Facilitation Guide

Carbon Emissions

How do We Impact Carbon Emissions, and How do Carbon Emissions Impact Us?

This facilitation guide can be used to inform our understanding of climate change and its effects locally and globally. Together, we will visualize our energy use and the comparative impact of energy systems and emissions around the world. We hope that through this workshop, participants become more aware of the long-term climate impacts of carbon emissions.

Materials Needed

- Country flags (print)
- Country emissions (print)
- Poster sized paper (6)
- Large world map or blow up globe
- Toilet paper (~100 rolls)
- Paper
- Markers
- Tape
- Mug giveaways (optional)

Facilitation Steps

A. Introduction: Who are we? Who's all here? Goals for today [10 min]

B. Carbon Emissions [10 min]

1. Take a moment to frame the conversation and familiarize participants carbon dioxide (CO2) and the long-term effects CO2 emissions have on the environment and the earth's natural processes:

CO2 and The Earth

CO2 is naturally present in the earth's atmosphere, but human activities, like burning fossil fuels (coal, natural gas, and oil) is altering the carbon cycle by adding *more* CO2 into the atmosphere. The earth just can't keep up. With an excess of CO2 in the earth's atmosphere, the earth cannot "cool down", thus causing an increase of heat surrounding the earth. In short, CO2 emissions actively contribute to climate change.

The main human-related emissions categories responsible for the CO2 increase are Electricity and Transportation.[1] These categories require a transition to zero-emission sources if we hope to move forward to clear up our energy system - the first step to this transition begins with grassroots and community-led discussion and learning to build our collective understanding on the impacts energy systems have on the earth and our health.

C. My emissions [25 min]

1. Set out six large posters around the room. On each poster, write the following time break-downs: *6-10am; 10am-2pm; 2-6pm; 6-10pm; 10pm-2am; 2-6am*. The posters will be used to visualize our energy habits and how we interact with the energy system inside our home.

Electricity & CO2

Electricity production is one of the largest greenhouse gas emissions; the electricity we use in our home is considered to produce *indirect* emissions - this means that our electricity came from an off-site supply location (i.e a local power plant burning fossil fuels to produce electricity for a county – said power plant is producing *direct* emissions).

2. As a large group, approach the 6-10am poster. Prompt participants to think out loud and share their morning routine in relation to energy consumption. Use guiding questions as needed:
    a. Is their phone charging?
    b. Do they blow dry or curl their hair?
    c. Which lights get turned on?
    d. Do you make coffee or tea?
3. Pass out a marker to all participants. Instruct them to write or draw the examples shared on the 6-10am poster. Encourage them to move around the room, stopping at each poster and inputting the energy sources they may interact with within that given timeframe. Allow ~10 minutes for pondering, conversations, and inputting.

[1] Environmental Protection Agency, EPA. (2022). Overview of Greenhouse Gases. May 16.
https://www.epa.gov/ghgemissions/overview-greenhouse-gases#carbon-dioxide.

Industries vs. Consumers

This activity is not to place CO2 emissions blame onto us as consumers, but rather a way for us to be more aware of our good, and not so good energy habits at home. It's important to acknowledge that as consumers, our choices are limited and the energy we use at home does not make us the sole contributors to CO2 emissions and climate change. Large, wealthy, extractive industries supply our cities, states, and the world with energy, means for transportation, and more; these industries are the world's largest polluters; the modes of extraction and production used by industries strongly dictates the level of CO2 emissions that impact our very neighborhoods (i.e do you live near an industrial site?) and the earth's atmosphere.

D. Emissions around the world [30 min]

1. Set out the printed country flags around the room and place the toilet paper rolls in an accessible location in the center of the space. The toilet paper rolls will be used to visualize each country's CO2 emissions.

Measuring CO2

How easy (or hard) is it to produce one metric ton of CO2? Drive about 2,500 miles in a fueled car. This is equivalent to a cross-country road-trip from Florida to Utah.

2. Gather participants in a large group in the center of the space. Explain that together, using toilet paper, they will take their best guess as to what may be each country's total per capita emissions.
3. Encourage participants to grab one roll of toilet paper; for this activity, each toilet paper roll represents one metric ton of CO2 emissions [per capita]. To get started, instruct participants to place their roll on or next to a country flag.
   a. As they consider which flag to place their toilet paper roll, advise them to consider only the emissions produced or used within each country's boundaries (e.g manufacturing techniques, modern industrialization, population size).
4. Have participants work together to determine the amount of rolls each country warrants for their total CO2 emissions. Allow ~10 minutes for discussion and roll placement.
5. To prepare for the group review, give participants a minute or two to confirm the final roll numbers for each country.
6. Going country by country, count the rolls and note the total number of metric tons participants guessed. Referencing the country emissions sheet, compare their guesses to the actual total metric tons emitted. Correct the number of rolls at each country as needed.
7. Once each country portrays their accurate CO2 emissions by means of toilet paper rolls, note

the highest emitting country along with the lowest emitting country. Prompt participants to reflect:

    a. Did any of the higher emitting countries surprise you?

    b. What do you know about some of the higher or lower emitting countries? (i.e France uses renewable energy sources)

    c. What inequalities in per capita emissions did you notice (take into account population size)?

    d. How do you see these emissions impacting the environment?

E. The Climate Crisis [20 min]

1. Have participants grab a chair and make a large group circle. Explain that together, they will be using the world map to note recent or ongoing environmental impacts (e.g climate emergencies) at home, around the country, and around the world.

2. Instruct participants to take turns and approach the map (or pass the globe) to note an environmental/climate impact faced in one or various countries, states, or cities. Encourage them to be specific and discuss the [aftermath] impacts posed to communities and land. Facilitate the conversation as needed, using examples to add to their understanding:

    a. Warmer temperatures causing severe drought: Midwest US, California, India, Western Africa, Australia.

        i. Consequences include: crop failure leading to food shortages, forest fires.

    b. Warmer temperatures causing heat waves: California, New York, India, Australia.

        i. Consequences include: dehydration, fires, drought, dangerous urban conditions (e.g heat islands, lesser tree canopies).

    c. Warmer temperatures causing rapid ice melts: Greenland, Arctic, Antarctica.

        i. Consequences include: melting permafrost, rising sea levels.

    d. Warmer temperatures causing warmer oceans: Puerto Rico, Dominican Republic, Japan.

        i. Consequences include: hurricanes, typhoons, power outages.

3. Using guiding questions, facilitate a collective reflection on these climate impacts:

    a. How do we see geographic location playing a role in the environmental impacts caused by climate change (i.e islands being more susceptible to floods)?

    b. How do these environmental impacts make us feel?

    c. What communities do you see/believe are bearing the brunt of these climate conditions?

    d. How do you prepare for possible climate emergencies?

F. Reflections & Closing [10 min]

1. Wrap-up; what did participants learn? What will they be sharing with community members? What remains unanswered?

2. Thank participants for their time and participation; we hope that they learned something new and are energized to continue conversations like today's.