Environmental Justice

Session 12: Decarbonization & False Solutions

WE ACT FOR ENVIRONMENTAL JUSTICE

CUNY SPH

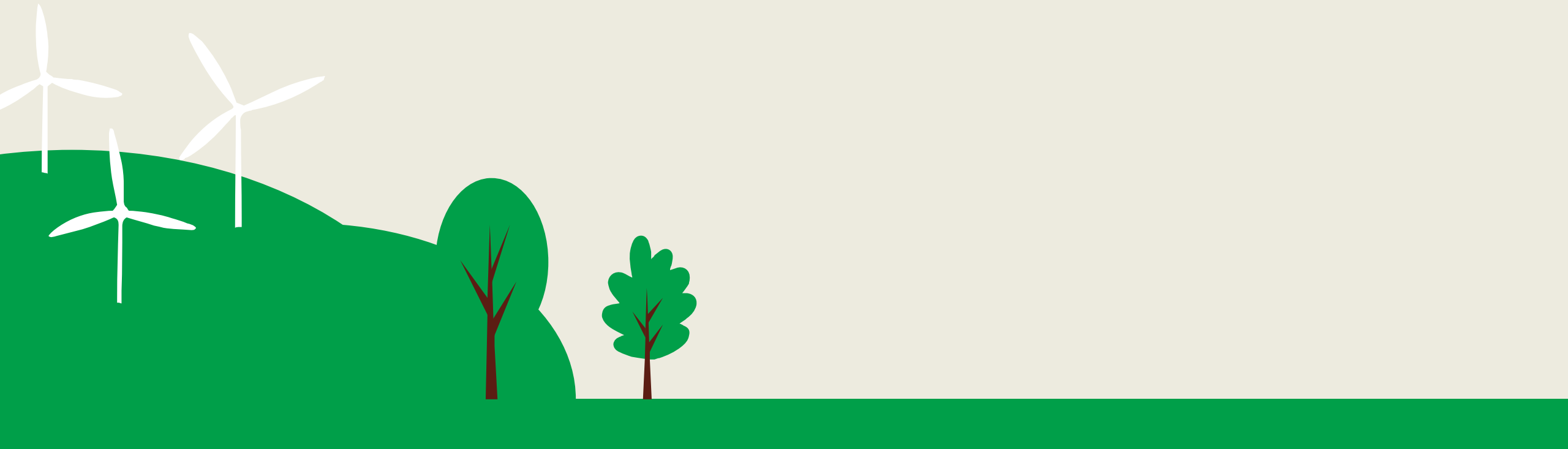
Journaling Exercise

- Can you think of a situation (in society or your personal life) where the motivation was well intended, but there was harmful unintended consequence?

- Do you every feel like technology is moving faster than we can evaluate the repercussions of it? If so, give an example.

Purpose of this lecture

The purpose of this lecture is not to exhaustively cover false solutions, but to convey that is as environmental justice advocates and public health practitioners it is appropriate, and important, to deploy a healthy level of skepticism before buying in to new climate technologies.



