**How Big is Your Carbon Footprint?**

**Introduction**

Increasing global temperature is a serious challenge for our generation and the generations to come. The temperature of the earth’s atmosphere has increased by 1.4 °F since 1900. Even though this change may seem insignificant, this temperature change is believed to already be causing climate change in some parts of the world. Steps can be taken to educate future generations on the many negative effects of global temperature increase and understand its potential causes. Scientists are trying to determine whether this increase is part of a natural cycle, or caused by human activity. Many scientists believe that increases in carbon dioxide in the atmosphere may be responsible for increasing temperatures. Carbon dioxide is produced as a byproduct of burning fossil fuels, something that modern societies require. This means that everyone has a carbon dioxide (or carbon) footprint and it is highly dependent on lifestyle choices such as transportation, diet, and purchases. This activity will help you understand the effect of your life choices on your carbon footprint. It will also help you recognize the lifestyle choices available to you that would lower their carbon footprint. Additionally, you will also be asked to critically think whether the options for lowering their carbon footprint available are actions that you are willing to take.

**Background**

A carbon footprint is the amount of greenhouse gases (GHGs) an individual, system, or activity is responsible for releasing into the environment. GHGs include carbon dioxide, methane, water vapor, ozone and nitrous oxide. These gases are needed in the atmosphere at their natural levels to regulate the earth’s temperature and maintain life in our planet. These gases maintain some of the heat in the atmosphere that is radiated to the earth from the sun instead of letting it be released back into space. GHGs above normal levels may lead to more heat being trapped on the planet, which translates to

climate change around the world. For example, 275 parts per million (ppm) of carbon dioxide (CO2) was present in the atmosphere until about 200 years ago. Scientists have develop models that indicate a safe upper limit is 350 ppm, but there is currently 400 ppm of CO2 in the atmosphere. Furthermore, some of these gases remain in the atmosphere longer than others. Water vapor leaves the atmosphere every time it rains. Methane, which is primarily produced by livestock and fossil fuel production, can remain in the atmosphere for hundreds of years. The following diagram shows the greenhouse effect and the relative amounts of GHGs in the currently in the atmosphere.



**Fig. 1 The relative amounts of GHG produced by human activities.**

Diverse energy sources such as coal, petroleum, natural gas, hydroelectricity, solar, nuclear, and biomass have shaped our nation and played an important role in our development. This development has come with a cost, and our nation, like many others, is dependent on fossil fuels for energy. These fossil fuels release high amounts of GHGs when burned for energy. We are releasing carbon dioxide and other GHGs into the atmosphere in a relatively short amount of time, while it took nature millions of years to sequester that energy in the form of coal, petroleum, and natural gas.

|  |
| --- |
| **Essential Question:** How can we minimize our carbon footprint while keeping our standard of living?  |

**Procedures:**

1. Visit www.footprint.wwf.org.uk
2. Answer the questions (to the best of your ability) and determine how many global hectares and Earths your lifestyle currently uses.

**Results:**

1. If everyone had the same lifestyle as you, % of your carbon share \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

CLICK SEE DETAILS 🡪

1. What is your:
	1. ~~Ecological Footprint? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_~~
	2. Carbon ~~Footprint~~ Emissions? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. How does your Ecological Footprint break down in percent?
* Food: \_\_\_\_\_\_\_\_\_
* ~~Shelter: \_\_\_\_\_\_\_\_~~ Home \_\_\_\_\_\_\_\_\_\_\_
* ~~Mobility: \_\_\_\_\_\_\_\_~~ Travel \_\_\_\_\_\_\_\_\_\_
* ~~Goods: \_\_\_\_\_\_\_\_\_~~ Stuff: \_\_\_\_\_\_\_\_\_\_\_\_
* ~~Services: \_\_\_\_\_\_\_\_~~
1. Now ~~EXPLORE SOLUTIONS~~ to determine what you could do differently.
	1. What are 2 things you could do to improve your carbon footprint (city, energy, food or population)? What tips do they offer to lower your impact? Write 2-3.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |
| --- |
| **Essential Question:** How can we minimize our carbon footprint while keeping our standard of living?  |

**Procedures:**

1. Visit [www.footprintcalculator.org](http://www.footprintcalculator.org).
2. Answer the questions (to the best of your ability) and determine how many global hectares and Earths your lifestyle currently uses.

**Results:**

1. If everyone had the same lifestyle as you, how many Planet Earths would we need? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

CLICK SEE DETAILS 🡪

1. What is your:
2. Ecological Footprint? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Carbon Footprint? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. How does your Ecological Footprint break down in percent?
* Food: \_\_\_\_\_\_\_\_\_
* Shelter: \_\_\_\_\_\_\_\_
* Mobility: \_\_\_\_\_\_\_\_
* Goods: \_\_\_\_\_\_\_\_\_
* Services: \_\_\_\_\_\_\_\_
1. Now EXPLORE SOLUTIONS to determine what you could do differently.
2. What are 2 things you could do to improve your carbon footprint (city, energy, food or population)?

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_