

November 29, 2022 – Sustainability Committee Meeting Minutes

1. CALL TO ORDER & ROLL CALL

Scott Elrod (Chairman), Jason Saleh (Vice Chair), Rebecca Flynn (Secy), Anita Wotiz, Ronny Krashinsky

Absent: Loverine Taylor

Public: Laura Iyer and Steve Levin – Citizen Climate Lobby, David Cardinal

2. ORAL COMMUNICATIONS FOR ITEMS NOT ON THE AGENDA

3. NEW BUSINESS:

a. Presentation on Interactive Climate Change Simulation Tool (EN-ROADS) with Steve Levin and Laura Iyer, Climate Ambassadors with Citizens Climate Lobby and Climate Interactive (Presentation PowerPoint available on the PV website in the Sustainability section and the Sustainability Committee section under meeting Resources)

Energy Rapid Overview and Decision Support En-ROADS Workshop

[En-ROADS \(climateinteractive.org\)](https://climateinteractive.org)

Help you understand the dynamics of climate change and support you to identify the high value opportunities to create a more just and sustainable world.

Worldwide global model and simulator. Developed with Climate Interactive and MIT Sustainability Initiative.

Latest CO2 reading: 419.30 ppm (way beyond 350 ppm)

Goals: How fast and effectively can we lower GHG emissions and temperature to 2.0 degrees? What are the valuable co-benefits and what are the equity considerations?

Conclusions: A large number of actions need to be taken worldwide and implement policies to bring GHG emissions down to keep the temperature increase to under 2 degrees C.

Both personal lifestyle choices and worldwide cut to burning of coal, oil, and gas in the next 10-20 years.

A price on carbon is the quickest, most effective way to change the system but other levers are required as well.

Need to mobilize people from passive agreement to active advocacy and action: letters to the editor, grassroots outreach to join Citizen Climate Lobby, engagements with politicians, and group development.

Citizens' Climate Lobby Core Areas of Focus: Carbon pricing, clean energy permitting reform, building electrification and efficiency, and healthy forests. Has North and South Silicon Valley chapters.

Need a mass movement to change the system. How to encourage PV residents to get involved in being part of the solution?

Climate change awareness day – educate on local initiatives as well as invite national groups to present their mission and solutions. Organizations such as Citizens Climate Lobby, 350, etc.

4. ADJOURNMENT at 7:59 PM. The next regularly scheduled meeting of the Sustainability Committee is December 15, 2022 at 7:00 P.M.



EN-ROADS

Choose Your Own Climate Future

Steve Levin & Laura Iyer

November 29, 2022

steve@leadingchange.net

Purpose of this En-ROADS Workshop

Energy Rapid Overview And Decision Support

- Provide a quick overview of what shapes our climate system and the dynamics of climate change.
- Support you to identify high value opportunities to create a more just and sustainable world.

Where should we focus as a whole system (Earth) to have a livable world?

Developed by:

