

Graphic Literacy

by Sophia



WHAT'S COVERED

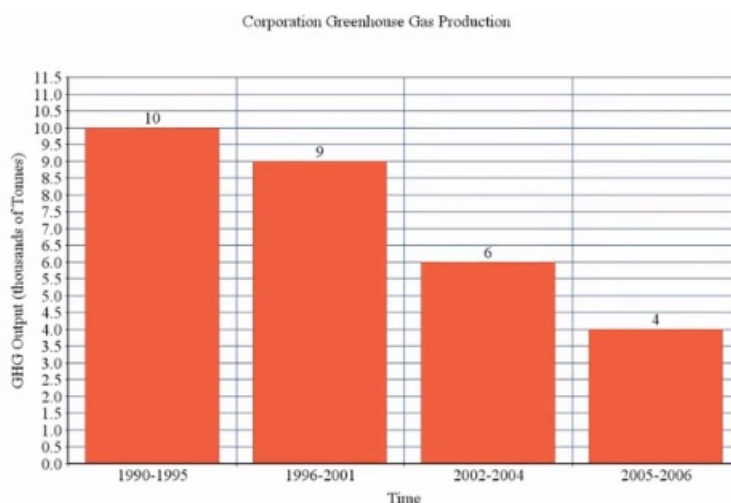
In this lesson, we're going to cover the topic of graphic literacy. You will learn how to interpret visual representations of information by examining the anatomy of graphs, as well as by discussing different types of graphs that are used in environmental science. Specifically, this lesson will cover the following:

1. Graphic Literacy

Graphic literacy is important to understand scientific texts, as well as to comprehend the ideas behind graphical representations of information. Information in science is often represented visually because it can be a highly impactful and efficient way to communicate. It can save time because the viewer can grasp concepts more quickly, and it can show trends and distribution, making prediction easier.

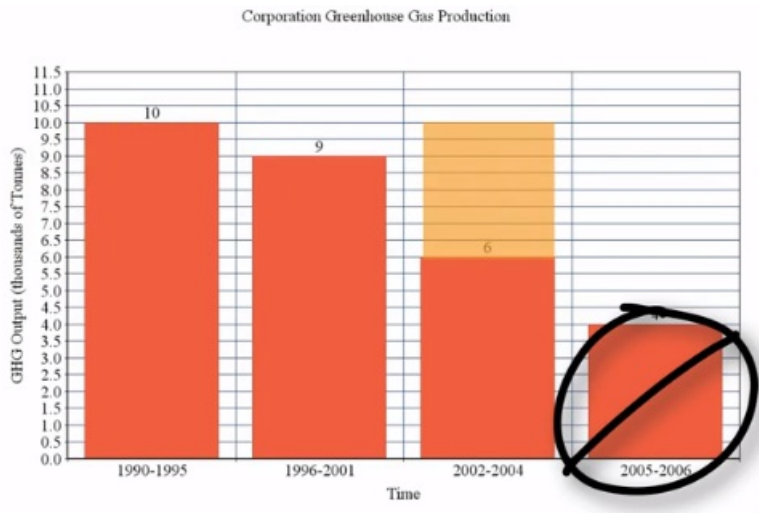
Graphic literacy becomes very important when information has been presented in a biased manner. Being able to spot this helps the viewer take bias into account when trying to see science objectively.

➞ **EXAMPLE** The graph below shows greenhouse gas emissions of a fictional company over time. Someone looking at this might interpret that the company's greenhouse gas emissions are decreasing over time. However, if you notice the time span sections at the bottom, they are not presenting regular intervals.



