



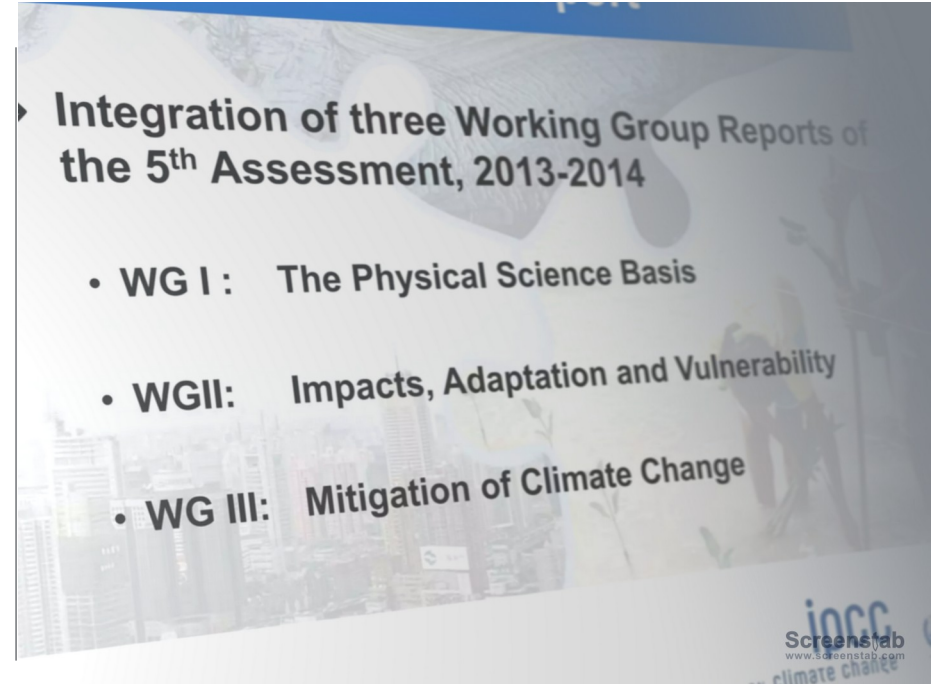
Ivey

CORPORATIONS & SOCIETY: NET ZERO



How to think through climate change?

- Convention: Separate out physical and social dimensions
- Drawing on:
 - Intergovernmental Panel on Climate Change
 - Founded in 1988, 195 member states



The Physical Science Base

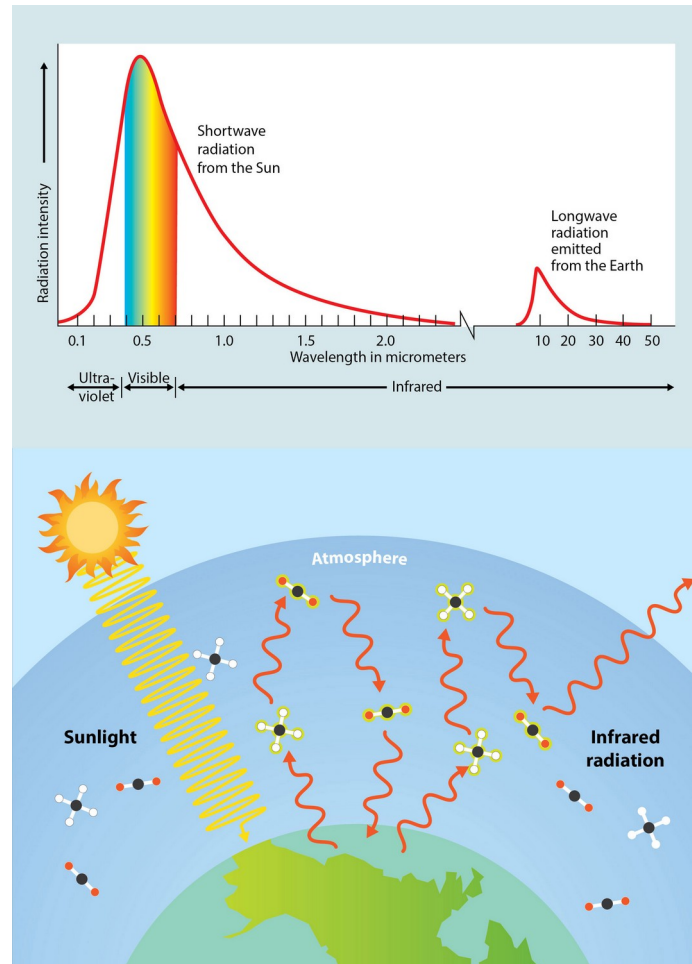


- Questions:
 - Are you familiar with the physical mechanism behind climate change?
 - How do CO₂ and other gases in the atmosphere affect global climate?
 - Where did you learn about it?