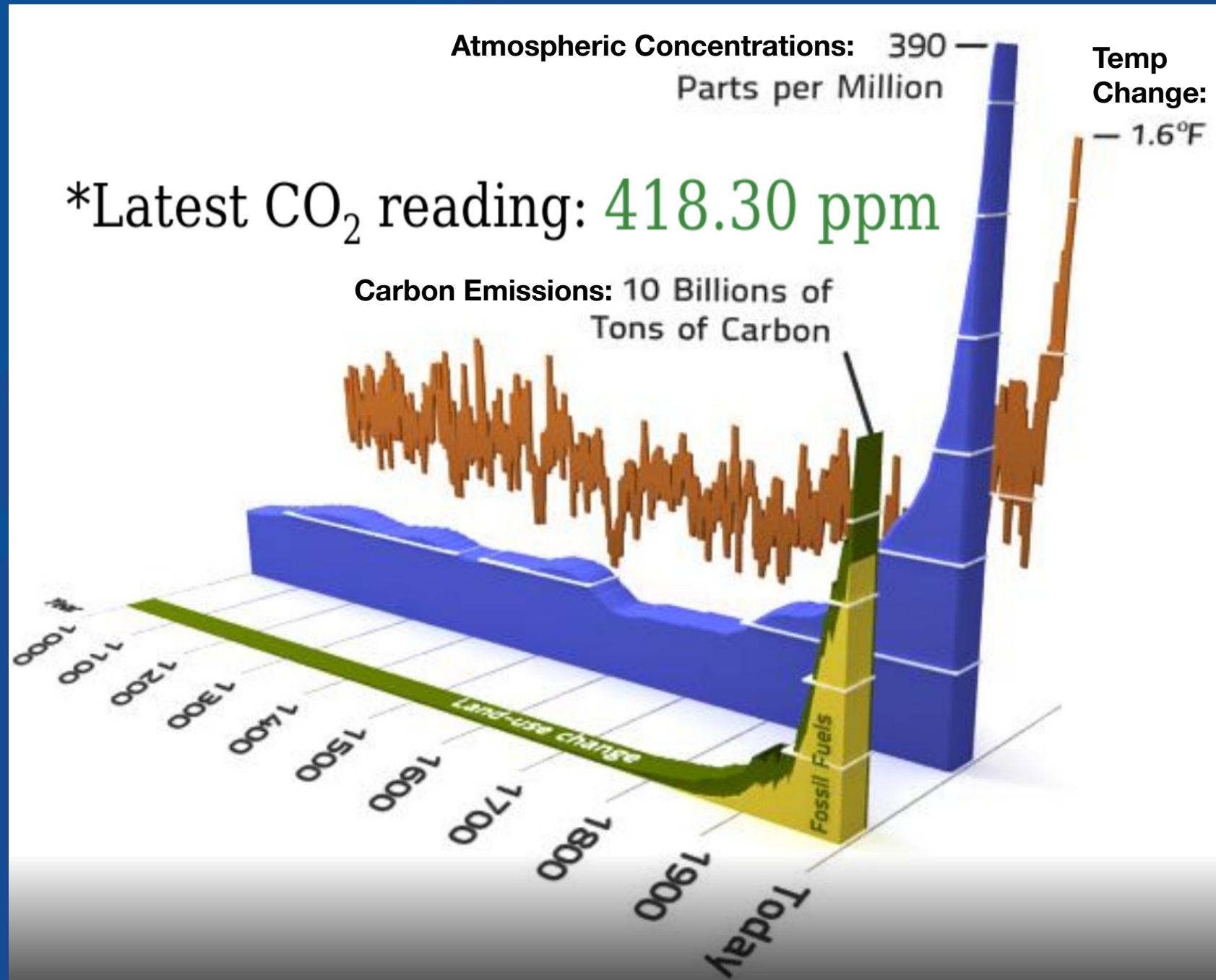
CLIMATE 
 **INTERACTIVE**

MIT
MANAGEMENT

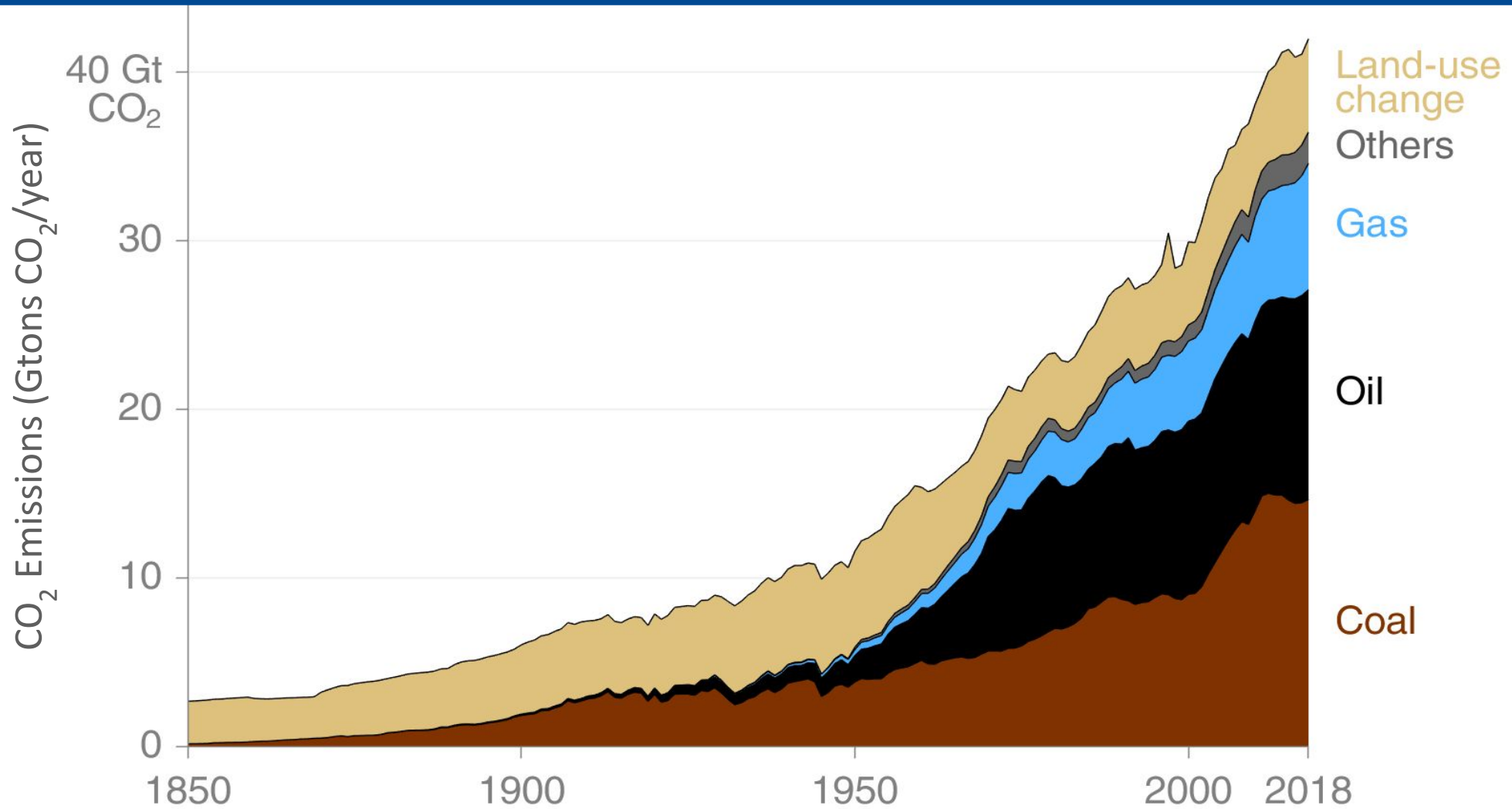
Sustainability
Initiative

1000 Years of History

- Carbon Emissions
- Atmospheric Concentrations
- Temperature Change



CO₂ Emissions by Source



© Global Carbon Project • Data: CDIAC/GCP/UNFCCC/BP/USGS

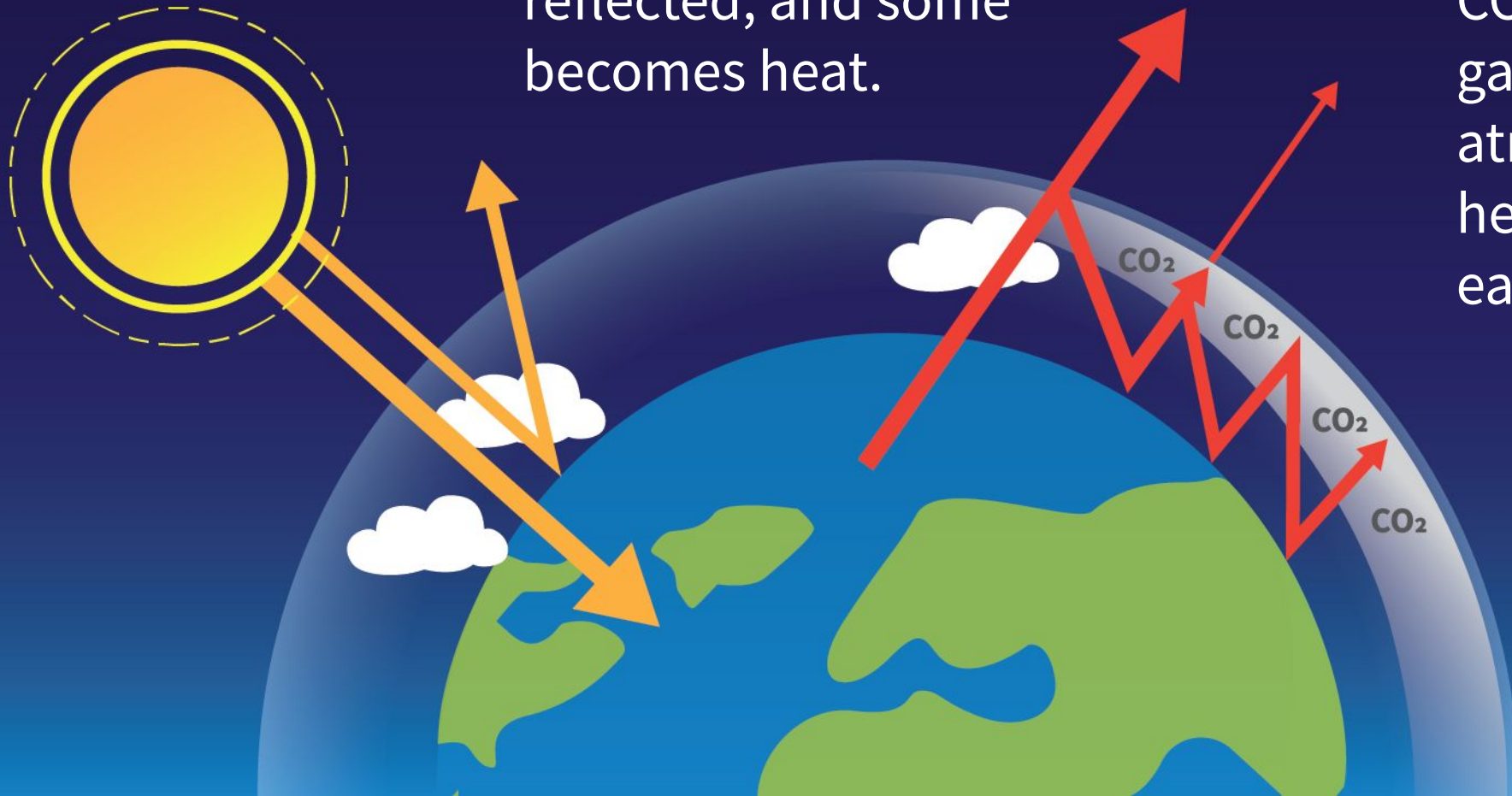
Source: Carbon Dioxide
Information Analysis Center (CDIAC)

