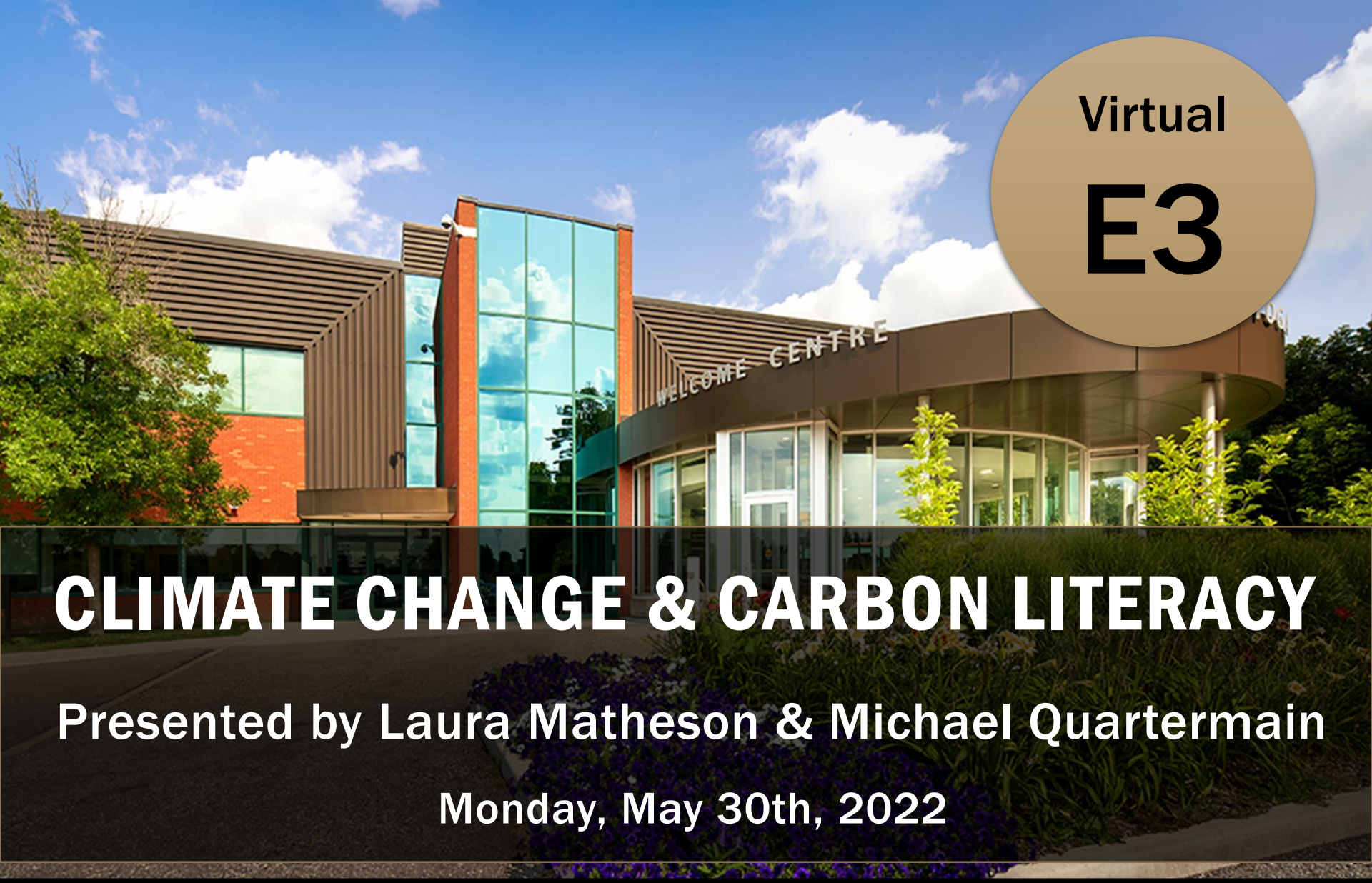

Virtual

E3

CLIMATE CHANGE & CARBON LITERACY

Presented by Laura Matheson & Michael Quartermain

Monday, May 30th, 2022

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SCHOOL OF BUSINESS

AACSB ACCREDITED

PRME Principles for Responsible Management Education
an initiative of the United Nations Global Compact

