



## Episode 2:

# Why is Climate Change Happening So Fast?

In 2019, Singaporeans sweated through the hottest temperature ever recorded. Is climate change really a distant problem? Why are people concerned about it? Why are some people starving, while some others have too much food? Join Jo the Singapore freshwater crab as she takes a closer look at the key drivers of climate change and how it impacts people around the world differently.

### What is in this guide:

- Suggested discussion for video
- How to use the activity sheet with your students
- Sample answer key

### Additional resources:

- Appendix 1: Carbon and us
- Further readings

## Suggested discussion for video

### Recall

- What are the two main causes for climate change to be happening so quickly?
- Which was the hottest year in Singapore?
- What percentage of Singapore's food is imported?
- What happens when forests are cleared?

### Explain

- What does transporting food around the world by car, train and plane have to do with climate change?
- How do forests help to fight against climate change?
- Why are people around the world still going hungry when there is more than enough food to feed the world?

### Infer

- Why is Jo concerned when she says "I'm here but for how much longer who knows?"
- How is Jo's diet of soggy worms and leaves important in the fight against climate change?



## How to use the activity sheet with your students



### Learning outcome:

To understand what a carbon footprint is and what activities contribute to them.



### Guiding questions:

- Introduce to students what a carbon footprint is – any activity that produces carbon.
- Conduct a class discussion. Get students to name activities they do on a daily basis. [Eating food, taking the bus, use of electronic devices, use of textbooks]
  - o How do these activities produce carbon?
    - Where do the apples that we buy from our supermarkets come from? The clothes that we wear? The phones we use daily?
    - Where does our food waste go? What about when we throw away old clothes and single-use disposables?
  - o What happens when there is too much carbon in our atmosphere? [Refer to **Appendix 1**]
- Conclude: Carbon is important but **too much carbon in the atmosphere leads to climate change.**
- Encourage students to attempt the carbon calculator at home. There are two main sections: Household and transportation. Students are encouraged to do it together with their family.
  - o How many trees must be protected to absorb the carbon from your activities?
  - o How did your carbon footprint compare with that of an average Singaporean? Your classmates? Your sibling?
  - o What other activities should be included in your carbon footprint calculator?



# WHAT IS MY CARBON FOOTPRINT?

A carbon footprint is the total amount of greenhouse gases (like carbon dioxide) that comes from our daily activities. We do not think about it but posting selfies on your social media, taking private transport to your desired location, eating your favourite food and sleeping with the air-conditioner on are all activities that release carbon dioxide into the atmosphere.

Calculate your carbon footprint at [footprint.conservancy.org](https://footprint.conservancy.org). Select "Singapore" at the top bar and follow the steps below.

Select "Calculate footprint for an individual."



Calculate the carbon footprint for your home under the household tab.

Ask your family members for help with the different options or select the option "I don't know" if you are not sure.

Click "continue" once done.



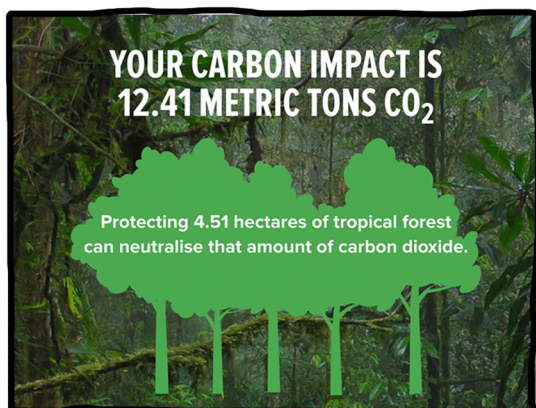
Calculate the carbon footprint for your daily transport mode under the transportation tab.

You can use Google maps to help you estimate the distance travelled between locations.

**\*Do NOT click on "automobile or motorbike."**

Click "calculate footprint" once done.



