

# **Sustainable Solutions: Change for a Livable Future**

**Class 1  
07/09/2023**

# What we will teach you in this class

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1. Assess **sustainability** of everyday items according to their carbon and material footprints
2. Understand **engineering design process** and **economic considerations** behind products
3. Distinguish reliable sources of information on sustainability and **spot greenwashing**

**Part 1: what do you think about sustainability?**

# Quick Assessment

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In your personal opinion:

- > how healthy is the planet? Responses: 2-3
  
- > how sustainable is humanity's current way of living? Responses: 2-3

# Brainstorming!

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What are the problems that make our way of living less sustainable?

> add sticky notes with brief answers to the Jamboard or drop a message in zoom chat

# Formalizing

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How would you define sustainability?

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# United Nations Sustainability Definition

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Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

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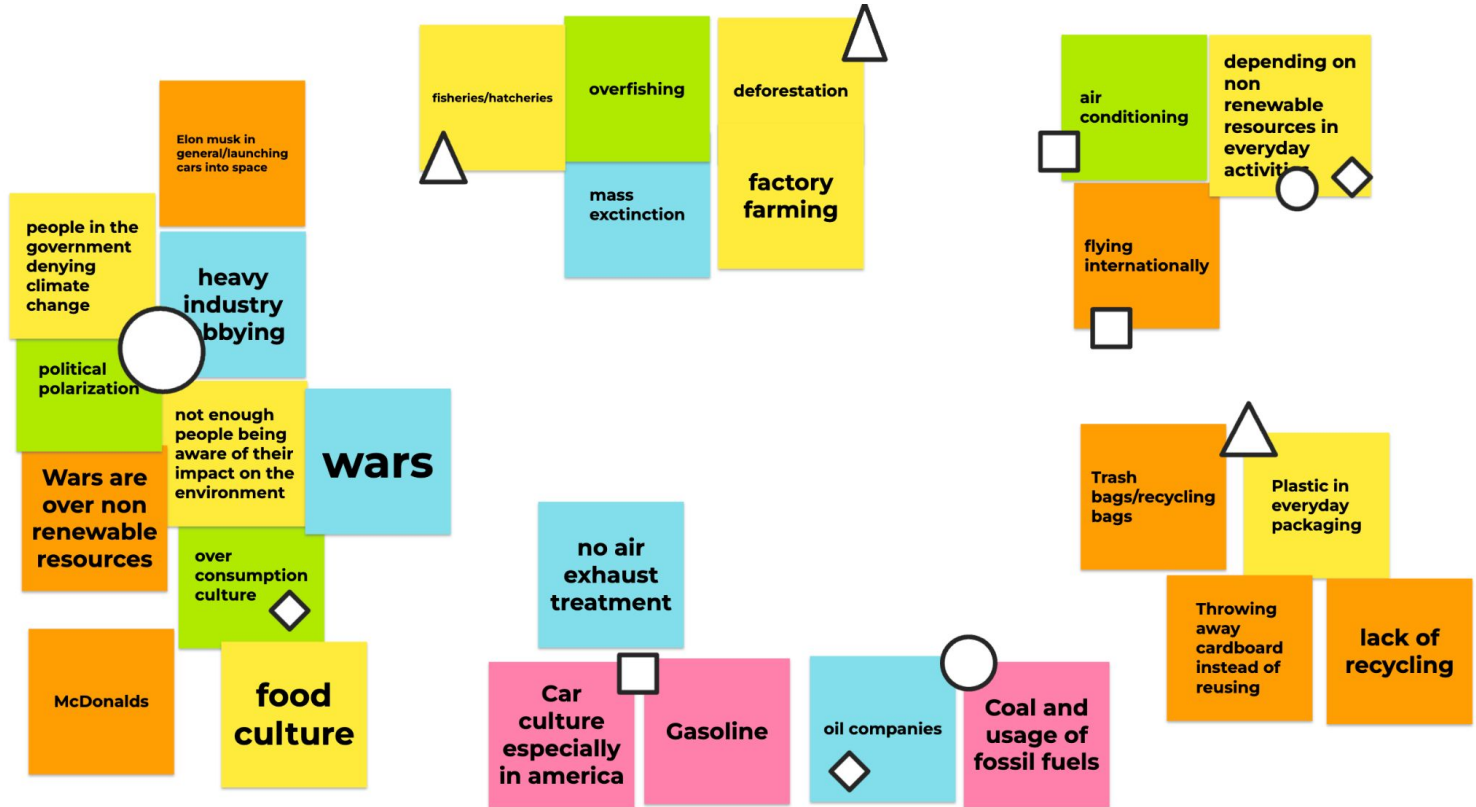
# Team discussion

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Based on the UN definition, which problems are the most important?

