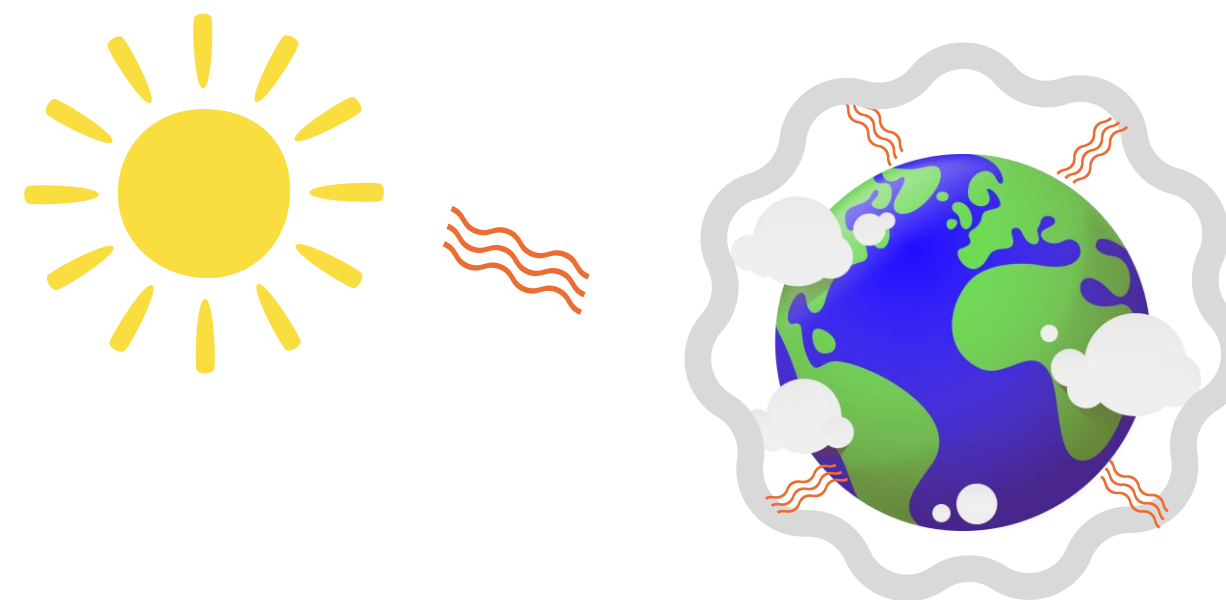




Interactive Escape Rooms for Climate Crisis Awareness and Civic Engagement in School Education

Module 1: Why is Our Climate in Crisis?

