environments*

C, grades 9-12

*Interdependence of organisms*

F, grades 9-12

*Natural resources, Environmental quality, and Science and technology in local, national, and global challenges*

**Skills:**

This learning activity requires students to:

- ask geographic questions
- acquire geographic information
- organize geographic information
- analyze geographic information
- answer geographic questions

**Vocabulary/Concepts:**

GNP per capita adjusted for purchasing power, carbon dioxide, emissions (total and per capita), greenhouse effect, climate change

**Objectives:**

As a result of completing this learning activity, students will:

- consider connections between wealth and quality of life.
- identify factors that drive changes in consumption patterns.
- discuss the environmental impacts of a variety of human actions.
- explain how consumption patterns affect global systems.

**Materials:**

- Copies of handout: "Human Needs Credits" (enough for each student to have one "credit card")
- Blank index cards
- Global Stress maps from Lesson 2
- Human Needs Continuum from Lesson 1
- Transparency of Chart 1, "Global Resource Bank: Menu"
- Transparency of Map 1, "GNP Per Capita (PPPS) 1994: Top 20 Countries"
- Transparency of Map 2, "Per Capita Carbon Dioxide Emissions 1992: Top 20 Countries"
- Transparency of Map 3, "Total Carbon Dioxide Emissions 1992: Top 20 Countries"

## SHOPPING AT THE GLOBAL RESOURCE BANK *continued*

### Background:

### THE LEARNING ACTIVITY:

Humans and other organisms use the environment in three ways:

- 1) As a **resource bank**. The environment supplies the raw materials needed to maintain existence. This includes the consumption of food, water, energy, territory, and the materials to build shelter. Humans also need resources and energy to maintain social and technological structures.
- 2) As a **habitat**. Humans require more space per individual than any other species.
- 3) As a **sink for wastes**. Wastes include things such as excreta, dead tissue, trash, and molehills. Humans leave more waste than other species.

The absolute number of people and the technology they employ to access resources, economic growth, and political and economic systems all play a role in the demand for resources, the level of goods and wastes produced, the consumption levels of people all over the world, and the access people have to resources. (See *World Population and the Environment Data Sheet* for an in-depth explanation.)

Environmental degradation in many developing countries is the result of poor people struggling to acquire basic essentials—food, water, and fuel. In addition, the poor often must contend with unhealthy environments because of inadequate sanitation, housing, water supply, and waste disposal. On the other end of the spectrum, actions to improve the quality of life in the United States and other more developed countries also place stress on the environment. Environmental damage resulting from the actions of people in all countries can be both local and global in its consequences. However, the more developed countries contribute most to global environmental problems.

One of the results of the current standard of living in industrialized nations is the increased level of CO<sub>2</sub> emissions due to the burning of fossil fuels. Over the last hundred years or so, the amount of CO<sub>2</sub> in the atmosphere has increased from about **285** ppmv (parts/million by volume) in the early 19th century to more than **350** ppmv today. Scientists are concerned that the amount of this heat-absorbing gas in the atmosphere, along with other greenhouse gases, will result in changes in the Earth's heat balance, leading to global climate change. While the bulk of greenhouse gas emissions comes from the United States and other industrialized countries, the consequences of climate change would have a global impact.

### Preparing for the Activity:

Make copies of the handout "Human Needs Credits." Cut the "credits" apart. You will need one credit card for each student in the class. Fold each credit card so that the value does not show. Place all of the credit cards in a basket or box and mix them. Each student will draw a credit card during the lesson.

### Introducing the Activity:

1. Ask students to review the Global Stress maps from Lesson 2.

- Which countries appear three or more times?  
(*Afghanistan, Angola, Bangladesh, Burkina Faso, Cambodia, Egypt, Ethiopia, Ghana, Guinea, Haiti, India, Israel, Kenya, Madagascar, Mali, Mozambique, Myanmar, Nepal, Niger, Nigeria, Pakistan, Rwanda, Saudi Arabia, South Korea, Tanzania, Uganda, Vietnam, Yemen, Zaire*)  
(Write each country on an index card.)
- Why is the United States not on any of the maps?  
(Write "United States" on an index card.)
- Which country appears more often than any other?  
(Add a ★ to Haiti's card.)