Others = Emissions from cement production and gas flaring

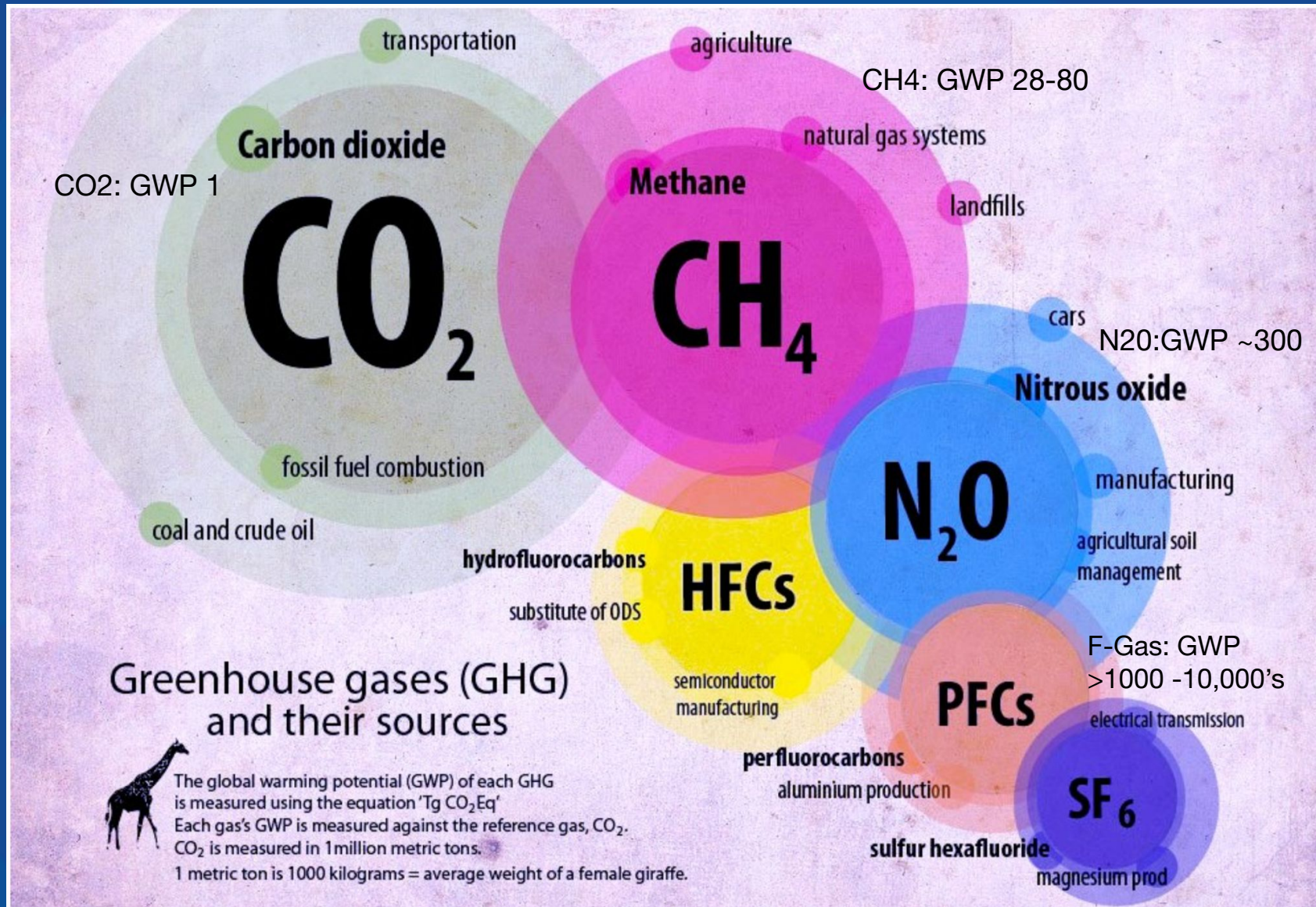
Greenhouse Gases Are Changing The Climate

Some sunlight that hits the earth is reflected, and some becomes heat.

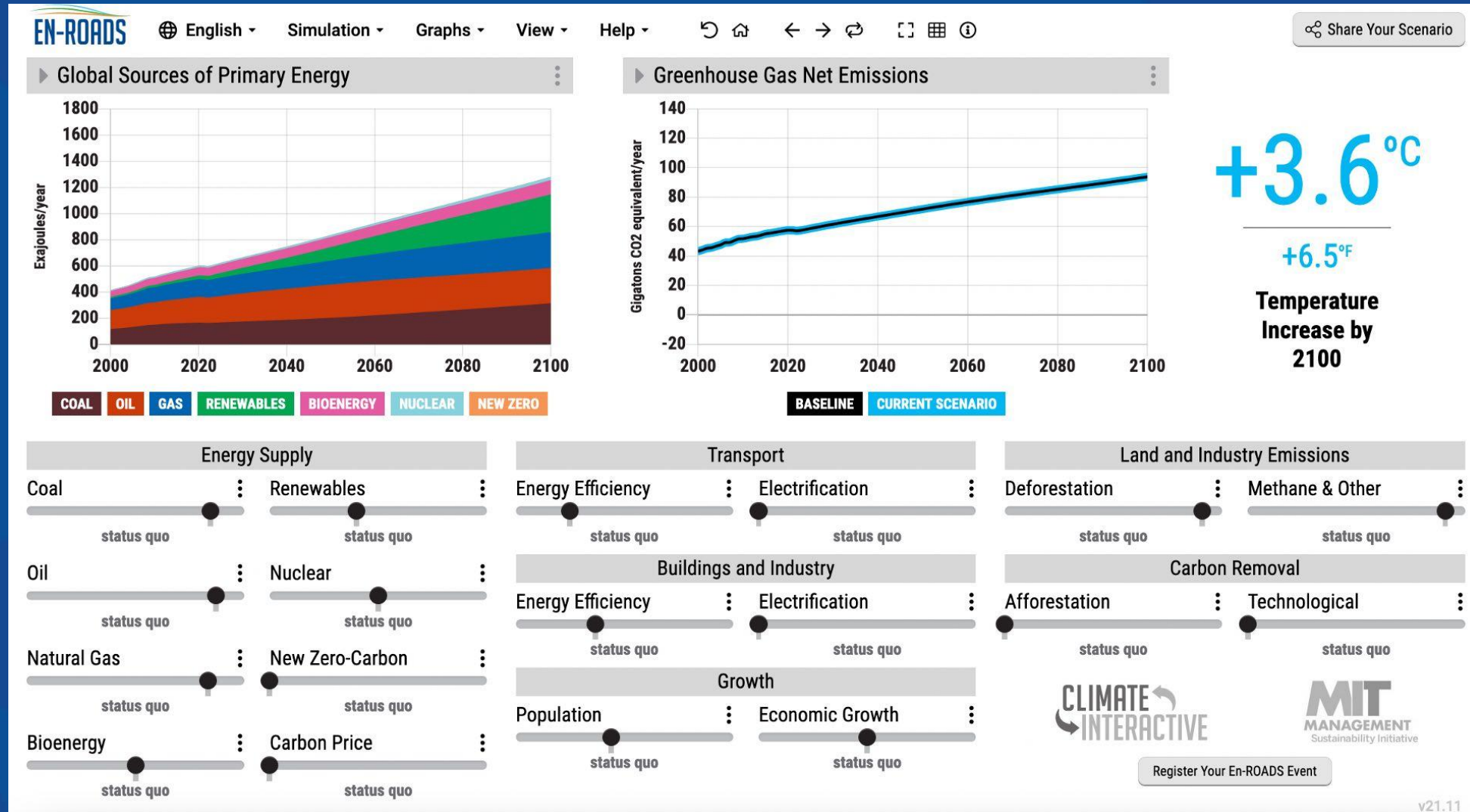
Some heat can escape. But excess CO_2 and other gases in the atmosphere trap heat, keeping the earth warm.