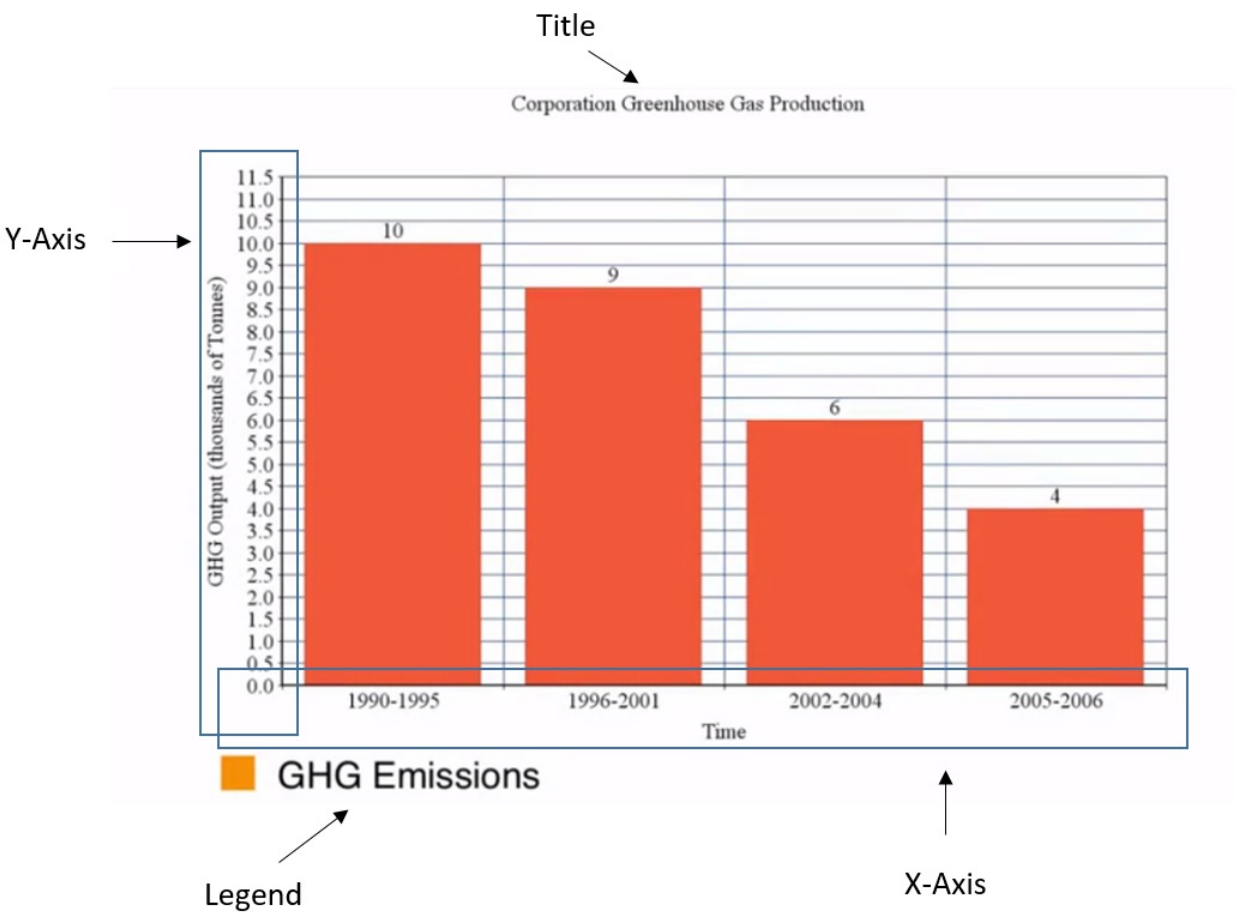
The first section takes place over 6 years, and the second also takes places over 6 years. However,

the third section is only over 3 years, and the last is only over 2 years. If you actually kept the intervals from 1990 to 2006 at regular intervals, there would only be three sections. The new third section from 2002 to 2006 would actually only be over 5 years, and we'd have 10,000 tons of greenhouse gas emissions. This means the corporation's emissions weren't actually decreasing at all.



2. Parts of a Graph

Let's break down the anatomy of what most graphs contain for a better understanding of what you might encounter. Below, the different parts on the bar graph from our earlier example have been labeled.