The physical science base

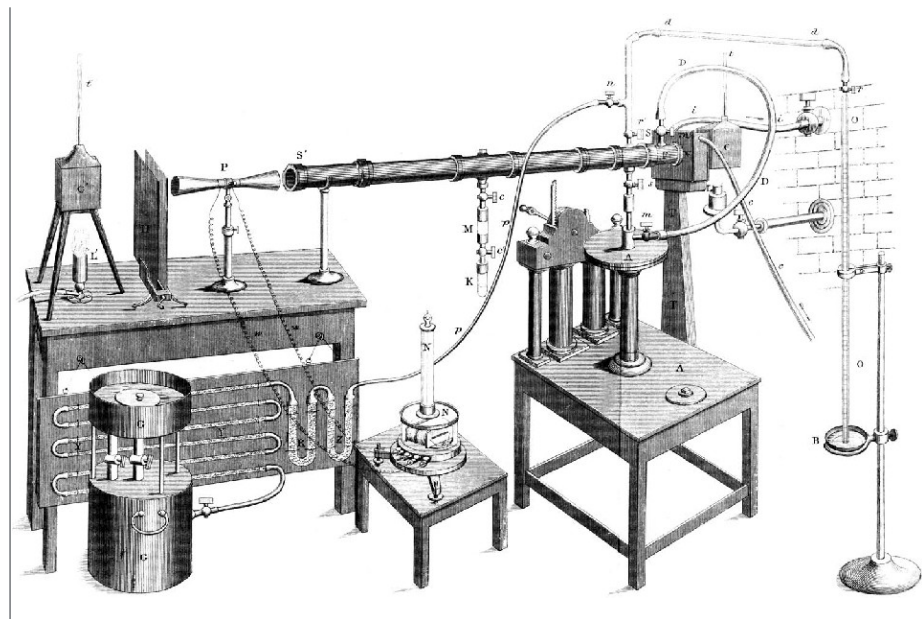
- How do CO₂ and other gases in the atmosphere affect global climate?
 - Earth's energy budget
 - Solar radiation vs. infrared radiation

<https://ugc.berkeley.edu/background-content/re-radiation-of-heat>



The physical science base II

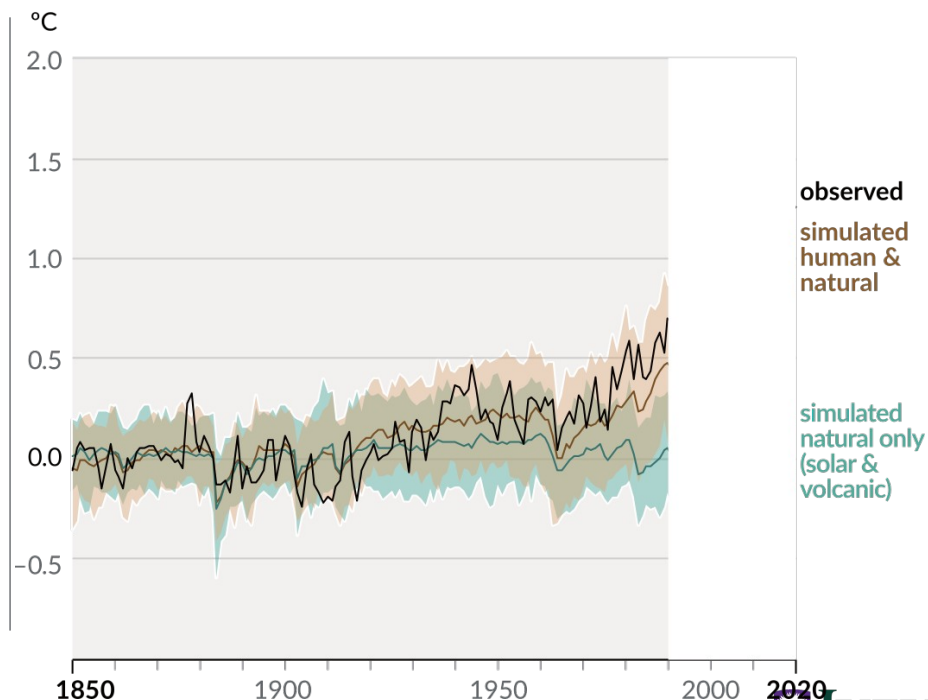
- Mechanism is:
 - Long established (Arrhenius, 1896; Tyndall, 1861)
 - Easy to observe