## SHOPPING AT THE GLOBAL RESOURCE BANK *continued*

2. Review the concept of the Human Needs Continuum from Lesson 1. Ask students to decide where along the continuum each of the countries listed on the index cards should appear and place the cards on the continuum.
3. Ask students what has enabled the United States to move so far up the Continuum, while Haiti remains at the lowest end. Discuss the different levels of wealth in these countries. Ask students to find the GNP/Capita indicator in the *World Population and the Environment Data Sheet*. Review the definition and compare the U.S. and Haiti values. How does this impact the ways that people are able to meet their basic needs?

### Executing the Activity:

#### **Part 1:**

Explain that students will have an opportunity to go shopping at the Global Resource Bank (discuss) to obtain their basic needs. Students first need some form of currency, so pass around the basket of "Human Needs Credits," allowing each student to draw one card.

4. Explain to students that they will participate in a simulation to demonstrate how wealth determines people's abilities to meet their basic needs and to improve their quality of life. Ask students to look at their "credit cards." Tell students that this is the amount of credit that they have to meet their basic food, water, health, energy, and transportation needs. Once they have met these needs they may use any remaining credits to purchase nonessential items.
5. Place Chart 1, "Global Resource Bank: Menu" on the overhead. Inform students that they must make a selection from each of the first four rows of needs. Have students jot down their choices and the value of each. If they have credits remaining, they may make additional choices as long as their credits last.
6. Ask various students to describe what they chose and why. Discuss if/how their choices differed according to their levels of income. Have students speculate where on the Human Needs Continuum they would fall.
7. Ask students to consider the impact of their choices on the environment. Discuss the effect that each of these choices might have on the environment and on their own well-being. Did they consider the impact on the environment before making their choices? In this context, how might their different levels of income affect the environment?
8. Conclude that all human actions affect the environment in one way or another. The consequences may be positive or negative in impact; local or global in nature.

#### **Note to Teacher:**

Younger students may end the lesson at this point. Older students will benefit from completing Part 2 of this activity, which progresses to have students analyze real world data and make connections between wealth, consumption, and global environmental issues.

## SHOPPING AT THE GLOBAL RESOURCE BANK *continued*

### Part 2:

Place Map 1, "GNP Per Capita (PPP):Top 20 Countries" on an overhead.

9. Ask students to identify any country that shows up on both the GNP map and any of the global stress maps. [Japan is one such country (cropland availability).]
  - What is the connection between GNP/Capita and meeting basic needs? (A country either has the resources to meet its basic needs or has enough money to buy what it needs; when basic needs are met, people have more time to pursue other activities.)
  - What is the relationship between GNP/Capita and consumption patterns? (When GNP/Capita increases, people have the money to meet their basic needs and begin to consume more resources.)
  - What is the connection between increased consumption patterns and impact on the environment? (Increased consumption leads to different types of environmental problems, such as waste, air pollution, and the emission of greenhouse gases.)
10. Point out that the impact of environmental problems related to high consumption levels is different from that experienced in a country like Haiti. For example, generation of greenhouse gas emissions such as carbon dioxide, which results from the burning of fossil fuels and deforestation, can lead to global stress.
11. Place Map 2, "Per Capita Carbon Dioxide Emissions: Top 20 Countries" on an overhead.
  - Ask students to assess the relationship between levels of CO<sub>2</sub> emissions and basic needs stress (i.e., Do countries under stress to meet basic needs contribute a lot to CO<sub>2</sub> emissions?).
  - Ask students to assess the relationship between levels of CO<sub>2</sub> emissions and GNP/Capita (i.e., Do countries with high GNP/Capita contribute a lot to CO<sub>2</sub> emissions?).
  - Ask students if the CO<sub>2</sub> map shows which countries emit the most CO<sub>2</sub> (i.e., total volume).

