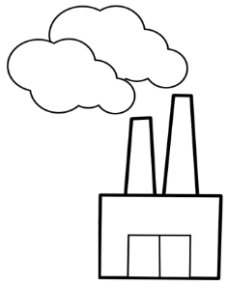
Mapping Activity: Per Capita Carbon Dioxide Emission

Background: Many gases make up Earth's atmosphere, but it is mostly nitrogen (78%) and oxygen (21%). Other gases comprise the remaining 1%, and some of them, including carbon dioxide, water vapor, and methane, have the ability to act like a blanket for the planet. Like the windows in a greenhouse, these *greenhouse gases* trap energy from the sun as heat in our atmosphere. Without their role in this *greenhouse effect*, Earth would be quite cold. Because of greenhouse gases, the surface of our planet averages around 15°C (59°F), making it the perfect place for life.



Since about 1850, however, human activities have been releasing extra greenhouse gases into the air, particularly methane and carbon dioxide. Extra methane enters the atmosphere from livestock. Extra carbon dioxide enters the atmosphere by burning fossil fuels such as gasoline and coal for transportation and electricity production. Scientists think that this increase in greenhouse gases has slowly caused a rise in average temperatures across the Earth. NASA calculates that the global average is almost 1°C higher than it was 60 years ago. Many scientists agree that the greenhouse gas contributing the most to the rise in average temperature is carbon dioxide.

Scientists are looking for ways to help countries reduce carbon dioxide emissions. Nearly every country on Earth contributes to the rise in greenhouse gases in some way – but some a lot more than others. Countries with large populations have a huge challenge because they have so many people needing electricity and using cars. Other countries are very underdeveloped, so their need to burn fossil fuels for electricity and transportation is very low. Some countries have already developed strict policies to reduce their carbon emissions.

For scientists to make a fair comparison of how well each country is limiting their carbon emissions, they need to take a look at carbon emissions per capita. Per capita is a Latin term that translates into "by head" and means the average per person. So, a county's total carbon emissions is divided by its population. It wouldn't be right to compare the total carbon emissions of India, with a population of over a billion, to the total carbon emissions of Portugal with a population of just 10 million. To be able to make true comparisons, scientists compare country's carbon emissions per capita. Today, you will map carbon emissions per capita by country.

Directions:

1. Cut the dashed curved line on the Europe, Africa, and Asia map. Glue it to the proper place on the North and South America map.
2. Color code the Map Key according to the following: 11< = RED; 8-11 = ORANGE; 5-8 = YELLOW; 2-5 = PURPLE; <2 = GREEN.
3. Lightly color each country listed on the data sheet with the color that corresponds to their per capita carbon dioxide emissions. Reference a World Map online or in a textbook if you are unclear about any country boundaries. Not all countries are represented.