The physical science base II

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- Why now?
 - Scientists like certainty (e.g., 95% confidence)
 - Variability of climate from other sources
 - Suitable data at global scale

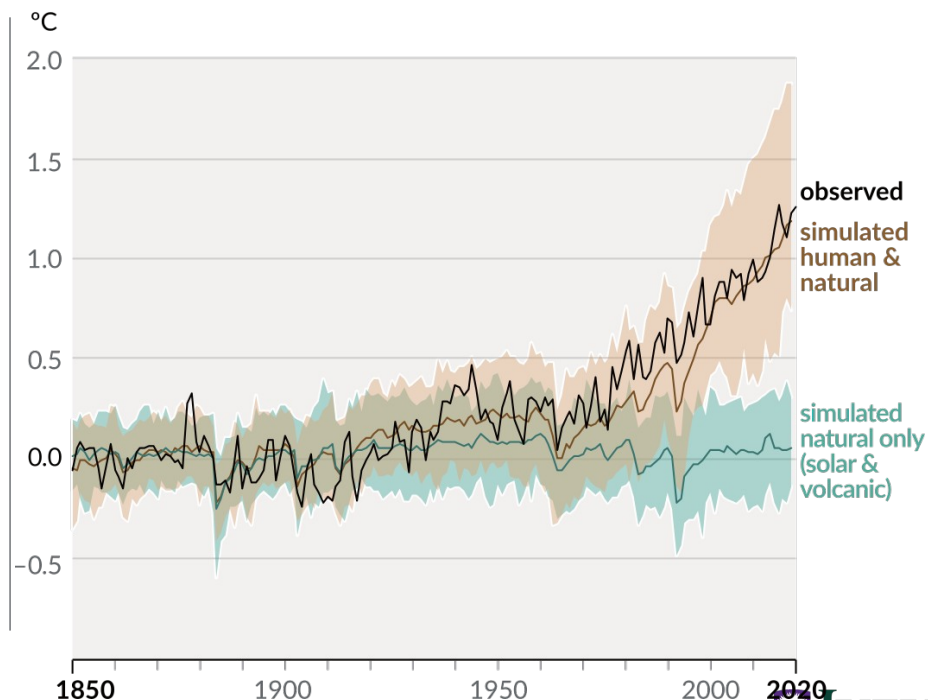
(b) Change in global surface temperature (annual average) as **observed** and simulated using **human & natural** and **only natural** factors (both 1850–2020)



The physical science base II

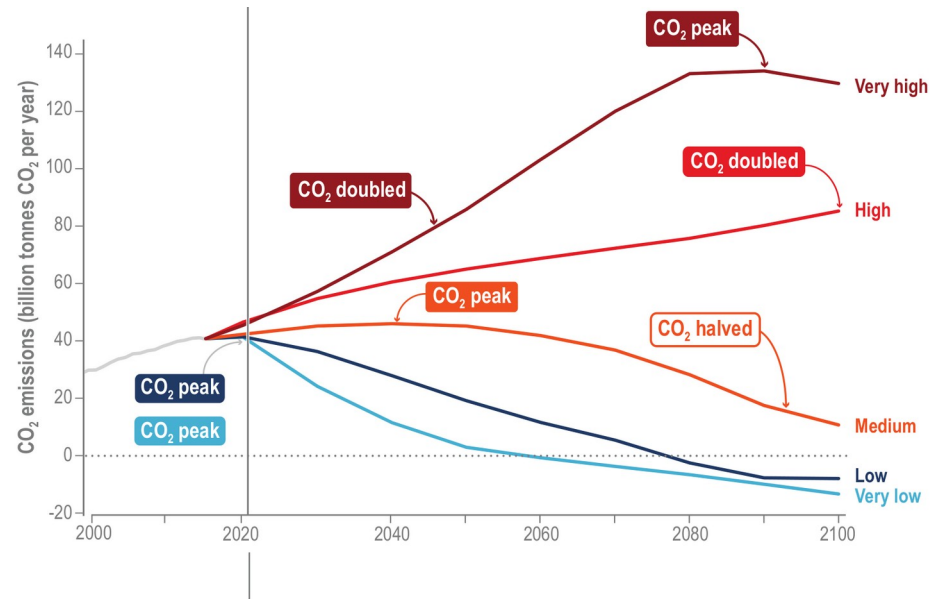
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- Since ~1998, there is certainty due to:
 - In 1900, concentration of CO₂ <300 parts per million
 - in 1990s >350 parts per million (today ~420)
 - Critical evidence provided by Mann, Bradley, and Hughes (1998)