(Note: This map shows per capita CO<sub>2</sub> emissions, not the total volume of CO<sub>2</sub> for each country.)
  - Ask students to guess which countries emit the most CO<sub>2</sub>.
12. Place Map 3, "Total Carbon Dioxide Emissions: Top 20 Countries" on the overhead. Have students compare this map to the per capita emissions map. Discuss the differences. Why are China and India in the top 20 in total emissions, but in not per capita emissions? (because of absolute population size).

## SHOPPING AT THE GLOBAL RESOURCE BANK *continued*

### Concluding the Activity:

13. Ask students to consider some of the consequences for the environment and for people of a build-up of CO<sub>2</sub> in the Earth's atmosphere.

Introduce the concepts of "greenhouse effect" and "climate change" and have students discuss the relationship between these examples of environmental impact and CO<sub>2</sub> emissions.

Be sure that students recognize the connection between local choices and global consequences.

### Extensions & Variations:

1. In Part 1, have students work in small groups to make decisions about obtaining their basic needs.
2. In Part 1, for younger students, use pictures with the words on the Global Resource Bank Menu and use paper money instead of credits.
3. To aid students in consolidating the concepts and connections introduced in Lessons 1-3, two case studies are provided. Each case study builds on different aspects of the core material already explored. Therefore, ideally, students should experience both. However, if time does not permit, you should select one of the case studies before moving to the culminating activity.

Case Study 1: The Price of Failed Stewardship: A Profile of Haiti

Case Study 2: A Matter of Accountability: Industrial Countries on Trial

<b>HUMAN NEEDS 2 credits</b>	<b>HUMAN NEEDS 10 credits</b>	<b>HUMAN NEEDS 25 credits</b>
<b>HUMAN NEEDS 2 credits</b>	<b>HUMAN NEEDS 10 credits</b>	<b>HUMAN NEEDS 25 credits</b>
<b>HUMAN NEEDS 2 credits</b>	<b>HUMAN NEEDS 10 credits</b>	<b>HUMAN NEEDS 25 credits</b>
<b>HUMAN NEEDS 2 credits</b>	<b>HUMAN NEEDS 10 credits</b>	<b>HUMAN NEEDS 25 credits</b>
<b>HUMAN NEEDS 2 credits</b>	<b>HUMAN NEEDS 10 credits</b>	<b>HUMAN NEEDS 25 credits</b>

# GLOBAL RESOURCE BANK

## Menu

### FOOD

Largely vegetarian diet, mostly home grown or from local sources (1 credit)	Vegetarian diet with occasional meat from local sources (2 credits)	Varied diet w/foods from distant places (e.g., oranges in winter) (6 credits)
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### WATER

Transport in buckets from river (no monetary cost)	Untreated well water (1 credit)	Treated water (3 credits)	Indoor plumbing w/hot water (5 credits)
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### ENERGY

