

**RESOURCE LIBRARY**  
ACTIVITY : 50 MINS

## Energy Use in the Americas

Students investigate issues of energy use in the Americas that are related to energy consumption, carbon emissions, and population size. They map and graph the information and then analyze it.

### GRADES

9 - 12+

### SUBJECTS

*Geography, Human Geography, Physical Geography*

### CONTENTS

1 Image, 1 PDF, 3 Links

## OVERVIEW

Students investigate issues of energy use in the Americas that are related to energy consumption, carbon emissions, and population size. They map and graph the information and then analyze it.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/energy-use-in-the-americas/>

## Program



## DIRECTIONS

**1. Have students list the top 10 energy-consuming countries in the Americas.**

Project for students the map "Energy and Minerals." Ask: *Which countries of the Americas use the most energy?* (Argentina, Brazil, Canada, Chile, Colombia, Mexico, United States, Venezuela) *Which countries use the least energy?* Distribute the worksheet Determine Energy Consumption and Carbon Emissions, and have students use the information on the map to fill in the first and second columns in Part 1.

**2. Find estimated population data for the top 10 energy-consuming countries.**

Invite volunteers to use the CIA World Factbook website and other Internet resources to find the estimated population of each of the top ten energy-consuming countries for the class. Have students write this information in the third column in Part 1.

**3. Have students calculate energy consumption per capita and display it on the Americas Mega Map.**

Have students use the data in the worksheet and the provided formula to determine the per capita energy consumption of each country. Have students list it in the last column in Part 1. Then have the whole class create a symbol to illustrate the per capita energy consumption of each country. Ask them to consider making the size of the symbol correlate to the amount of the data it represents. Have students make and place these symbols on their correct locations on the Americas Mega Map.

**4. Find carbon emissions data for the top 10 energy-consuming countries.**

Invite volunteers to use the United Nations Environmental Indicators website and other Internet resources to find the amount of CO<sub>2</sub> emitted annually by each of the top ten energy-consuming countries for the class. Have students complete Part 2 of the worksheet. Ask students to create a symbol to illustrate the per capita carbon emissions of each country. Ask them to consider making the size of the symbol correlate to the amount of the data it represents. Have students place these symbols on their correct locations on the Americas Mega Map. Ask: *Is there a correlation between the two different symbols on the map? What does it mean if a country has different sized symbols for energy consumption and carbon emissions?*

**5. Have students identify the ten countries in the Americas with the highest carbon emission rates, find their populations, and graph this information.**

Have students identify the countries with the 10 highest carbon emission scores in the Americas. Next have them find the populations for those 10 countries. Ask them to use the

two sets of data to create a bar chart with two bars for each country. The first bar represents the country's carbon emissions. The second represents its population. Ask: *Which country produces the most carbon emissions? What do you notice when you compare each country's population size with its carbon emissions?*

## OBJECTIVES

# Subjects & Disciplines

### Geography

- [Human Geography](#)
- [Physical Geography](#)

# Learning Objectives

Students will:

- interpret a map with data to identify the top 10 energy-consuming countries
- analyze population and carbon emission data
- calculate per capita energy consumption and carbon emission data
- interpret information shown by symbols on a map
- graph information

# Teaching Approach

- Learning-for-use

# Teaching Methods

- Hands-on learning
- Information organization
- Research

# Skills Summary

This activity targets the following skills:

- 21st Century Themes
  - Global Awareness
- Critical Thinking Skills
  - Analyzing
  - Understanding
- Geographic Skills
  - Acquiring Geographic Information
  - Analyzing Geographic Information
  - Organizing Geographic Information

# National Standards, Principles, and Practices

## NATIONAL COUNCIL FOR SOCIAL STUDIES CURRICULUM STANDARDS

- Theme 3:

People, Places, and Environments

- Theme 7:

Production, Distribution, and Consumption

## NATIONAL GEOGRAPHY STANDARDS

- Standard 1:

How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information

- Standard 11:

The patterns and networks of economic interdependence on Earth's surface

### Preparation

### What You'll Need

### MATERIALS YOU PROVIDE

- Construction paper
- Markers

- Pencils
- Pens
- Scissors

## REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per classroom, Projector
- Plug-Ins: Flash

## PHYSICAL SPACE

- Classroom

## GROUPING

- Large-group instruction

## OTHER NOTES

Before starting this activity, assemble the Americas Mega Map.

## BACKGROUND & VOCABULARY

### Background Information

Geographers use maps to convey information to others. You can display physical, political or cultural information, or use maps to illustrate specific themes and topics. Maps are useful in helping to see patterns or relationships between layers of information.

### Prior Knowledge

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### Recommended Prior Activities

- None

### Vocabulary

<b>Term</b>	<b>Part of Speech</b>	<b>Definition</b>
<b>carbon emission</b>	<i>noun</i>	carbon compound (such as carbon dioxide) released into the atmosphere, often through human activity such as the burning of fossil fuels such as coal or gas.
<b>energy consumption</b>	<i>noun</i>	use of power, usually defined as power produced by human beings in plants run on electricity, fossil fuels, or nuclear fission.
<b>population</b>	<i>noun</i>	total number of people or organisms in a particular area.



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