

## General Public Module 2: Climate Science Fundamentals

This unit explores the fundamental scientific concepts behind climate change, focusing on the greenhouse effect and the various natural and anthropogenic drivers of climate change. It aims to provide participants with a clear understanding of how these factors contribute to global warming and the role human activities play in accelerating these changes.



*Copyrite: PAHO*

## Lesson 2: The Greenhouse Effect and Climate Drivers

Time: 1 Hour

Modality: Self-Learning via Blended Online Learning

This lesson is designed to be self-directed using a blended online learning platform that incorporates chat functionalities for real-time interaction, group action learning, and participatory learning techniques.

### Content:

- Explanation of the Greenhouse Effect: Define and explain the greenhouse effect, illustrating how it naturally warms the Earth and how human activities amplify this effect.
- Key Greenhouse Gases: Discuss the major greenhouse gases (carbon dioxide, methane, nitrous oxide, and water vapor), their sources, and their impact on climate.
- Human Contributions: Highlight how human actions, such as industrial processes and agricultural practices, increase these gases in the atmosphere, intensifying global warming.
- Natural Climate Drivers: Outline natural factors affecting the climate, like solar variations and volcanic activity.
- Anthropogenic Climate Drivers: Focus on human-induced factors such as fossil fuel combustion and deforestation.
- Comparative Impact: Emphasize the significant role of human activities compared to natural factors in current climate changes.

### Activities:

- Animated Video Viewing: "The Greenhouse Effect in a Minute" – TED-Ed.
- Interactive Quiz: Engage in a short quiz that tests understanding of key concepts covered in the video and the lecture content.

### References & Examples:

- NOAA's Greenhouse Gas Basics: Offers in-depth information on various greenhouse gases and their roles in climate change (NOAA Greenhouse Gases).
- IPCC Data Visualization: Access the IPCC portal for graphical representations of greenhouse gas concentration trends over time (IPCC Data Portal).
- Graphs and Charts: Utilize interactive graphs and charts during the online session to demonstrate the relationship between greenhouse gas concentrations and global temperature changes.