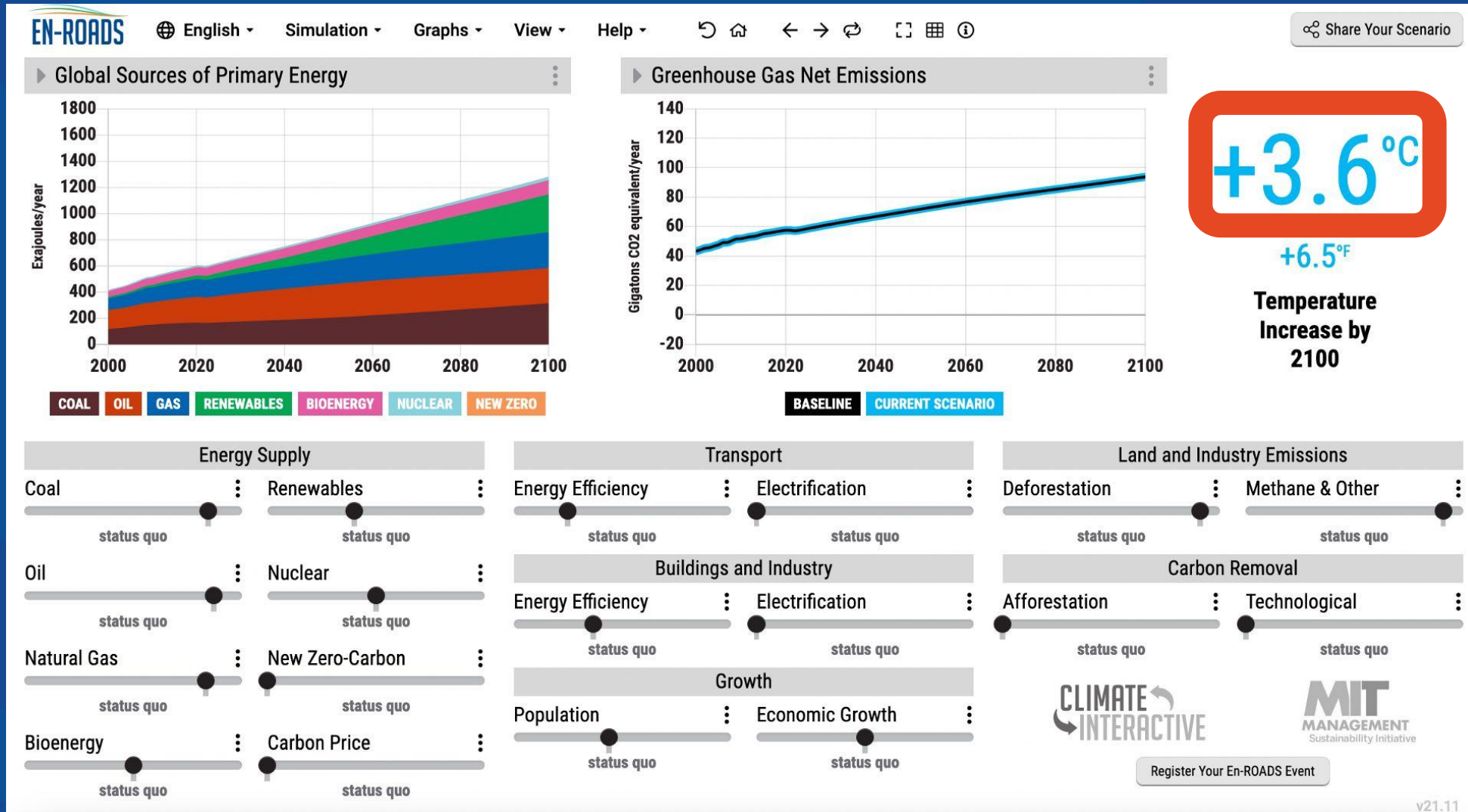
What Makes Up Greenhouse Gases (GHG)?



En-ROADS is a cutting-edge simulation model used to **test** climate solutions and **generate** climate scenarios for the future.



En-ROADS is a cutting-edge simulation model used to **test** climate solutions and **generate** climate scenarios for the future.



What would 3+ °C (or 5.4+ °F) of warming mean?