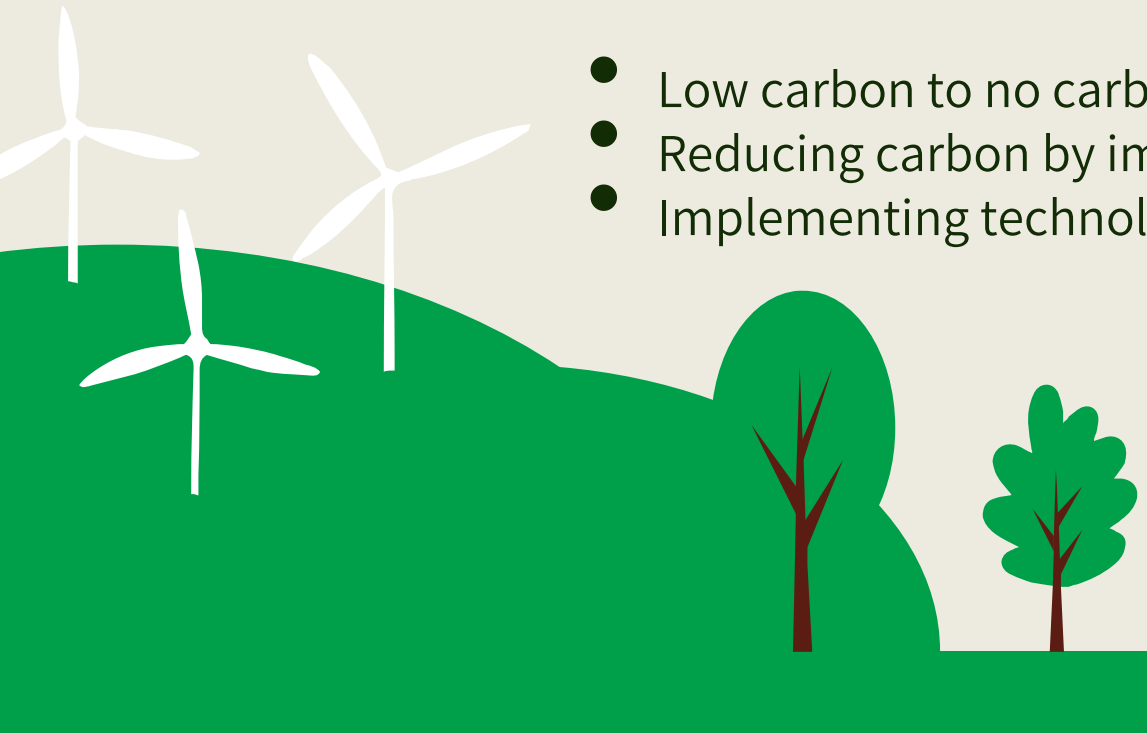
What is Decarbonizations?

Decarbonization (i.e., *decarb*) is the process of reducing carbon dioxide (CO2) emissions.

The goal of decarb is to mitigate climate change by transitioning to low-carbon or carbon-neutral society .

This includes:

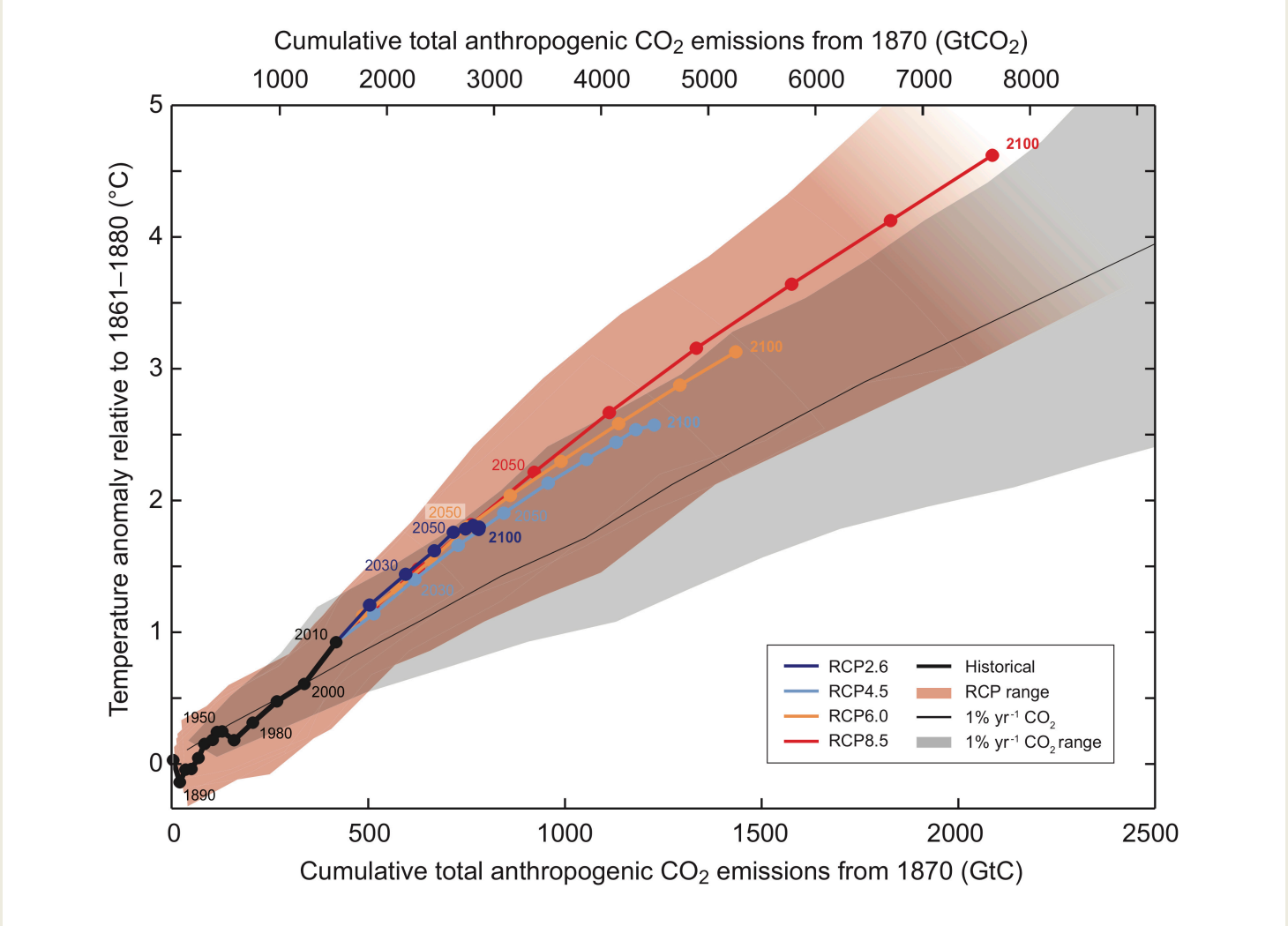
- Low carbon to no carbon energy sources
- Reducing carbon by improving energy efficiency
- Implementing technologies that capture and store carbon emissions