Unit 2: The Natural Greenhouse Effect



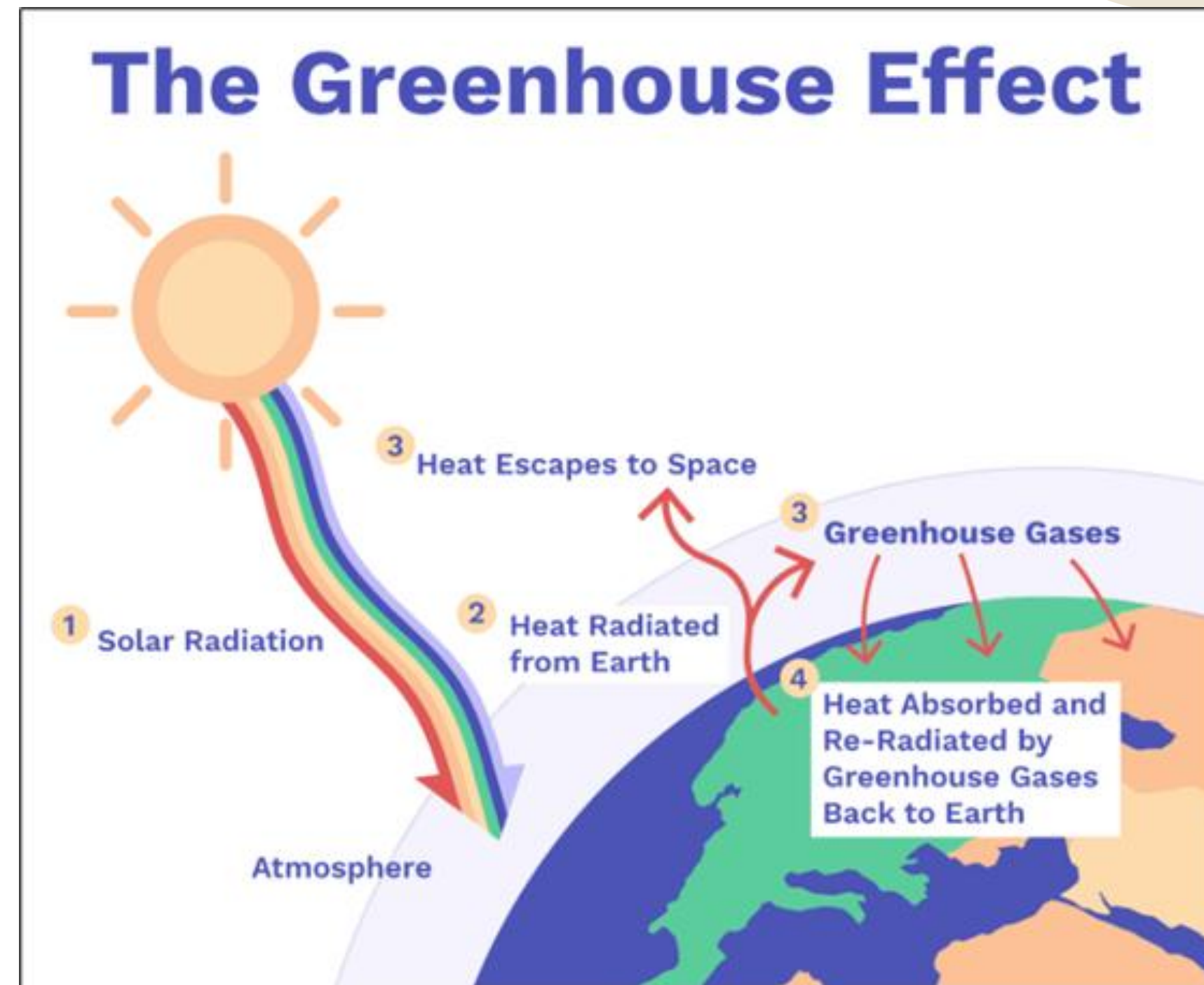
Why Earth is Not Too Cold



Imagine the Earth is inside a Greenhouse

- The Greenhouse is our atmosphere, which acts like a thin blanket
- The Sun's rays penetrate the atmosphere, bringing heat and energy to the Earth
- The Earth absorbs the heat and emits some of it back to the atmosphere via Greenhouse Gases (GHGs)
- Some heat remains trapped in the 'greenhouse', while the rest of the heat escapes

Video: [What is the Greenhouse Effect? \(NASA\)](#)