Select the three most important issues from the list we made earlier

# Jamboard Results



## Bonus: US Environmental Protection Agency (EPA) definition

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“create and maintain conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations.”

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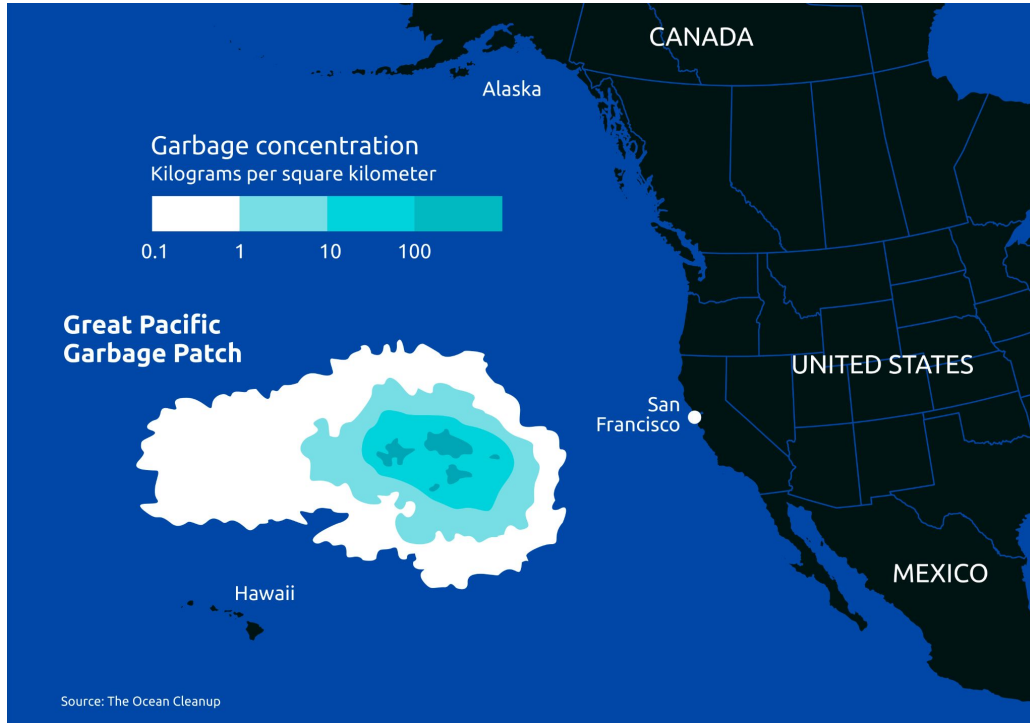
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## Part 2: current sustainability trajectory

# Plastics Pollution

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# Plastics Pollution

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4 trillion plastic bottles were sold globally between 2009 and 2019

Recycling rate for PET bottles in the US is under 30%





# Chemical Pollution

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health

[Life, But Better](#)

[Fitness](#)

[Food](#)

[Sleep](#)

[Mindfulness](#)

[Relationships](#)

## **Nearly half of the tap water in the US is contaminated with ‘forever chemicals,’ government study finds**

By Jen Christensen, CNN

Updated 1:53 PM EDT, Thu July 6, 2023

# Chemical Pollution

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☰ **CNN** health Life, But Better Fitness Food