Carbon Literacy Project

CONESTOGA'S 30TH E3 CONFERENCE

VIRTUAL EMPLOYEES FOR EXCELLENCE IN EDUCATION CONFERENCE

MONDAY, MAY 30 TO THURSDAY, JUNE 2, 2022

Before we start, please:

1. Ensure that your mic remains muted unless you intend to interact with the audience
2. Click the "Chat" button on the task bar and say hello in the chat window
3. Check the features list (right)
4. Note that this workshop will be recorded

Features for this workshop

- Group chat
- Raise hand (in the task bar 'Reactions')
- Breakout groups
- Camera/mic welcome but optional!
- Kahoot!

All E3 recordings and resources will be available at:
http://bit.ly/VirtualE3

CLIMATE CHANGE & CARBON LITERACY

SLIDE NAVIGATION

Click on the Info icon, or link beside it for additional resources

All blue, underlined texts are live links, and can be followed to external sources for more information

Indicates recourses specific to Canada

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CLIMATE CHANGE & CARBON LITERACY

SESSION OVERVIEW

AGENDA

1. An Introduction to Responsible Management Education (RME) at Conestoga College
2. An Introduction to Carbon Literacy Training Module 1: the Science of Climate Change
   - 2.1 Causes of Climate Change
   - 2.2 The Greenhouse Effect
   - 2.3 Global Impacts
   - 2.4 The Future we Want

LEARNING OUTCOMES

- Understand how RME shapes strategic direction at Conestoga College
- Describe and explain the science of climate change
- Describe how the climate crisis impacts us as an individual and collectively and what we can do about it

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CLIMATE CHANGE & CARBON LITERACY

1.0 RESPONSIBLE MANAGEMENT EDUCATION (RME)

- Alert, alert, alert: our current trajectory is unsustainable!
- Business serves to gain by solving the very problems they created
- Leading business schools have recognized the need to prepare future leaders to solve these "wicked" challenges
  - Evidence of commitment is now required by major accreditation bodies
  - Business school ranking systems are increasingly incorporating themes of RME
  - Stakeholder demand

Learn more about PRME & RME: Blueprint for SDG Integration

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CLIMATE CHANGE & CARBON LITERACY

1.1 CONESTOGA COLLEGE & PRME

PRME Principles for Responsible Management Education

an initiative of the United Nations Global Compact

- Purpose
- Research
- Values
- Partnership
- Method
- Dialogue

SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS

SUSTAINABLE DEVELOPMENT GOALS

Learn more about PRME, the SDGs, and Canada's plan, here!