Why the focus on CO2?

CO_2 is a greenhouse gas

Positive correlation between anthropogenic CO_2 and global mean surface temperature of earth since 1870

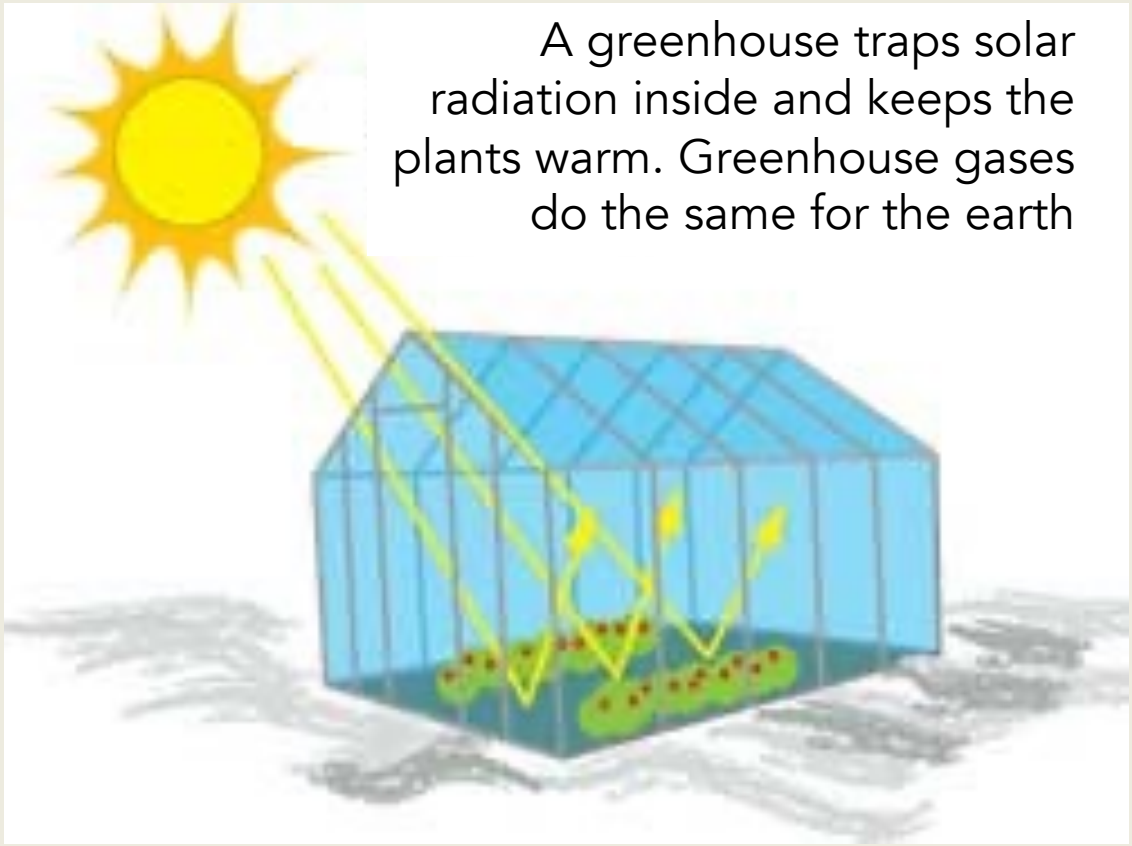


IPCC AR5 WGI report pg. 28

Greenhouse Gases

Greenhouse gases are gases that trap heat.