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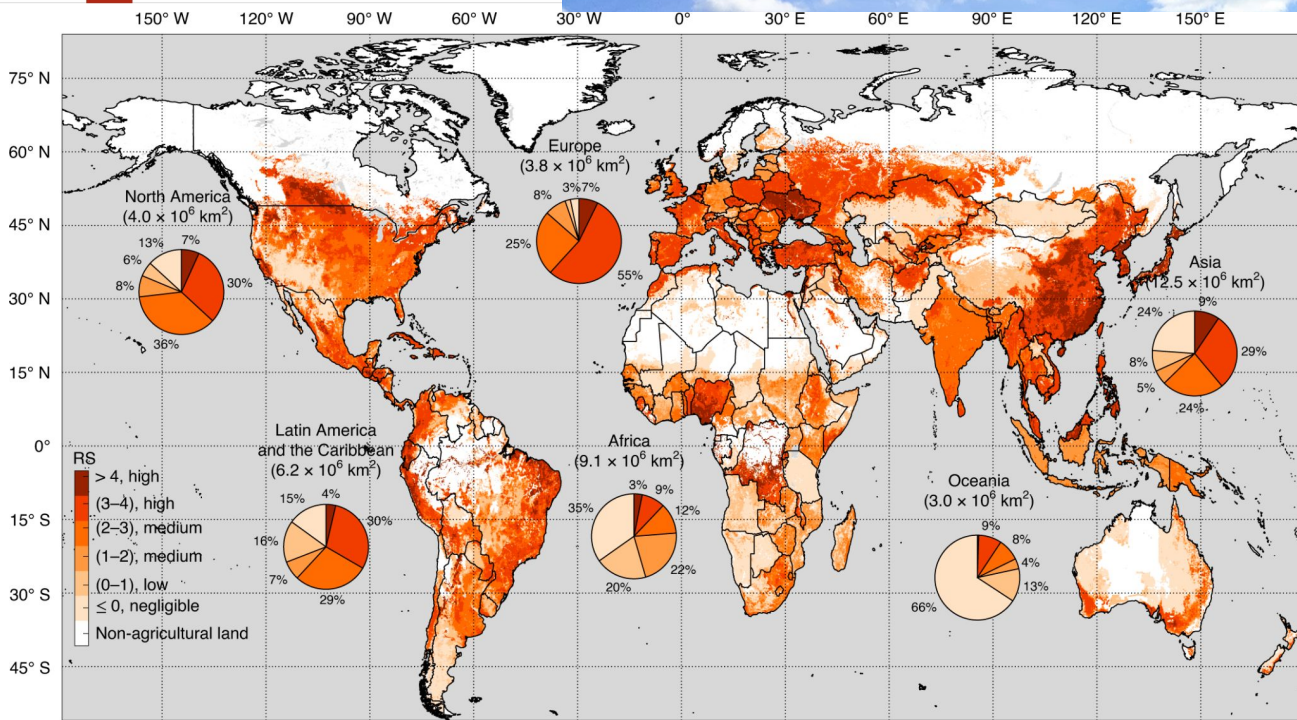


<https://pitwatch.org/>

# Chemical Pollution

<https://www.nature.com/articles/s41561-021-00712-5>

☰ CNN health Life, But Better Fitness Food



# How sustainable is your lifestyle?

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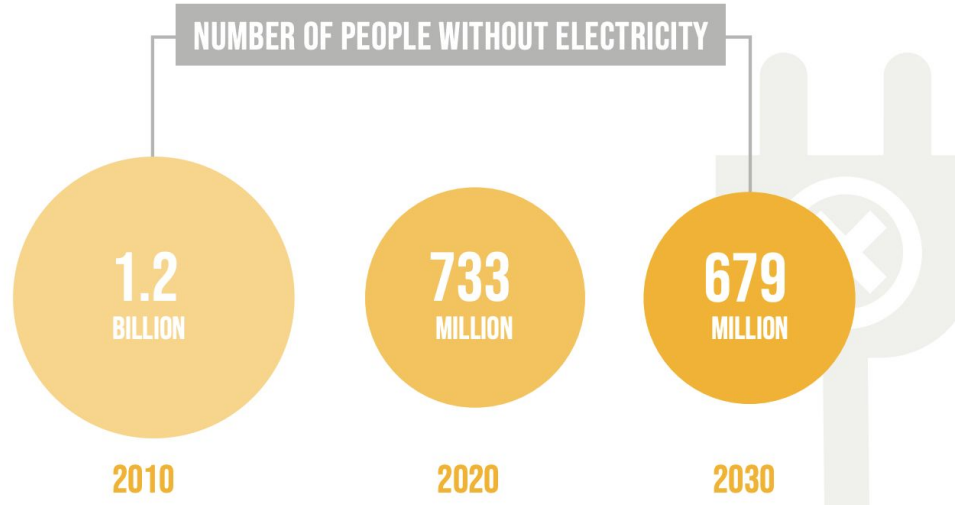
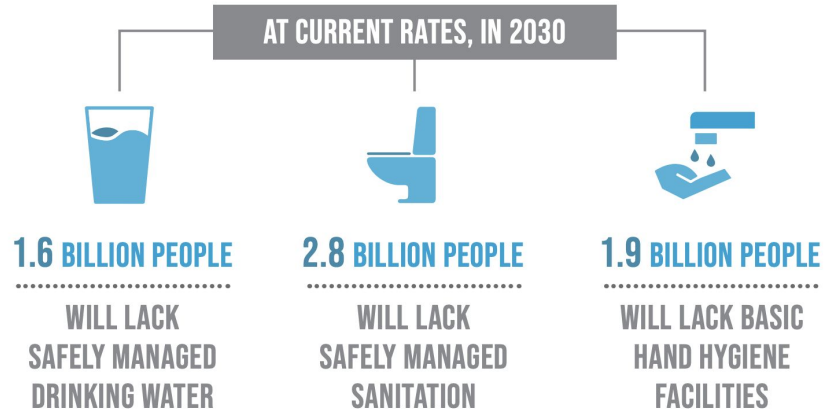
<https://www.footprintcalculator.org/home/en>