Arctic sea ice is gone in **2 out of every 3** summers¹



50% of insect species lose >50% of their habitat range²



Drought: **11 months longer**

Increase in average drought length³

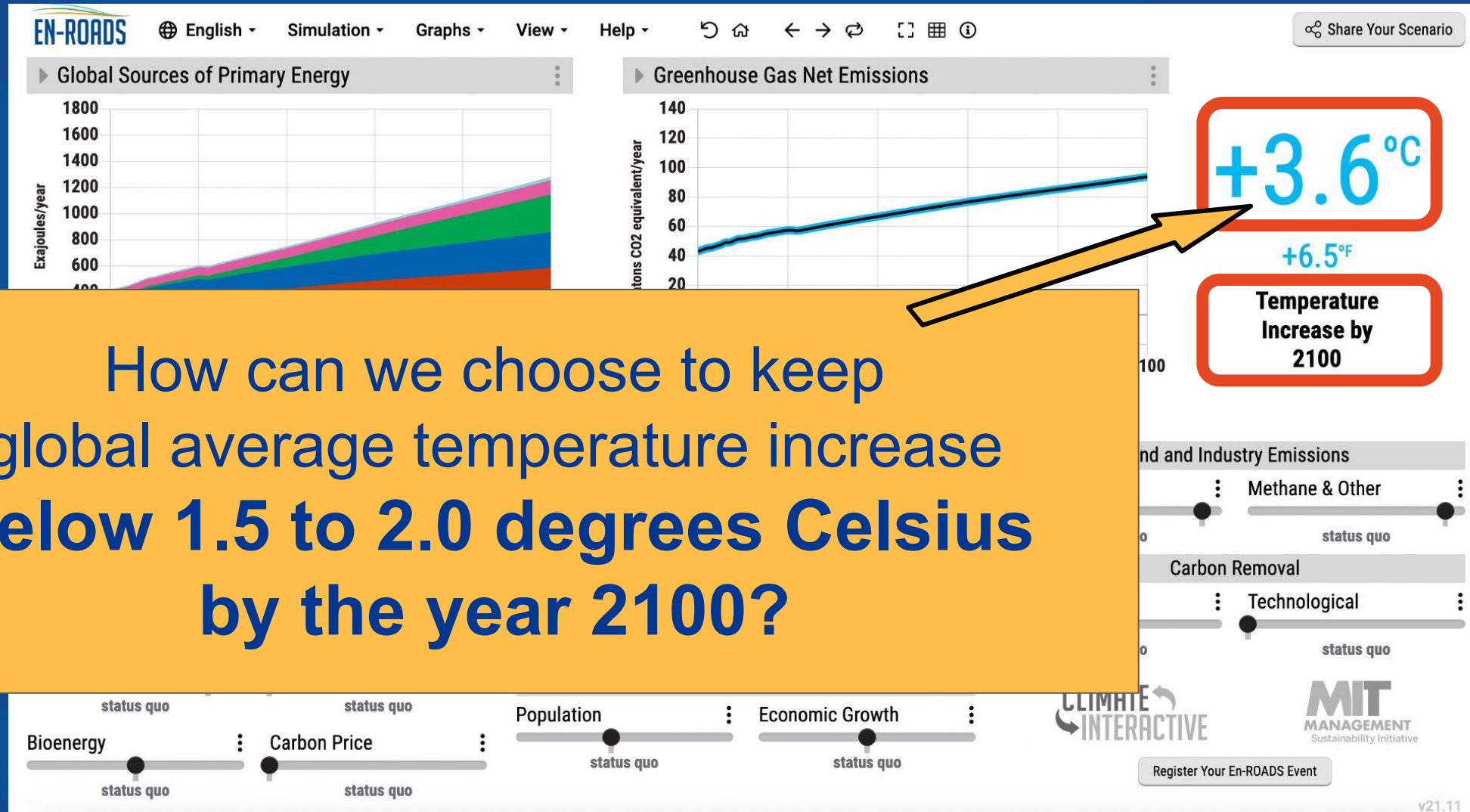


Area burned by summer wildfires in Mediterranean **doubles⁴**

Compared to today

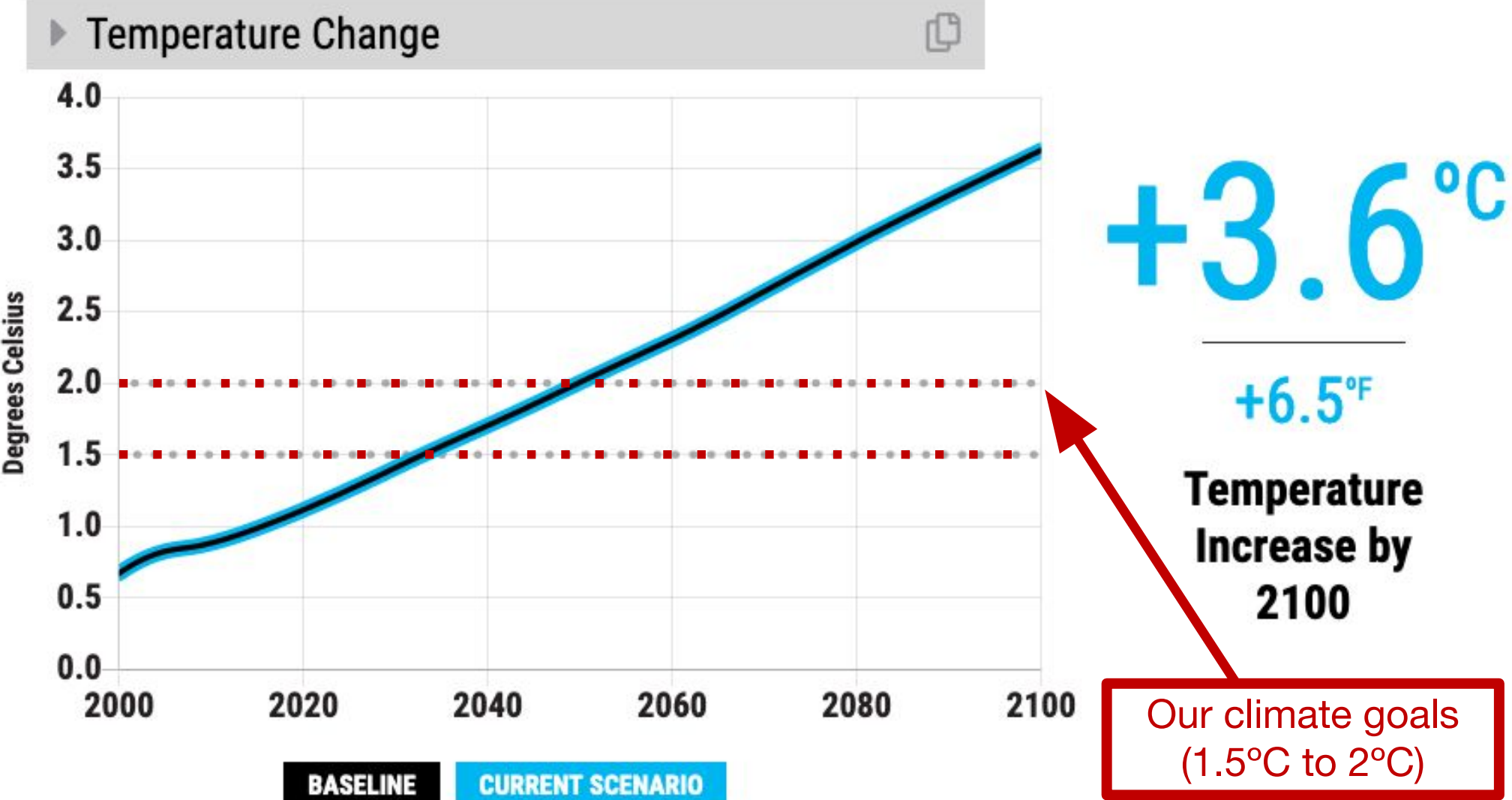
See the impacts of your scenario in the Impacts graph section of En-ROADS

En-ROADS is a cutting-edge simulation model used to **test** climate solutions and **generate** climate scenarios for the future.



How can we choose to keep global average temperature increase below **1.5 to 2.0 degrees Celsius** by the year 2100?