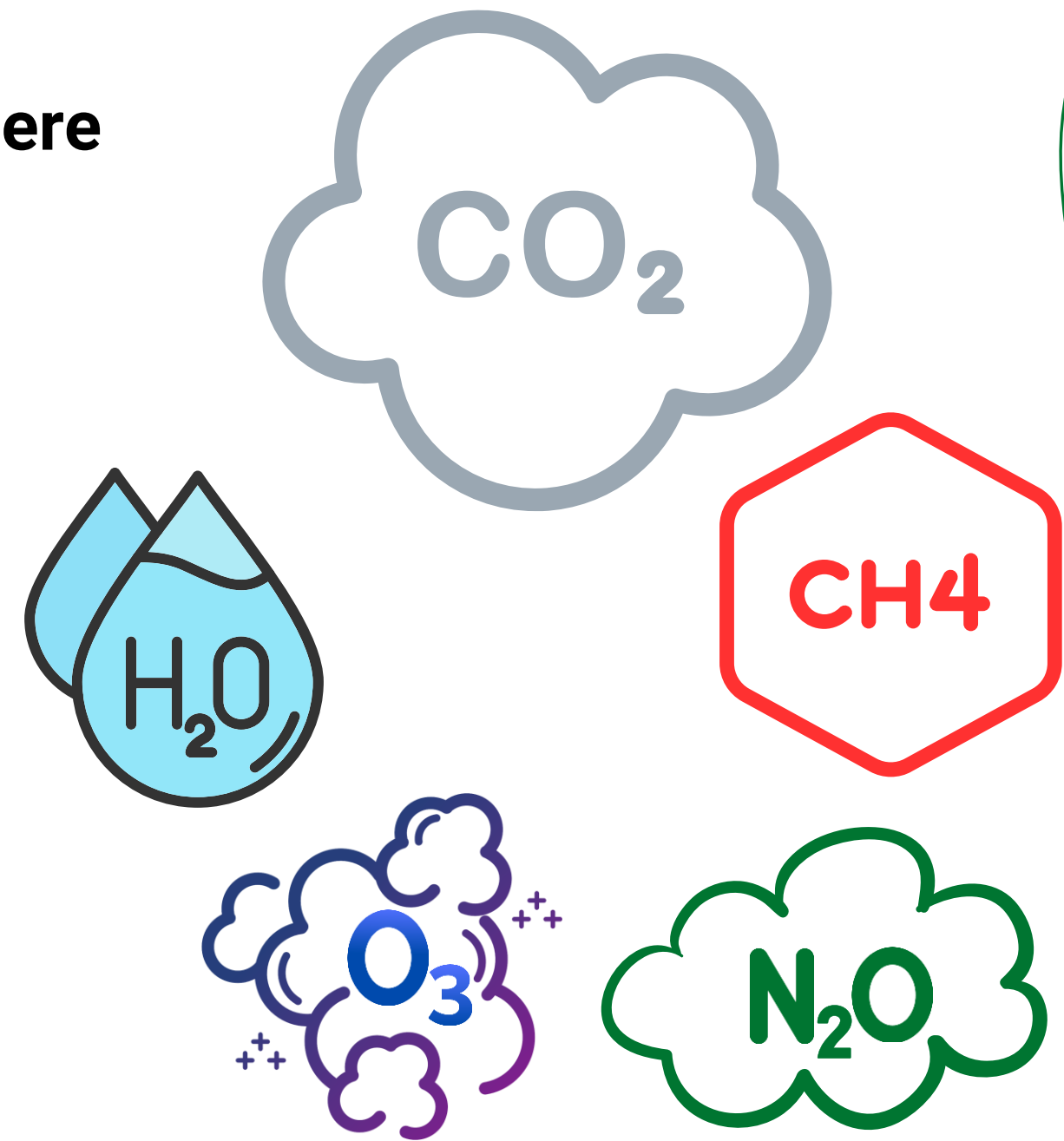


Greenhouse Gases



Greenhouse gases create the thin blanket in our atmosphere

- The majority of GHGs are water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3)
- These create the greenhouse 'blanket' around the Earth, keeping the planet warm enough to sustain all existing organisms
- Each of these gases are emitted from natural sources (plants, animals, the ocean, etc.)
 - But humans also emit GHG through industrial processes (burning of fossil fuels for transport, production of goods, etc.) - mostly CO_2