Fuelwood from nearby forest (no monetary cost)	Coal (2 credits)	Oil (3 credits)	Solar energy (8 credits)
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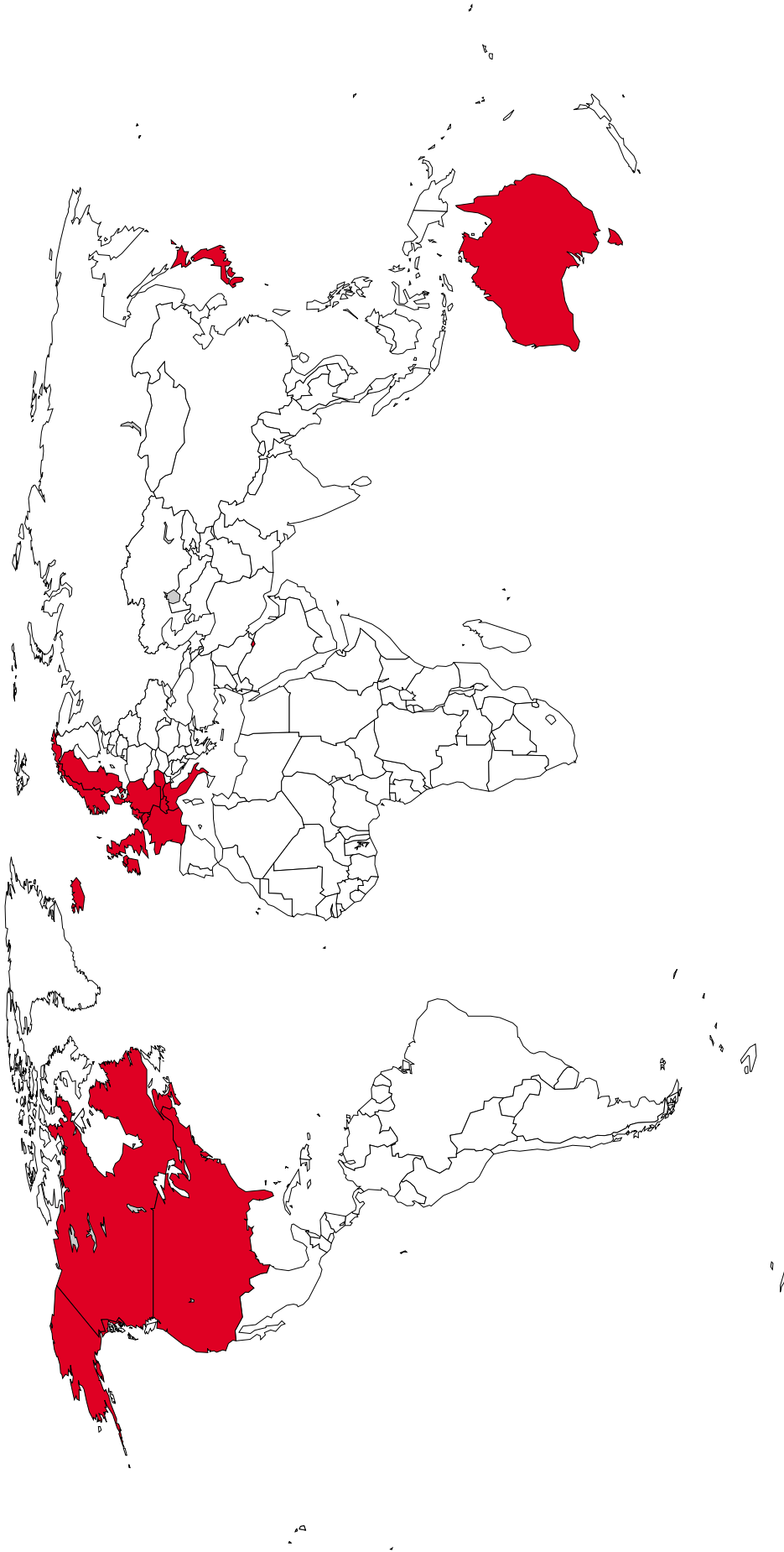
### TRANSPORTATION

Walking (no monetary cost)	Public transportation (1 credit)	Motorcycle (2 credits)	Car (10 credits)
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### LUXURY

Radio (1 credit)	Television (3 credits)	Refrigerator (4 credits)	Air conditioning (10 credits)
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# GNP PER CAPITA (PPP) 1994: TOP 20 COUNTRIES