Baseline scenario



Choose Your Own Climate Future

Let's create the scenario you prefer...
...that solves the climate challenge

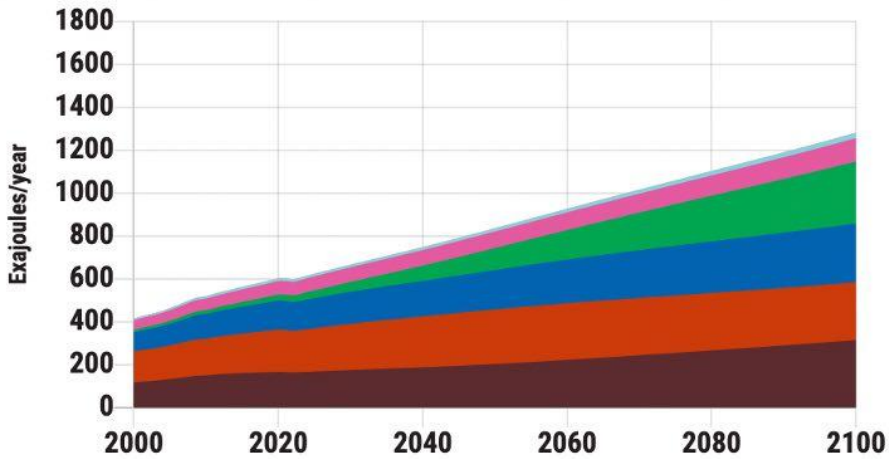
En-ROADS Simulations



Over **190,000** participants in **104** countries

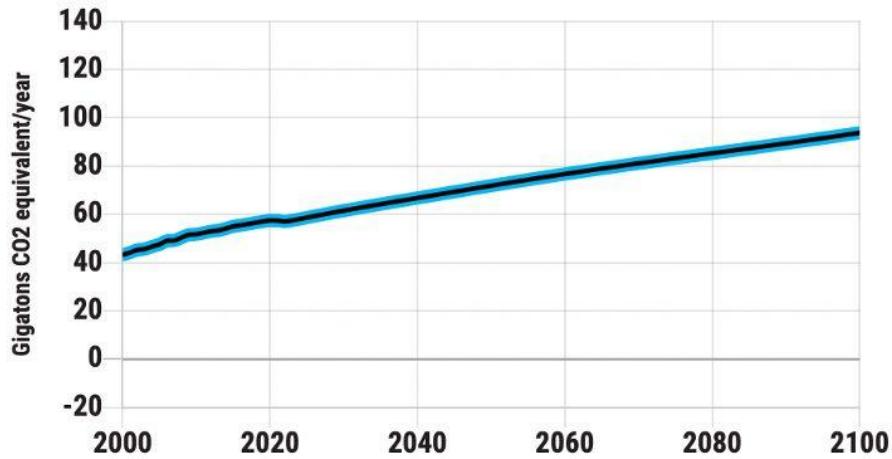


Global Sources of Primary Energy



COAL OIL GAS RENEWABLES BIOENERGY NUCLEAR NEW ZERO

Greenhouse Gas Net Emissions



BASELINE CURRENT SCENARIO

+3.6°C

+6.5°F

Temperature Increase by 2100

Energy Supply

Coal: status quo

Oil: status quo

Natural Gas: status quo

Bioenergy: status quo

Renewables: status quo

Nuclear: status quo

New Zero-Carbon: status quo

Carbon Price: status quo

Transport

Energy Efficiency: status quo

Electrification: status quo

Buildings and Industry

Energy Efficiency: status quo

Electrification: status quo

Growth

Population: status quo

Economic Growth: status quo

Land and Industry Emissions

Deforestation: status quo

Methane & Other: status quo

Carbon Removal

Afforestation: status quo

Technological: status quo

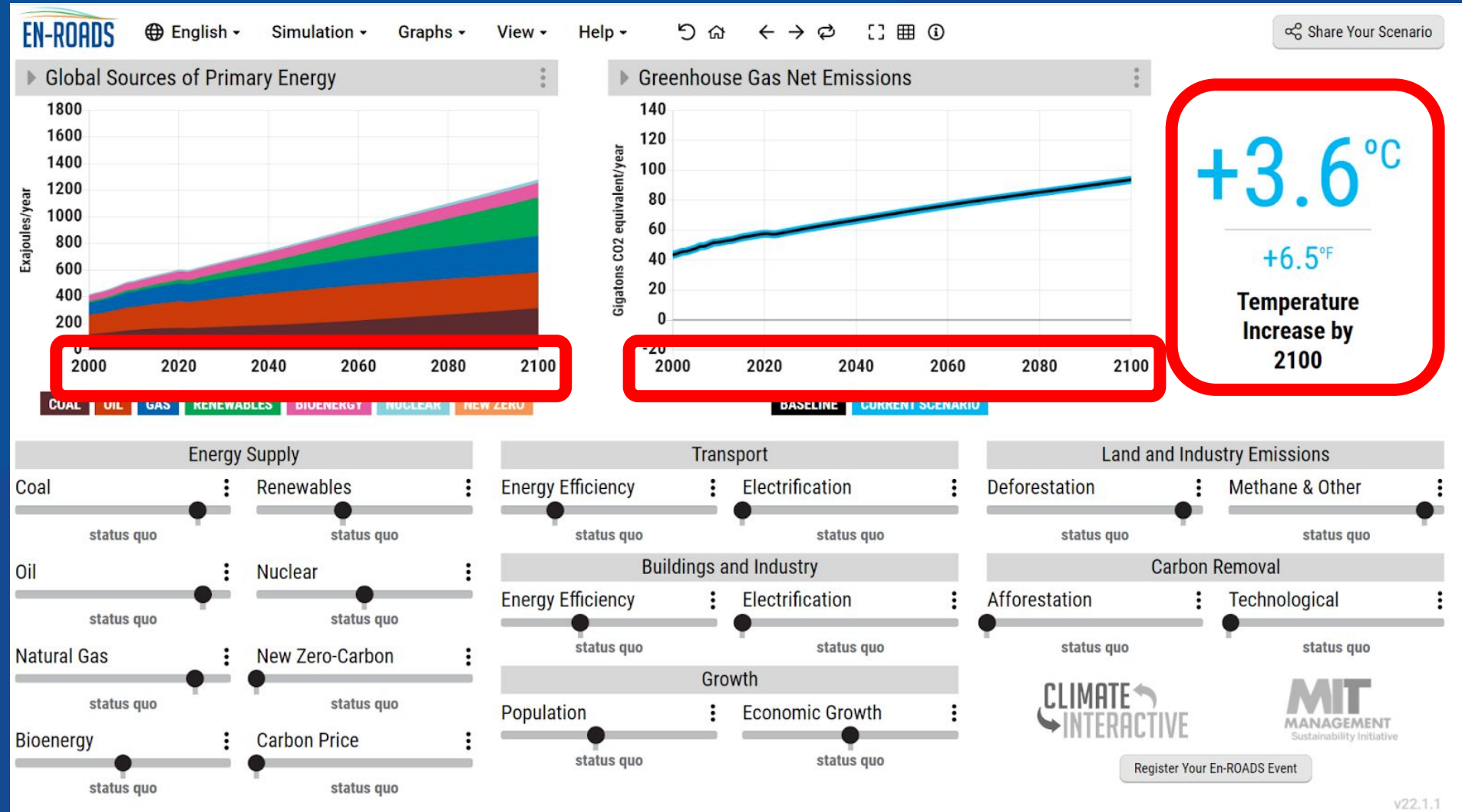


Register Your En-ROADS Event

Impact vs Solutions

The Impact of Our Actions

Our Possible Solutions



Coal
Discourage or encourage mining coal and burning it in power plants.

Renewables
Encourage or discourage building solar panels, geothermal, and wind turbines.

Transport Energy Efficiency
Increase or decrease the energy efficiency of vehicles, shipping, air travel, and transportation systems.

Transport Electrification
Increase or decrease purchases of new electric cars, trucks, buses, trains, and ships.

Methane & Other Gases
Decrease or increase greenhouse gas emissions from methane, nitrous oxide, and the f-gases.

Oil
Discourage or encourage drilling, refining, and consuming oil for energy.

Nuclear
Encourage or discourage building nuclear power plants.

Buildings & Industry Energy Efficiency
Increase or decrease the energy efficiency of buildings, factories, appliances, and other machines.

Buildings & Industry Electrification
Increase or decrease the use of electricity in buildings, appliances, motors, and other machines, instead of fuels like oil or gas.

Energy Supply

Coal :: Renewables

Oil :: Nuclear

Natural Gas :: New Zero-Carbon

Bioenergy :: Carbon Price

Transportation

Energy Efficiency :: Electrification

Land and Industry Emissions

Deforestation :: Methane & Other

Buildings and Industry

Energy Efficiency :: Electrification

Carbon Removal

Afforestation :: Technological

Growth

Population :: Economic Growth

Register Your En-ROADS Event

Natural Gas
Discourage or encourage drilling and burning natural gas for energy.

New Zero-Carbon
Discover a brand new, cheap source of electricity that does not emit greenhouse gases.

Economic Growth
Assume higher or lower growth in goods produced and services provided.

Afforestation
Plant new forests and restore old forests.