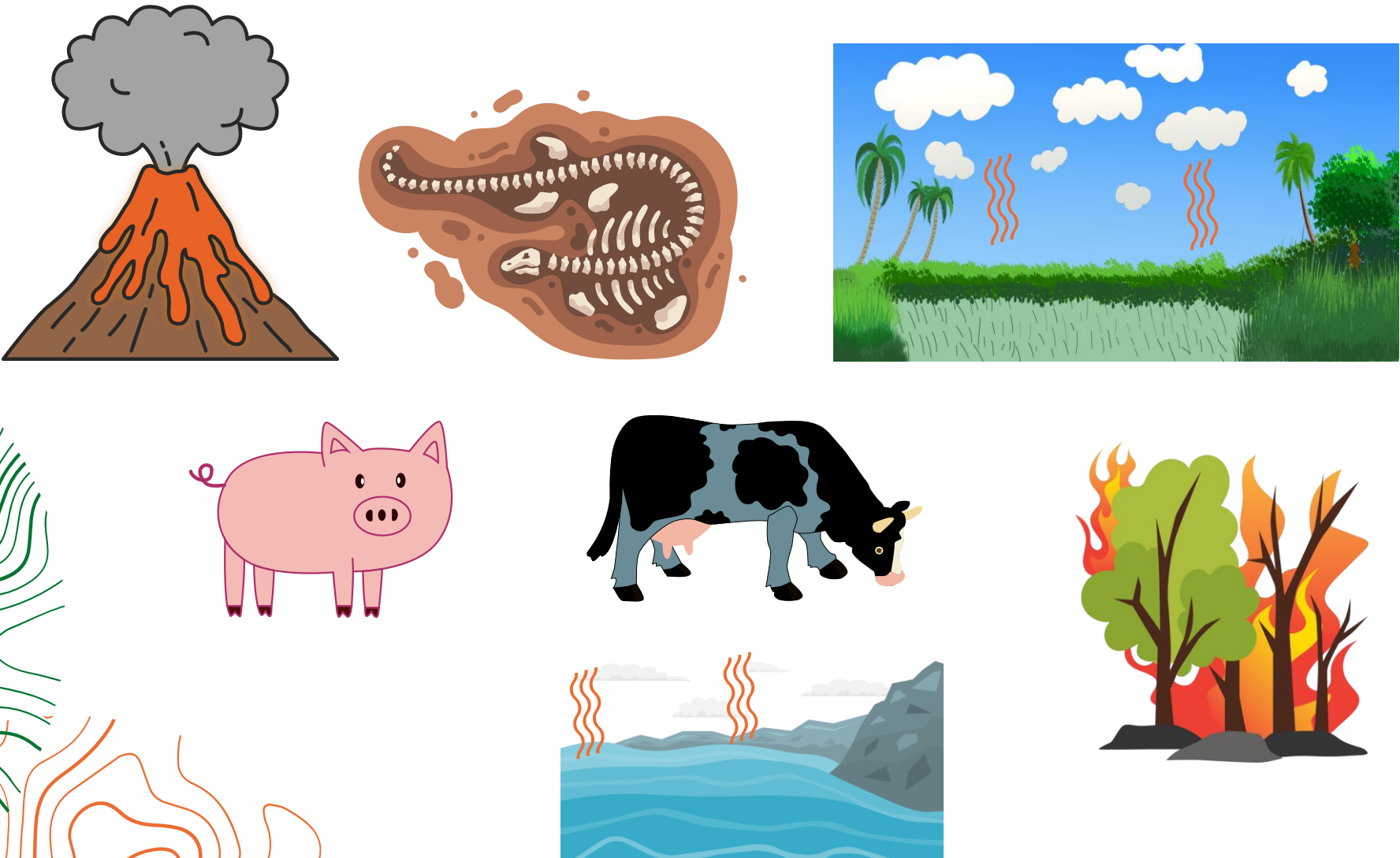
What Emits Greenhouse Gases?



Can you think of other sources?

There are both natural and anthropogenic (human) sources of GHGs

Natural Emitters



Anthropogenic Emitters



Let's Experiment

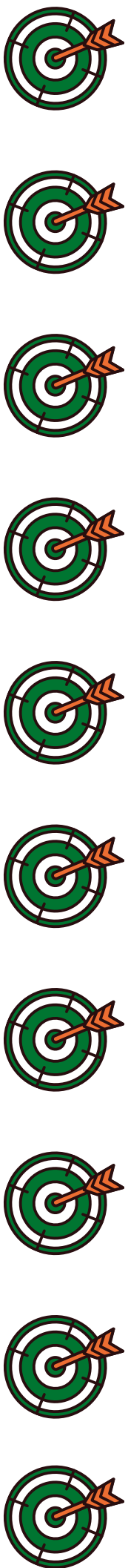


Greenhouse Effect Jar Experiment

- Which jar is warmer?
- Plastic bag = greenhouse effect, jar = Earth

Reflection:

What do you think would happen if the Earth continues to trap more greenhouse gases?



Key takeaways



- The greenhouse effect - when balanced - is beneficial for the planet, as it makes life on Earth possible
- Problems start when greenhouse gases increase too much and become trapped in the atmosphere, heating the planet more than the comfortable temperature range
- Because of the amount of GHG emitted by humans since industrialization began, and the impacts this creates on the global climate, scientists have classified a new geological period - the “anthropocene” (from the Greek root *anthropos* - “human”)





Thank you!

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