Just like a greenhouse, greenhouse gases let the sun's energy enter our atmosphere, but when the sun's energy radiates back out to the atmosphere as heat, greenhouse gases trap the warmth inside



A greenhouse traps solar radiation inside and keeps the plants warm. Greenhouse gases do the same for the earth

What is involved in Decarbonization?

Decarbonization action include:

1. Adoption of renewable energy sources
2. Increasing energy efficiency
3. Electrifying transportation
4. Promoting sustainable practices across various sectors

Ultimately, decarbonization aims for a future with lower greenhouse gas emissions

Building Decarb

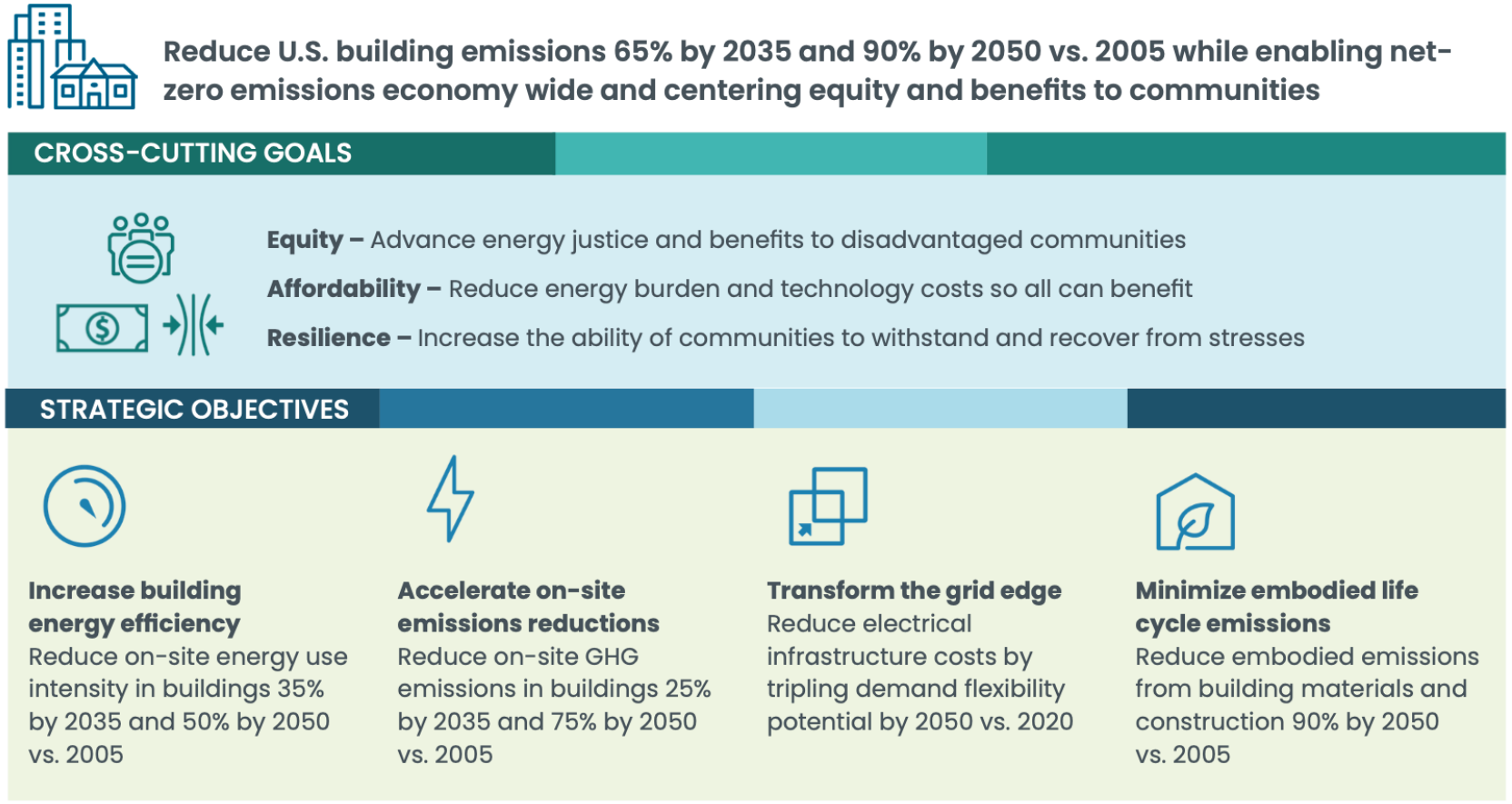


Figure ES-2. Rapid decarbonization of the buildings sector by 2050 is marked by the achievement of three cross-cutting goals and four strategic objectives. The Appendix includes documentation of how quantitative performance targets were determined.

- Increase building energy efficiency
- Reduce emissions from buildings
- Reduce electrical cost
- Reduce emissions from building materials/construction

US Dept of Energy 2024 report

Industrial Decarb

Industrial decarbonization is decarbonization of the industrial sector. Two main components of this are:

1. **Electrification**: Shifting from fossil fuel-based energy systems to electric systems that can be powered by renewable energy sources.

2. **Carbon Capture and Storage (CCS)**: Developing technologies to capture CO2 emissions from industrial processes and store them underground or utilize them in other ways.

Renewable Energy Sources

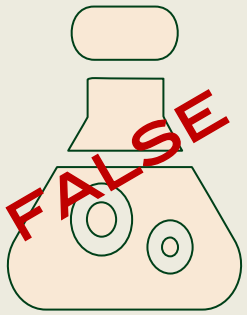
Renewable energy sources:

1. **Solar Energy:** Harnessed from sunlight using solar panels or solar thermal systems.
2. **Wind Energy:** Generated from wind using wind turbines
3. **Hydropower:** Produced from the movement of water, typically from rivers or dams.
4. **Biomass**: Derived from organic materials (like plant and animal waste) that can be converted into energy
5. **Geothermal Energy:** Extracted from the heat stored beneath the Earth's surface.
6. **Ocean Energy:** Includes tidal energy, wave energy, and ocean thermal energy conversion (OTEC).
7. **Hydrogen:** While not a direct energy source, hydrogen can be produced from renewable sources

What are False Solutions?

False solutions are decarbonization efforts that are branded as solutions to climate change. However, they have other harmful unintended (or downplayed) consequences.

Specifically false solutions are technologies and processes marketed as solutions to the climate crisis while increasing pollution burden, expanding fossil fuel reliance or infrastructure, or exacerbating health risks



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EJLF

September 19, 2022

The Honorable Jennifer M. Granholm
Secretary, Department of Energy
1000 Independence Avenue, S.W.
Washington D.C 20585

Dear Secretary Granholm:

"we would like to share our concerns regarding what we consider "false solutions" to the problem of climate change: namely, carbon capture utilization and storage, nuclear energy, bioenergy, hydrogen energy, mineral mining, waste to energy, and geothermal energy"

– Open letter from the Environmental Justice Leadership Forum to the Secretary of the Dept of Energy

Carbon Capture as a False Solution

CARBON CAPTURE AND STORAGE, OR CCS, is a dangerous delay tactic championed by the fossil fuel industry and other polluters to continue business-as-usual while taking resources away from the needed transition to clean, cheaper renewable energy.

CCS is touted as a process to divert some of the carbon dioxide released from smokestacks. This CO2 is compressed, pushed under high pressure through pipelines, and ironically then used to pump more oil out of the ground — which when burned produces more CO_2. Other problematic uses include making synthetic CO_2-emitting fuels and polluting plastics and storing CO_2 underground, typically in oil and gas fields that have a long history of leaks and blowouts.