Deforestation
Decrease or increase the loss of forests for agricultural and wood product uses.

Bioenergy
Discourage or encourage the use of trees, forest waste and agricultural crops to create energy.



















Carbon Price
Set a global carbon price that makes coal, oil, and gas more expensive depending on how much carbon dioxide they release.

Population
Assume higher or lower population growth.



















Technological Carbon Removal
Pull carbon dioxide out of the air with new technologies that enhance natural removals or manually sequester and store carbon.

See PDF at:
https://drive.google.com/file/d/1EMt9vOQ7GDDWSot0Olc9g5P5TkNa7c7d/view?usp=share_link

Multisolving co-benefits for En-ROADS

Energy Supply		Transport		Land and Industry Emissions	
<p>Coal Taxing reduces air and water pollution, improving community and ecosystem health. </p>	<p>Renewables  Subsidizing reduces air & water pollution, improves health, productivity, savings, energy access, and job opportunities.</p>	<p>Energy Efficiency Increasing lowers energy costs. Improves public transit reduces traffic congestion & noise. Biking & walking increases physical activity & health savings. </p>	<p>Electrification Increasing creates jobs in manufacturing & sales of electric batteries & engines. Improves air quality at the source, increasing health savings & worker productivity. </p>	<p>Deforestation Reducing decreases erosion, protects biodiversity, ecosystems, & food sources. Preserves small-scale resource gathering & sustainable forestry livelihoods. </p>	<p>Methane & Other Reducing improves water pollution & protects marine habitats. Plant-based diets are healthier for individuals and ecosystems. </p>
<p>Oil Taxing reduces chance of harmful oil spills. Improves national security & lowers military costs. </p>	<p>Nuclear Taxing reduces risk of exposure to radiation from nuclear meltdown or hazardous waste. Protects health of uranium miners. </p>	<p>Buildings & Industry</p>		<p>Carbon Removal</p>	
<p>Natural Gas Taxing improves water security & quality, protects wildlife and biodiversity. </p>	<p>New Zero Carbon Research advancements in new technologies can create jobs and may be useful for other applications. </p>	<p>Energy Efficiency Increasing reduces energy demand & cost. Improves indoor air quality & health outcomes. Creates weatherization jobs. </p>	<p>Electrification Increasing reduces noise pollution from motor engines, generators, & furnaces. Lowers energy costs. Improves indoor and outdoor air quality. </p>	<p>Afforestation Increasing creates jobs in tree planting & care. Urban tree canopies reduce urban heat island effect which conserves energy. </p>	<p>Technological Growth in nature-based carbon removal approaches like agricultural soil sequestration may help improve small-holder and farmer profits. </p>
<p>Bioenergy Taxing frees land for food production. Improves water & air quality, protects habitats. </p>	<p>Carbon Price Improves air quality, healthcare savings, & worker productivity. Makes renewable energy relatively cheaper. Funds can be earmarked for social programs. </p>	<p>Growth</p>			
		<p>Population Low growth reduces global consumption. Access to family planning, reproductive services, & education enhances quality of life for women. </p>	<p>Economic Growth Low growth shifts focus from material consumption to alternative measures of wellbeing such as gross national happiness. </p>		

Equity Considerations for En-ROADS

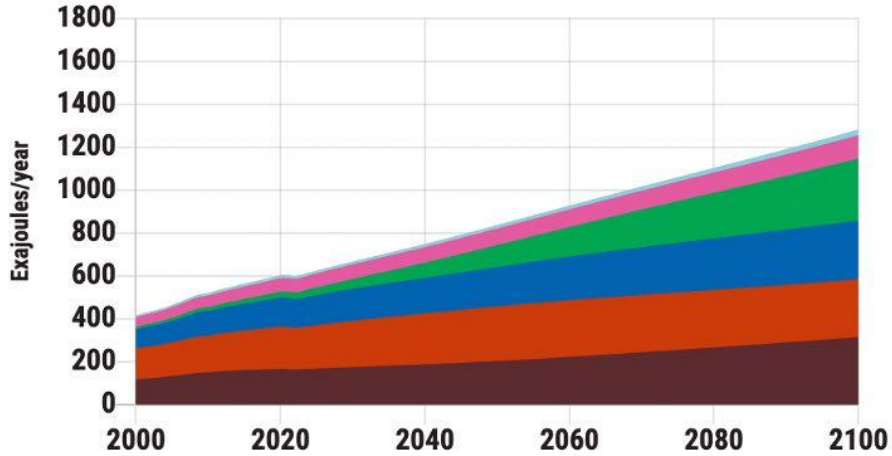
Energy Supply		Transport		Land and Industry Emissions	
<p>Coal Taxing raises energy costs. Low-income individuals rely on coal jobs yet suffer the most negative impacts of its production. </p>	<p>Renewables Many developed countries limit subsidy programs to homeowners. Poorer communities remain unable to access the technology. </p>	<p>Energy Efficiency High-quality pedestrian & cycling infrastructure is often concentrated in wealthier, white communities. Improved public transportation can improve social equity. </p>	<p>Electrification Electric vehicles and charging stations are not affordable or available to everyone. Lithium and copper mining severely harms ecosystems. </p>	<p>Deforestation Preservation efforts have restricted the access of Indigenous people who have lived sustainably on the land for generations. Policies to reduce deforestation need local stakeholder engagement. </p>	<p>Methane & Other Cultural values attached to certain foods. Policies to reduce methane & other gases may decrease food security. Local economies and employment that rely on industrial agriculture can be threatened. </p>
<p>Oil Industry protections must be eliminated. Essential to provide low skill and high skill workers new job pathways. </p>	<p>Nuclear Plants, mines, & waste sites often located in low-income areas that lack resources to advocate for stricter regulations. </p>	<p>Buildings & Industry</p>		<p>Carbon Removal</p>	
<p>Natural Gas Poor communities & communities of color disproportionately experience negative impacts of drilling and burning. </p>	<p>New Zero Carbon There are unknown consequences and risks associated with new energy sources. </p>	<p>Energy Efficiency High up-front costs of efficiency improvements. Policies often directed to property owners, inhibiting low-income renters from accessing the benefits. </p>	<p>Electrification High up-front costs of switching energy systems to electric. Household air pollution is unevenly distributed within and across countries. </p>	<p>Afforestation Large shifts in land can compromise historic land access. Policies to grow afforestation should avoid creating monocultures of trees that are all the same species & age. </p>	<p>Technological Many approaches have not yet been developed at scale and growing technological removal poses unknown risks and consequences to the communities they are situated within. </p>
<p>Bioenergy Subsidizing may accelerate deforestation and can negatively impact farmer livelihoods by shifting agriculture markets. </p>	<p>Carbon Price Fossil fuel workers risk losing their jobs. Higher costs may be passed on to consumer. Companies can find loop holes or exemptions due to corruption & rent-seeking. </p>	<p>Population Policies around limiting population growth should be voluntary, accessible, & empower women to make the choices that are best for them. </p>	<p>Economic Growth Gains in growth have gone to the world's wealthiest in recent decades. Policies must be tailored to specific local and regional circumstances. </p>		