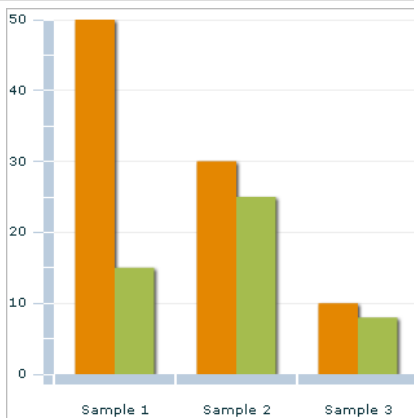
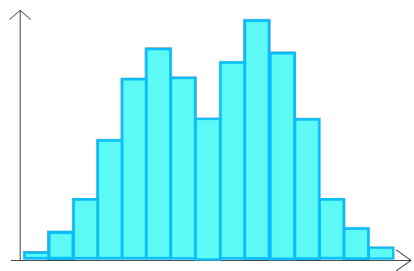
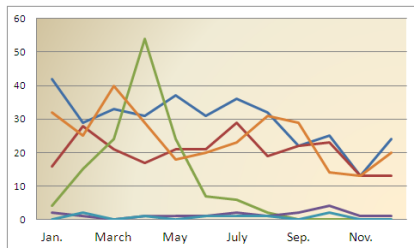
- The title is usually at the top or bottom and indicates what the graph is displaying.
- The legend can be in various locations but is at the bottom of this particular graph. It identifies the meaning of various colors or symbols used in the graph.
- The x -axis is always the horizontal axis and displays a range of values or categories.
- The y -axis is always the vertical axis and displays a range of values.

Scale is the total range of values on the x - or y -axis. Units are the form of measurement of the values on the x -axis and/or y -axis. In this graph, the unit is in tons of greenhouse gas emissions, but it can be number of people, years, etc. Axis labels are descriptions of what the values on the axis represent. In this example, "Time" for the x -axis and "GHG Output" for the y -axis.

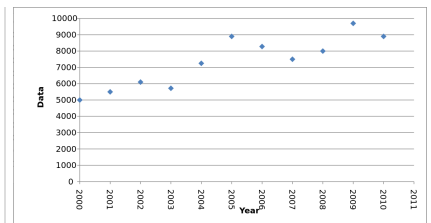
This graph doesn't have a footnote, but sometimes footnotes are placed at the bottom of a graph to provide additional explanation or interpretation of the graph. Finally, data is the information that the graph displays as a whole.

3. Types of Graphs

Let's discuss a few of the many different types of graphs that are used in environmental science.

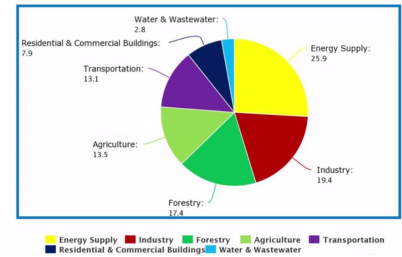
Type of Graph	Example
Bar graphs Bar graphs are used to show differences in quantifiable characteristics across groups. Common characteristics of bar graphs are x- and y-axes and data depicted using vertical or horizontal bars.	
Histograms Histograms are used to show the frequency of various characteristics across groups. Like bar graphs, they commonly have x- and y-axes with data depicted using vertical or horizontal bars.	
Line graphs Line graphs are used to show a trend in a characteristic relative to changes in time, space, concentration, or other variables. They commonly have x- and y-axes with data depicted as lines connecting data points.	
Scatter plots	

Scatter plots are used to show the relationship between two different characteristics. They commonly have x - and y -axes with data depicted using individual dots for each data point.



Pie charts

Pie charts are useful for showing relative proportions of multiple characteristics or groups within a larger group. A pie chart typically has no axes but shows a circle with labeled subdivisions.



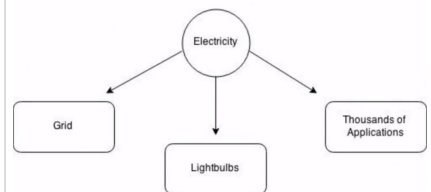
Pictographs

A pictograph is like a bar graph or a histogram. It commonly uses images for values and may use the relative size of an image to represent various values for comparison.



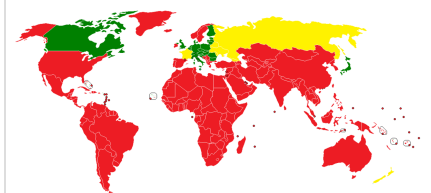
Flow diagrams

Flow diagrams are used to show process, sequence, or flow and may be multidirectional or web-like. They commonly have no axes, but they use arrows to show the direction of the process by connecting images or text to represent steps.



Maps

Maps are used to depict differences in some characteristics or to show the location of various phenomena. They commonly show the map of a region with icons, lines, arrows, and/or coloration (as in the map shown here).



SUMMARY

In this lesson, we discussed **graphic literacy**, the common **parts of graphs**, and the various **types of graphs** one might encounter in environmental science.

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