# Oksana's Results: 1.9 Earths

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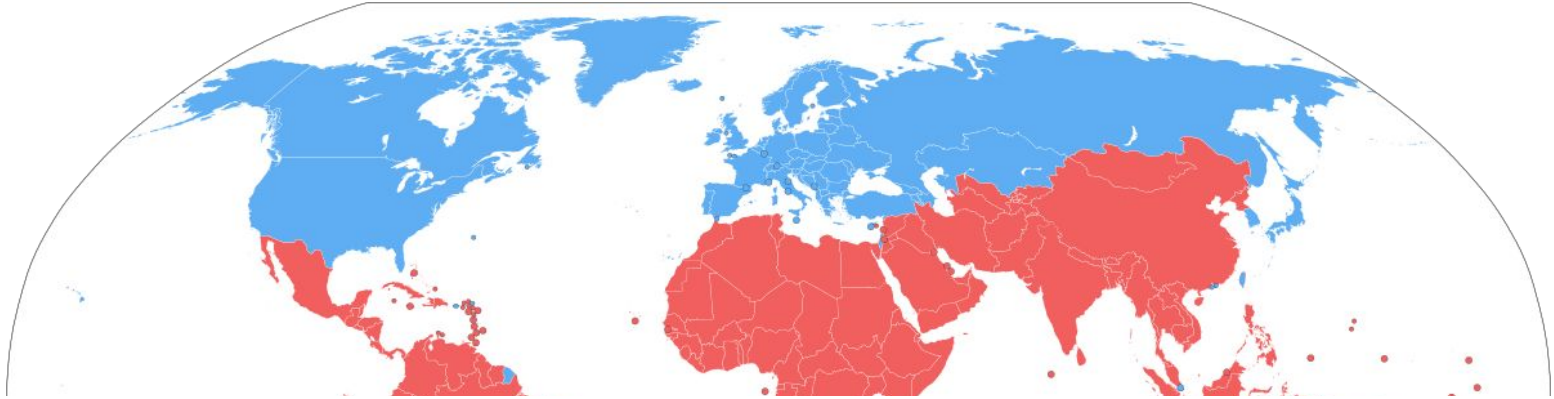
There is a very significant difference in the  
quality of life and access to resources across the  
world.



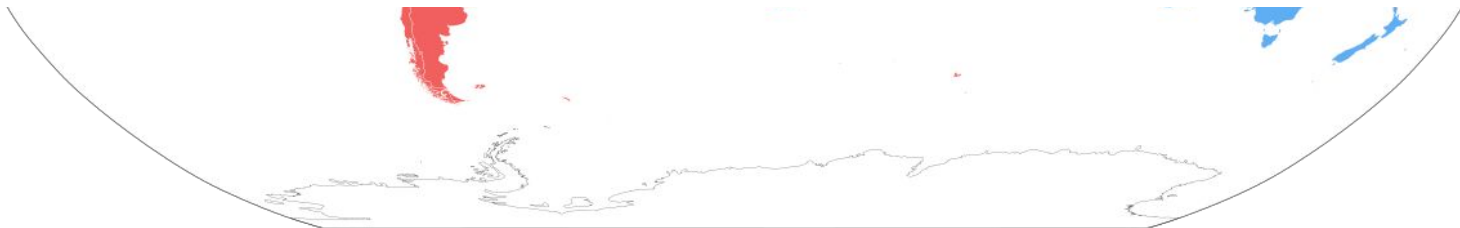
<https://unstats.un.org/sdgs/report/2022/The-Sustainable-Development-Goals-Report-2022.pdf>

# Inequality: Global North and Global South

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Global North is responsible for **92% of GHG** emissions that are currently in the atmosphere





# Part 3: introducing the capstone project!

Why do we still rely on single use plastics?  
Why did Big Oil companies make record profits in 2022 despite climate emergency?

There are **a lot of factors and constraints** that influence actions of people, businesses, and governments.

Detailed analysis identifies **hidden factors** at play that are not obvious when we first look at potential solutions. The goal of this project is to give you an example of **how decisions are being made** given the “imperfect world” we live in.

# Most Sustainable Bubble Tea Cups

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Our “client” is a small Boba Shop in Cambridge, MA. The owner would like to make her shop **as sustainable as possible** while still being able to **stay in business**.

Your task is to propose the most sustainable solution for the **bubble tea cups**



# Project Outline

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1. Come up with the design for the cup and straw that you think is the most sustainable
2. Each week, we will cover one of the sustainability criteria to consider
3. Present your final design in the last class!