Three Criteria to Consider

- How fast and effective in lowering GHG and temperature?
-

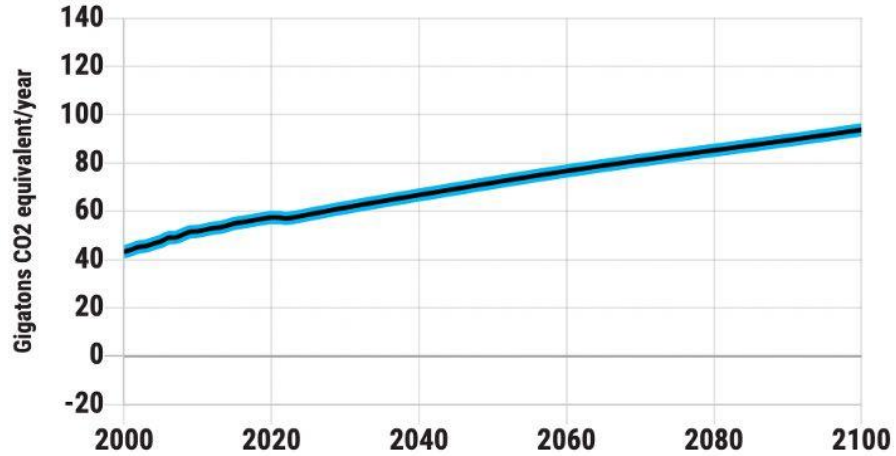
- What are the valuable co-benefits?
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Global Sources of Primary Energy



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Oil | Nuclear | Energy Efficiency | Electrification | Carbon Removal | Technological

Natural Gas | New Zero-Carbon | Population | Economic Growth

Bioenergy

Let's GO!

<https://en-roads.climateinteractive.org/scenario.html?v=22.7.0>

CLIMATE INTERACTIVE | MIT MANAGEMENT Sustainability Initiative

Typical “Discoveries” from En-ROADS

1. Personal lifestyle choices are not sufficient for system-wide change.
2. All successful scenarios significantly cut burning of coal, oil, and gas in the next 10-20 years.
3. **A price on carbon is the quickest, most effective way to change the “whole system” that produces GHG.**
4. There are many lower-leverage actions that help address climate change globally but which are not as high of a priority as reducing fossil fuel use.

So, Now What?

Paul Hawken, Editor, Drawdown:

“It is estimated that between 98 and 99 percent of humanity is disengaged [from climate change.]

Your friends might be engaged, but between 98 and 99 percent of humanity is disengaged.

From the earth’s point of view, there’s no difference between a climate denier and someone who understands the problem but doesn’t actually do anything.”

What can I do?



My Comfort Zone

Where the Magic Happens

What can I do?

You really can make a profound difference on big issues with your voice as a citizen.

You probably haven't because of your sense of powerlessness and resignation about politics.

If you find an organization committed to dissolving the powerlessness, you can make that profound difference.

Find an organization that

- builds chapters,
- provides training,
- makes key asks of elected officials, and
- encourages you to be audacious.

When you are trained and encouraged as an advocate, you will succeed at doing things you never thought you could do.

Then you will see yourself in a new light – as a community leader.

And ...you will be **amazed!**

What can I do?

There are five core activities that CCL chapters leverage to bring citizens into the political process and to make constructive change possible.

Our volunteers & the 5 levers of political will

Chapters work to build support for climate action with their members of Congress.

There are five core activities that CCL chapters leverage to bring citizens into the political process and to make constructive change possible.

CCL Chapter



Chapters are comprised of everyday people who live within the same congressional district.

Lobbying Congress



Media Relations



Grassroots Outreach

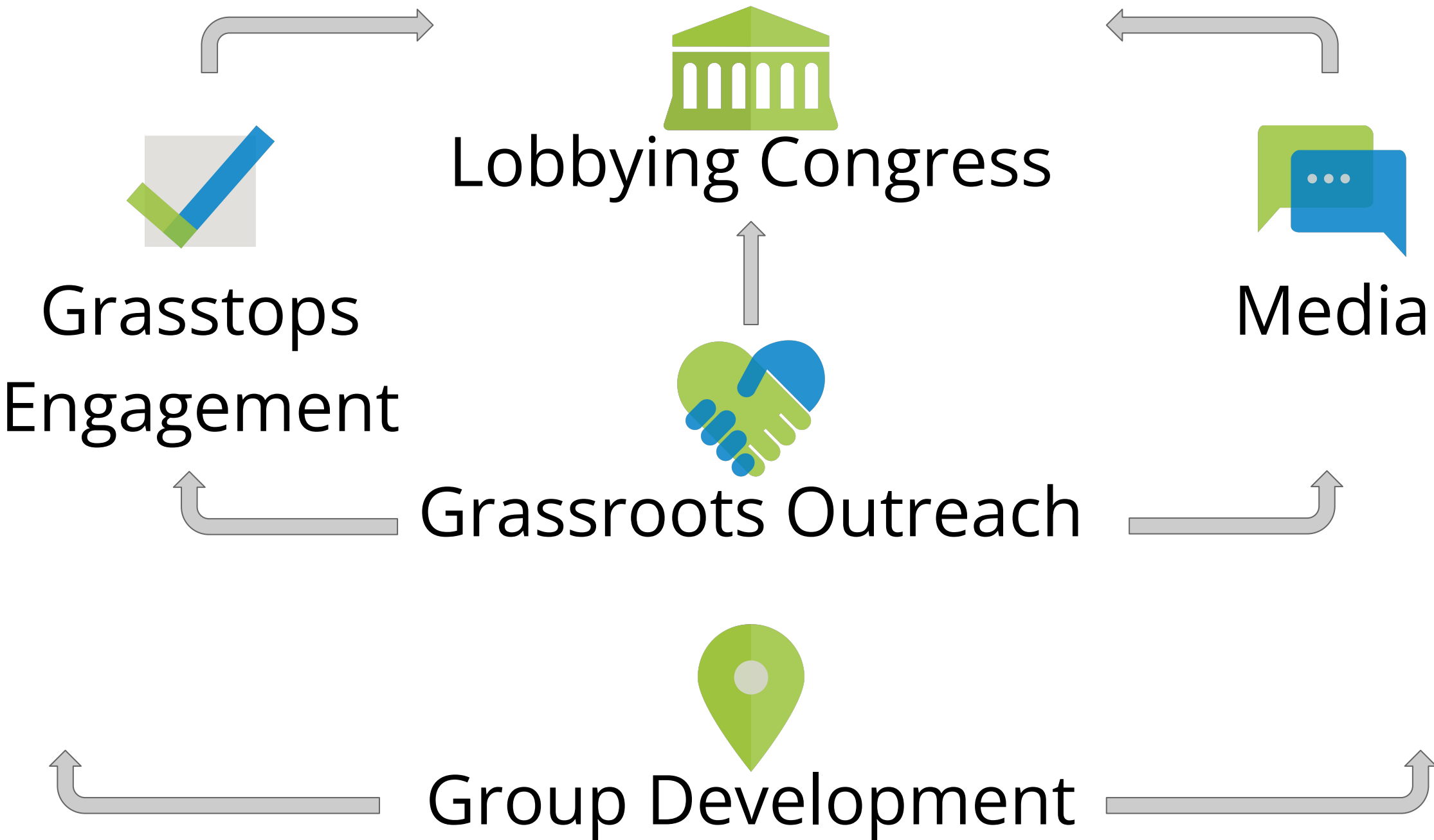


Grasstops Engagement



Group Development





Citizens' Climate Lobby Core Areas of Focus

Carbon Pricing & Carbon Border Adjustment Mechanisms (CBAMs) +

Clean Energy Permitting Reform +

Building Electrification and Efficiency +

Healthy Forests +

Debrief