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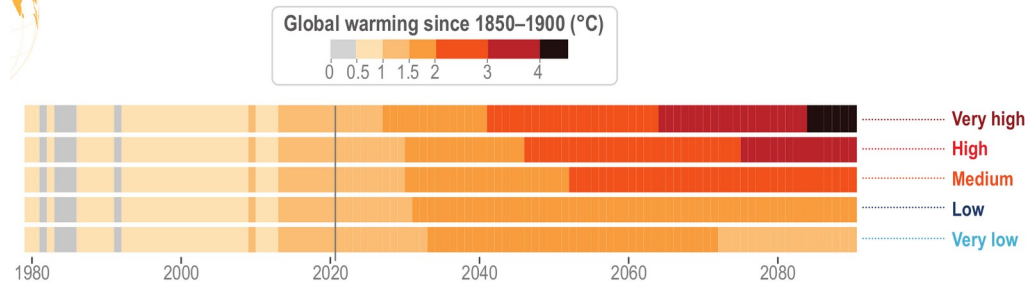
Net zero challenge

- CO₂ stays in the atmosphere for 300-1,000 years.
 - Cumulative climate impacts.
- Thought experiment:
 - Your boss set 1.5°C goal
 - No indication for immediate plunge of emissions
 - Ask science to provide pathway
- Hypothetical solution: zero emissions by 2050/2080



Effect on surface temperature

For temperature to stabilize, CO₂ emissions need to reach net zero.



Net zero on company level

What did you find?

What types of claims do they make? Emissions? Offsets? Carbon Intensity?

Breakout

- In groups of ~3
- Look at 1–3 companies' climate targets:
 - Do they mention net zero?
 - Do they mention scope 1, scope 2, scope 3?
 - Do they mention carbon offset?
 - Do they mention carbon intensity/efficiency or emissions per unit sold or emissions per revenue/profit etc.?
 - *What do they actually plan to do?*
- Many companies register their targets at:
<https://sciencebasedtargets.org/companies-taking-action#dashboard>



Core concepts

- **Carbon efficiency**
 - Total emissions / revenue
- **Absolute vs. relative reduction**
 - Absolute:
 - Canada pre-covid 2019: 585 MMT CO2
 - Canada during covid 2020: 535 MMT CO2
 - absolute reduction of 50 MMT CO2
 - Relative:
 - Year 1: sell 10 units, emit 10 tons CO2
 - Year 2: sell 20 units, emit 18 tons of CO2
 - 10% relative improvement
- **Scope 1, scope 2, scope 3**
 - Scope 1: direct emissions
 - Scope 2: energy consumption
 - Scope 3: indirect emissions
 - Business travel, customers' energy usage, raw material input/output
- **Carbon offset**
 - Company A pays for organization B to implement emission reduction, claims project toward its target

<https://netzeroclimate.org> (University of Oxford)

Concerns

Let's tell it like it is. Using bogus 'net-zero' pledges to cover up massive fossil fuel expansion is reprehensible.

—United Nation's Secretary-General António Guterres on “emission gap” between pledges and actual emissions

- **“Future-washing”**

- Company A makes pledge for 2035, but no immediate, substantial projects
- 2035 approaches, goal post is moved

- **Carbon offset**

- Guardian: 94% of credits had no benefit
- One company responds: “*Sylvera's Research Shows 30% Are High Quality*”
 - <https://sylvera.com/blog/guardian-offsets-response>

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Revealed: more than 90% of rainforest carbon offsets by biggest certifier are worthless, analysis shows

Investigation into Verra carbon standard finds most are 'phantom credits' and may worsen global heating

- 'Nowhere else to go': Alto Mayo, Peru, at centre of conservation row
- Greenwashing or a net zero necessity? Scientists on carbon offsetting
- Carbon offsets flawed but we are in a climate emergency

Most viewed

- Tucker Carlson firestorm over Trump texts threatens to engulf Fox News
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- Fox News braces for turbulence as second defamation laws advances
- Three-year-old plane accidentally shot down in Texas