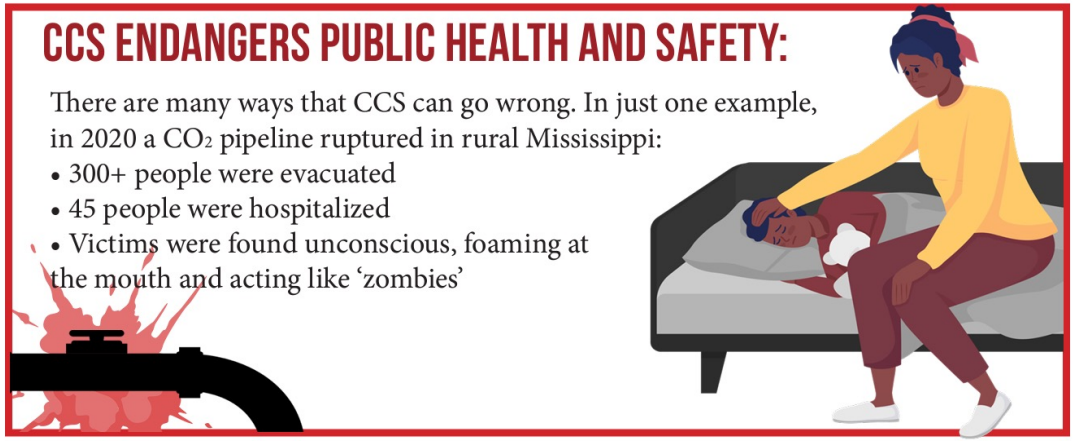


Figure from the Center from Biological Diversity Carbon Capture False Solutions Explainer

Carbon Capture as a False Solution

CLIMATE

The U.S. is expanding CO2 pipelines. One poisoned town wants you to know its story