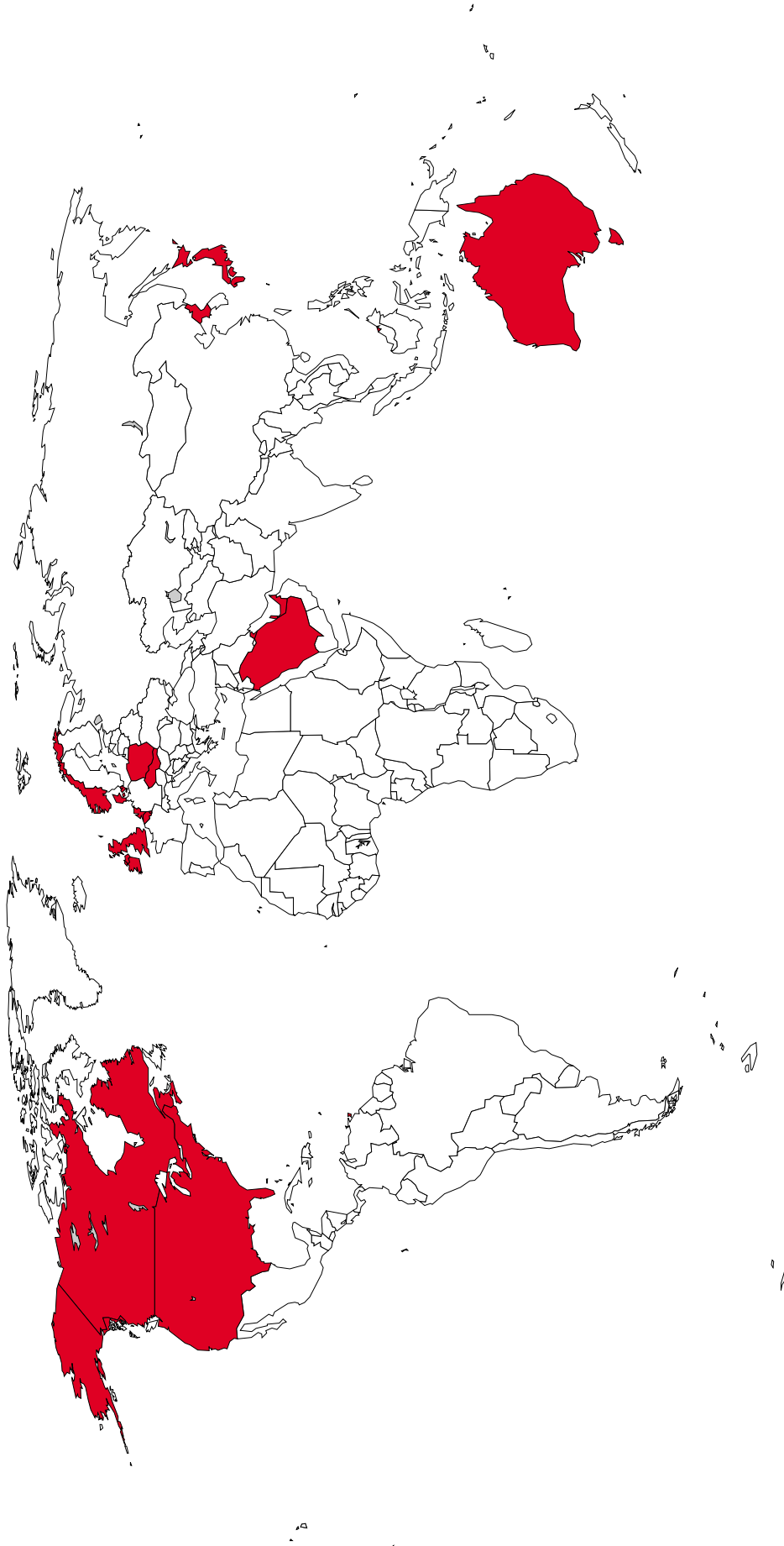


Source: World Bank, The World Bank Atlas, 1996

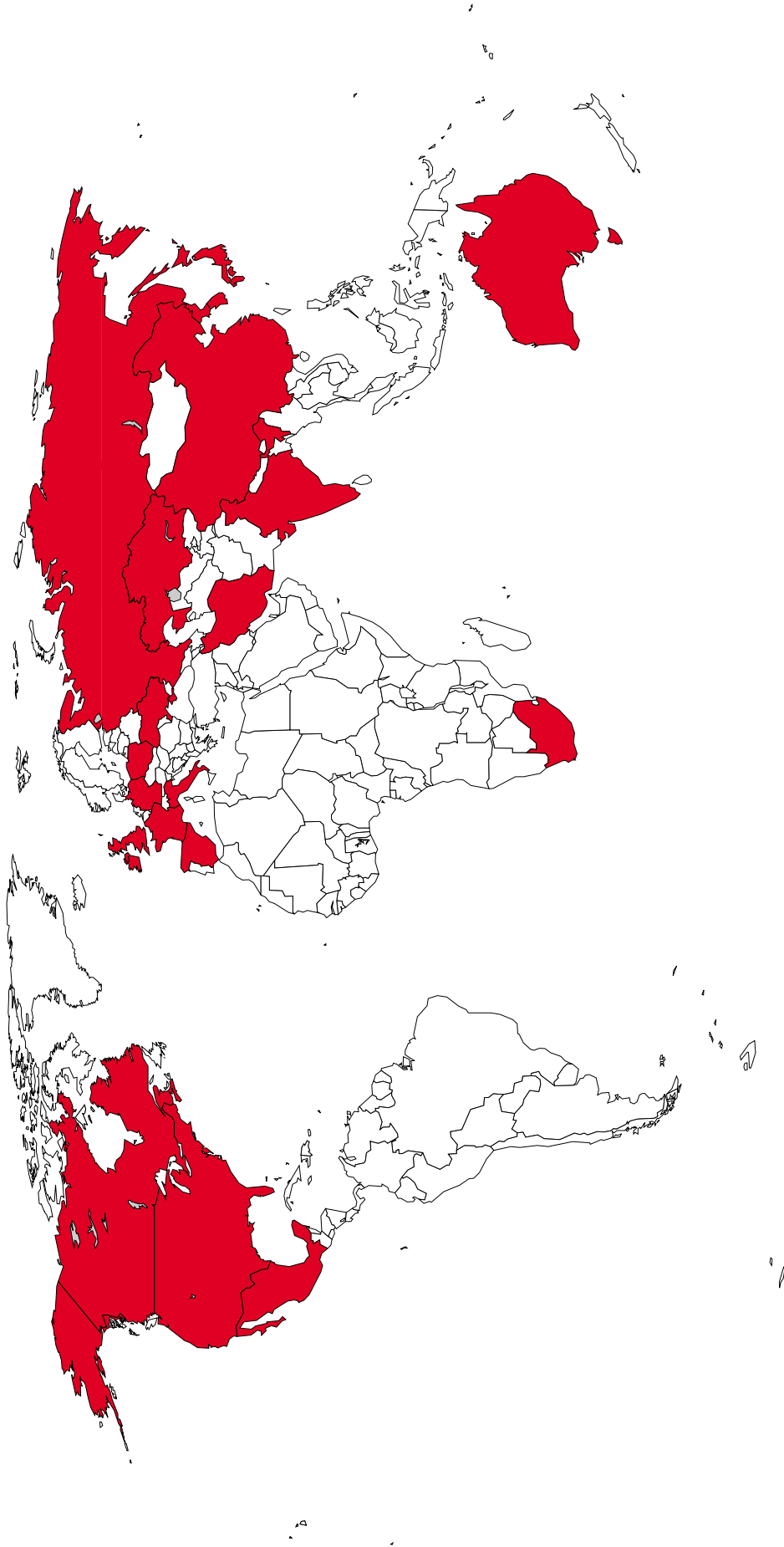


LESSON 3, MAP 2

**PER CAPITA CARBON DIOXIDE EMISSIONS 1992:  
TOP 20 COUNTRIES**



# TOTAL CARBON DIOXIDE EMISSIONS 1992: TOP 20 COUNTRIES



Source: World Resources Institute