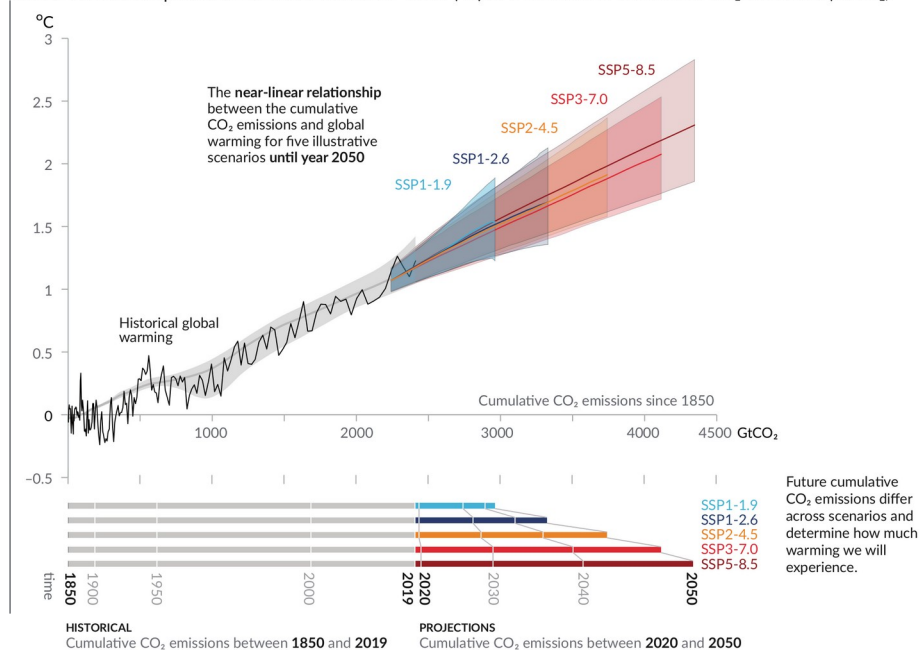
Bottom line

Welsby, Price, Pye, and Ekins (2021):
“Unextractable fossil fuels in a 1.5°C world”

- Simple formula:
 - Climate change direct function of emissions
 - To reduce climate change, reduce emissions
 - To assess if emission reduction is effective, judge emissions at source, i.e., fossil fuel extraction/consumption
 - *At the core* that is all there is to net zero
- Present-day reductions stem from shutting down coal power plants, sulfur dioxide filters
- Easy, reliable way to remove carbon: new natural forests (Lewis, Wheeler, Mitchard, and Koch, 2019)

Every tonne of CO₂ emissions adds to global warming

Global surface temperature increase since 1850–1900 (°C) as a function of cumulative CO₂ emissions (GtCO₂)



Resources

Web

- Oxford Net Zero
 - <https://netzeroclimate.org>
- Understanding Global Change (UC Berkeley)
 - <https://ugc.berkeley.edu/>
- United Nations Emissions Gap Report
 - <https://unep.org/resources/emissions-gap-report-2022>
- United Nations climate impact fact sheets
 - <https://ipcc.ch/report/ar6/wg2/about/factsheets>
- Science Based Targets initiative (SBTi)
 - <https://sciencebasedtargets.org>

Literature

- Montgomery, A. Wren, Tom P. Lyon, and Julian Barg. forthcoming. “No End in Sight? A Greenwashing Review and Research Agenda.” *Organization & Environment*.
- Mann, Michael E. 2012. *The Hockey Stick and the Climate Wars: Dispatches from the Front Lines*. Columbia University Press.
- Welsby, Dan, James Price, Steve Pye, and Paul Ekins. 2021. “Unextractable Fossil Fuels in a 1.5 °C World.” *Nature* 597(7875):230–34.
- Lewis, Simon L., Charlotte E. Wheeler, Edward T. A. Mitchard, and Alexander Koch. 2019. “Restoring Natural Forests Is the Best Way to Remove Atmospheric Carbon.” *Nature* 568(7750):25–28.

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Arrhenius, S. (1896).

XXXI. On the influence of carbonic acid in the air upon the temperature of the ground. *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science*, 41(251), 237–276.

Lewis, S. L., Wheeler, C. E., Mitchard, E. T. A., and Koch, A. (2019).

Restoring natural forests is the best way to remove atmospheric carbon. *Nature*, 568(7750), 25–28.

Mann, M. E., Bradley, R. S., and Hughes, M. K. (1998). Global-scale temperature patterns and climate forcing over the past six centuries. *Nature*, 392(6678), 779–787.

Tyndall, J. (1861).

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Welsby, D., Price, J., Pye, S., and Ekins, P. (2021). Unextractable fossil fuels in a 1.5 world. *Nature*, 597(7875), 230–234.