UPDATED SEPTEMBER 25, 2023 · 9:05 AM ET

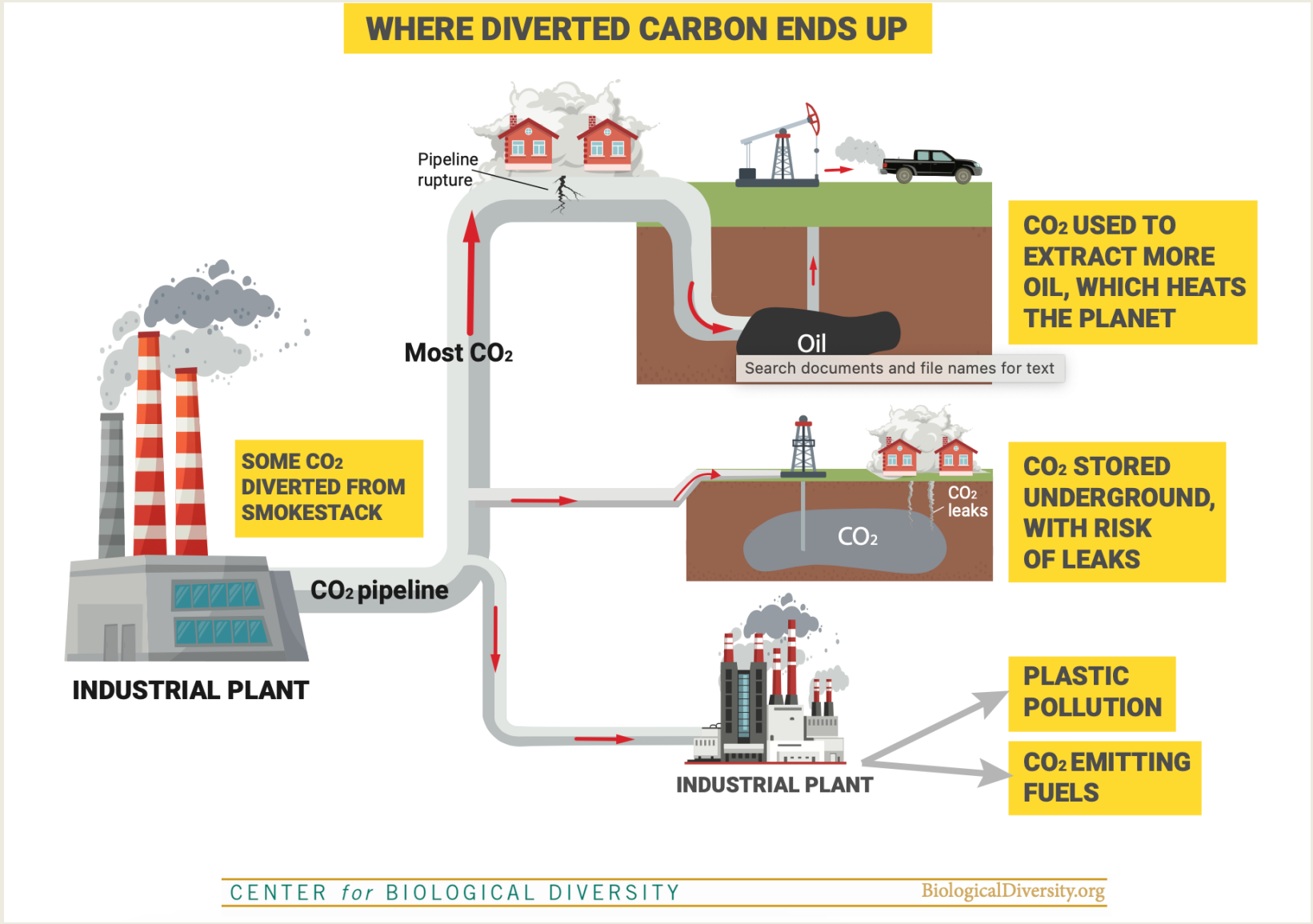
By Julia Simon

Deemmeris Debra'e Burns shows the spot on a rural road in Satartia, Miss., where he lost consciousness when a carbon dioxide pipeline ruptured, an experience he thinks is a warning for America.

Julia Simon/NPR

https://www.npr.org/2023/05/21/1172679786/carbon-capture-carbon-dioxide-pipeline

Carbon Capture as a False Solution



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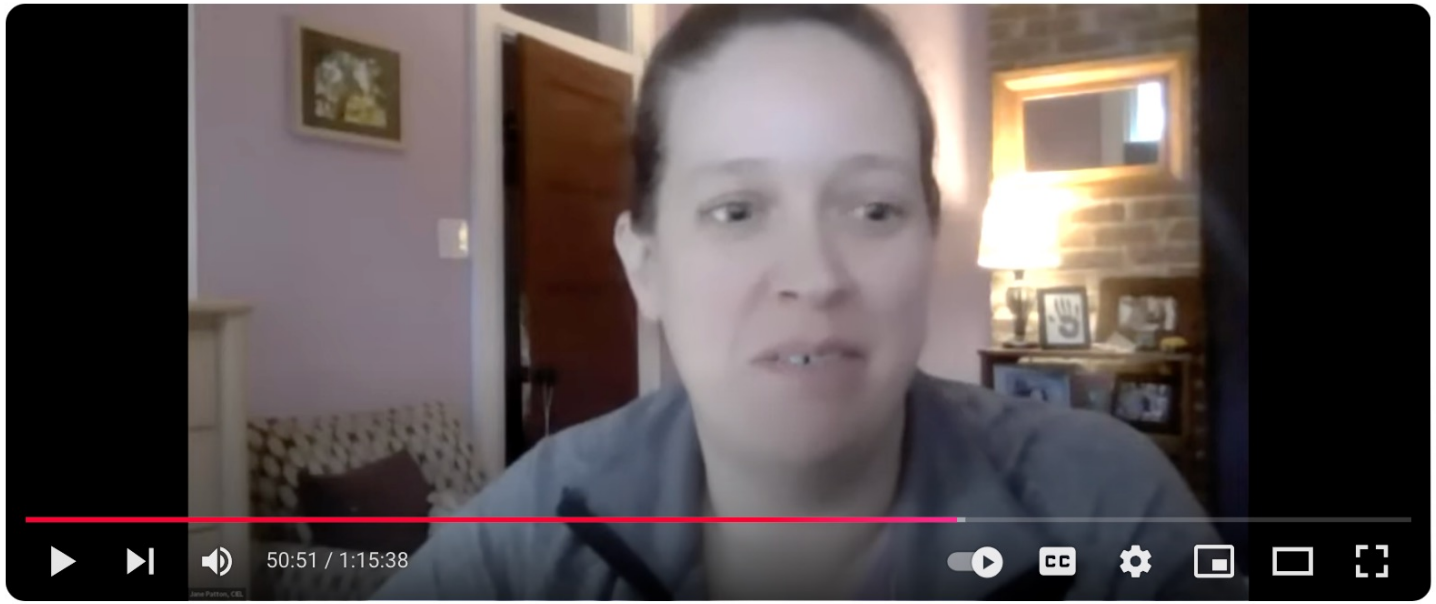
Carbon Capture as a False Solution



https://youtu.be/PIgzQq4F7Fw?si=Fqcj-mJBkG50zI7A&t=3041

We Can't Afford False Solutions: Dirty Hydrogen & Carbon Capture Sequestration

WE ACT for Environmental Justice
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Jane Patton, US Fossil Economy Campaign Manager, Center for International Environmental Law

Carbon Capture as a False Solution

According to the Center for International Environmental Law, these are seven reasons why policymakers should reject carbon capture and storage:

1. The buildout of CCS infrastructure presents serious health, safety, and environmental risks. Marginalized communities already overburdened by industrial hazards are being targeted for CCS.