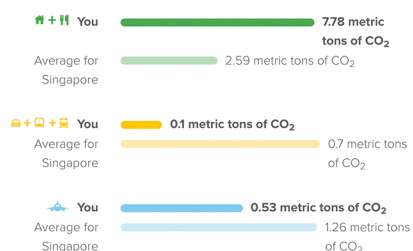


Your carbon impact will be shown at the end. You will also get to see your carbon footprint in the form of a certain number of trees needed to absorb the carbon dioxide emitted from your daily activities.



## HOW DO YOU COMPARE?

Here is your annual carbon footprint.



How do you compare to an average Singaporean?



**My result:** \_\_\_\_\_ metric tonnes of carbon dioxide per year

**What other activities contribute to my carbon footprint? List at least 3 in the box below.**

- Eating chips imported from Australia
- Eating beef imported from Japan
- Throwing away unwanted food or old clothes
- Using my phone to scroll through social media once I reach home
- Using the air-conditioner when I sleep
- Discarding plastic boxes of takeaway food



**Reflect** on your carbon footprint:

What are the activities that contribute the most to it? Commit to climate action by reducing your carbon emissions! Start by taking small steps to change your habits and behaviour. What would you do differently in your daily life to reduce your carbon footprint?



## Appendix 1: Carbon and us

Carbon is the building block of all life. Carbon is in your body, in the air you breathe, the food you eat and the clothes you wear. Through natural processes like photosynthesis and human activities like burning fossil fuels, carbon is transferred from one thing to another.

In nature, carbon moves from one place to another in an ongoing process, this is known as a carbon cycle. Below are some natural processes that illustrate how carbon moves:

Natural Processes	Movement of carbon
Photosynthesis	Carbon dioxide is removed from the atmosphere to help plants make food and carbon dioxide is converted to carbon which is stored in plants.
Respiration	Carbon dioxide is released into the atmosphere from living things during respiration, the process where oxygen is taken in and carbon dioxide is given out.
Decomposition	Carbon dioxide is released into the atmosphere when decomposers like bacteria and fungi break down dead animals and plants into organic matter that can be absorbed by the roots of plants for nutrients.
Eating	In a food chain, as living things eat other living things for energy, carbon in food is transferred to the one eating the food.
Erosion	Erosion moves carbon stored in soils to water bodies.

Why is climate change happening so fast and what is the role of the carbon cycle? Human activities like deforestation, the burning of fossil fuels, transportation, agriculture and food production have led to large amounts of carbon being released into the atmosphere. When these activities happen intensively and quickly, our atmosphere and oceans absorb an excessive amount of carbon dioxide (a heat-trapping gas) leading to accelerated climate change.

Human activities	Movement of carbon
Deforestation for rearing livestock and agriculture	Clearing of forests to raise animals or growing plants for food or resources means the removal of trees and soil. Consequently, all the carbon that is stored within them is released into the atmosphere.
Burning of fossil fuels	Burning fossil fuels to generate electricity or to power modes of transportation releases the trapped carbon in fossil fuels in the form of carbon dioxide and carbon monoxide.
Importing across countries	One hidden contributor to our carbon footprints is food transport. Many of us, especially in Singapore which is a food haven, do not consider where our food comes from. However, with over 90% of our food being shipped, flown, and driven into Singapore.

### Further readings:

1. Stylianou, B. C. N. G. A. H. B. (2019, August 9). Climate change food calculator: What's your diet's carbon footprint? BBC News. <https://www.bbc.com/news/science-environment-46459714>
2. Live more, Waste less: Food too good to waste. (2020, November 26). [Video]. YouTube. <https://www.youtube.com/watch?v=o6Dznw7IL0U>
3. Tan, J. (2020, December 14). Meet the people getting "ugly" food onto plates and away from the bin. The Straits Times. <https://www.straitstimes.com/singapore/meet-the-people-getting-ugly-food-onto-plates-and-away-from-the-bin>
4. Soil organic carbon the hidden potential. (2017). Soil Organic Carbon the Hidden Potential, 1. <http://www.fao.org/3/I6937EN/I6937en.pdf>