2. CCS is not consistent with the principles of environmental justice.

3. Rather than replacing fossil fuels, carbon capture technology prolongs our dependence on them.

4. The majority of captured carbon is used to pump more oil out of the ground.

5. There is no economic rationale for the massive deployment of CCS.

6. CCS does not remove CO2 from the atmosphere. At best, it prevents some carbon emissions from entering the atmosphere.

7. Science and existing regulations do not back the promise of “permanent” storage or sequestration of carbon.

Hydrogen as a False Solution

New Jersey EJ Alliance on hydrogen as a false solution.

Hydrogen marketed as an alternative energy source, but hydrogen is dangerous.

HYDROGEN PRODUCTION, HYDROGEN CO-FIRING

What Is Hydrogen Fuel?

Hydrogen fuel has been marketed as an alternative to fossil fuel and a solution to the climate crisis. However, at every point in its life cycle, hydrogen fuel poses significant risk to EJ communities and communities where this infrastructure is built. Irregardless of how the hydrogen was produced, it still poses a danger to workers and communities when transported, stored, and co-fired.

NEW JERSEY ENVIRONMENTAL JUSTICE ALLIANCE
NJEJA

Hydrogen as a False Solution

Colors

Gray Hydrogen
Hydrogen produced from fossil fuels

Blue Hydrogen
Hydrogen produced from fossil fuels, employs CCS to "capture" emissions

Pink Hydrogen
Hydrogen produced from nuclear energy

Green Hydrogen
Hydrogen produced via electrolysis using renewable technologies

The Bottom Line

The color code for hydrogen merely refers to the way in which it was created. It masks the dangers associated with the rest of its lifecycle (ie. production, transportation, storage, and end-use/co-firing). There may be some limited uses for green hydrogen in hard-to-decarbonize sectors, but this should be examined with caution and determined on a case by case basis, only if other renewable alternatives are not feasible.

Hydrogen as a False Solution

The Dangers

Production

All colors of hydrogen, except for green, rely on non-renewable fuel to power their process which poses a risk to EJ communities. Green hydrogen, although produced via electrolysis powered by renewable energy, is still highly water intensive and not sustainable water usage.

Transportation/Storage

All hydrogen types have risks with transport and storage. Transporting by pipelines risks embrittlement, leaks, and explosions. Transportation by super-cooled trucks could lead to explosions or fires. Transport and storage also carry risks of co-pollutant emissions.

Co-Firing

When co-fired (i.e. when burned alongside natural gas to generate energy), hydrogen produces co-pollutants (hazardous pollutants that are released alongside greenhouse gases) and dangerous toxins such as PFAs and NOx, and can generate smog and particulate matter.

New Jersey EJ Alliance on hydrogen as a false solution.

- Hydrogen also can rely on the use of non-renewable energy
- Risk of leaks and explosions during transport (similar to the issue with carbon capture)
- Can generate pollutants including PFAs, NOx, smog, and particulate matter

False Solutions Group Exercise

Get into groups of two and investigate why the following are false solutions:

- carbon capture utilization and storage (x)
- nuclear energy
- bioenergy
- hydrogen energy (x)
- mineral mining
- waste to energy
- geothermal energy

10 min to investigate
10 min to report back to the class

"we would like to share our concerns regarding what we consider "false solutions" to the problem of climate change: namely, carbon capture utilization and storage, nuclear energy, bioenergy, hydrogen energy, mineral mining, waste to energy, and geothermal energy"

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https://docs.google.com/presentation/d/1A_0IYWCf0qBw6jN9geHW9PcCNDCBXKtu/edit?usp=sharing&ouid=110055069378553562870&rtpof=true&sd=true

Next Week's Assignment

- Submit a report outline and campaign flyer for the proposed environmental justice policy proposal

- The report outline should be composed of the (1) problem framing, (2) campaign position, (3) data and expert testimonies, and (4) other information needed to advance the campaign.

- The flyer should be a graphic of a single 8.5 x11 sheet of paper that could be printed and used to advertise the mock public hearing.