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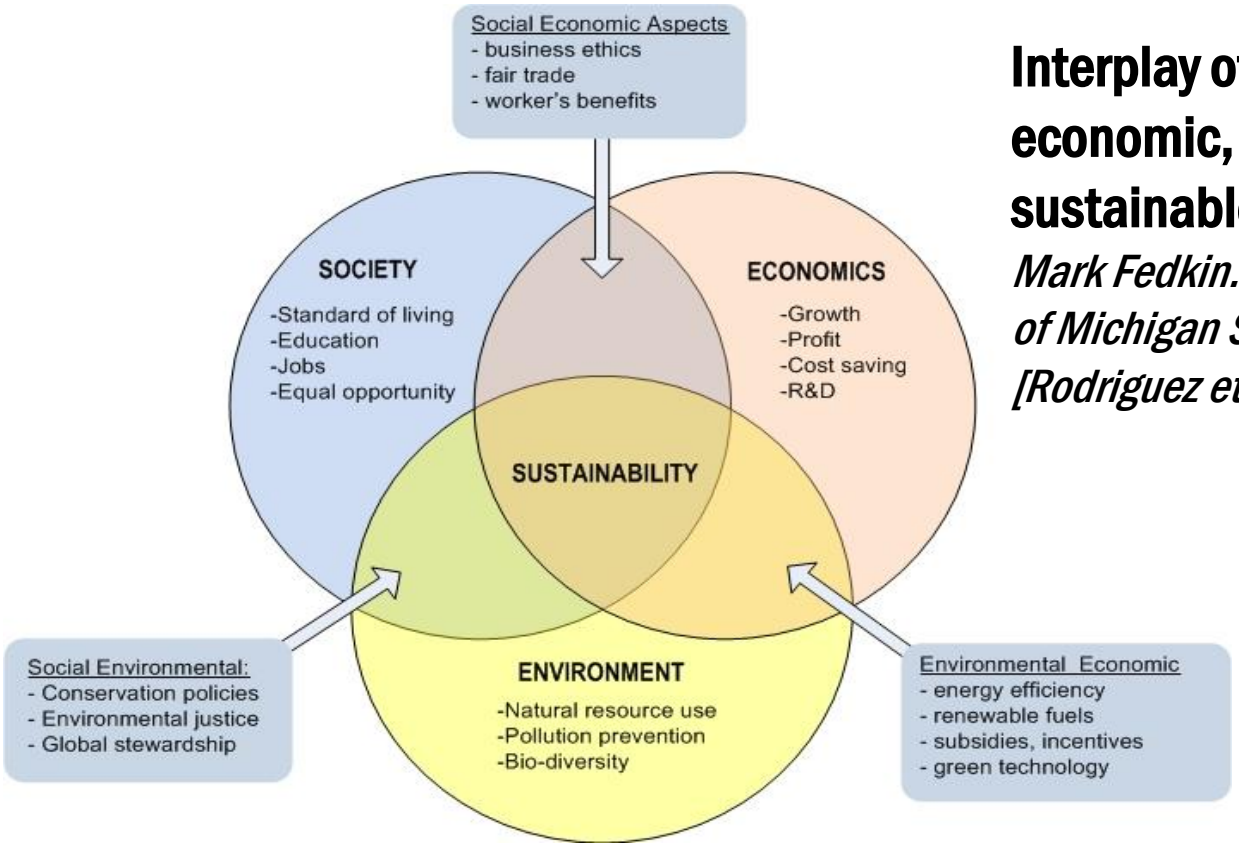
CLIMATE CHANGE & CARBON LITERACY

1.2 SUSTAINABLE MINDSET



Interplay of the environmental, economic, and social aspects of sustainable development

Mark Fedkin. Adopted from the University of Michigan Sustainability Assessment [Rodriguez et al., 2002]

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CLIMATE CHANGE & CARBON LITERACY

2.0 INTRODUCTION

Carbon Literacy is, *"an awareness of the carbon dioxide costs and impacts of everyday activities, and the ability and motivation to reduce emissions, on an individual, community and organizational basis."*

(Carbon Literacy Trust, 2022)

Learn more about The Carbon Literacy Project

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CARBON LITERACY TRAINING

PROGRAM SESSIONS

To become certified, you must complete all four modules and successfully complete an assessment

1. The Science of Climate Change
2. Carbon & Canada
3. Global Impacts & Response
4. Take Action!

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QUIZ: WHERE ARE WE AT?

Steps:

1. Visit https://kahoot.it

2. Enter game PIN

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The Science of Climate Change

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COP 26 & WEF

"The results of the COP26 climate summit in late 2021 did not please everyone..." (WEF, 2021)

"If we continue to stick our heads in the ground...not like sensible, long-term people, if we continue to do that, we will undoubtedly face...the consequences."

(David Puttnam, 2014)

Climate action failure ranked as the #1 global risk. Learn more in the World Economic Forum's 2022 Global Risks Report

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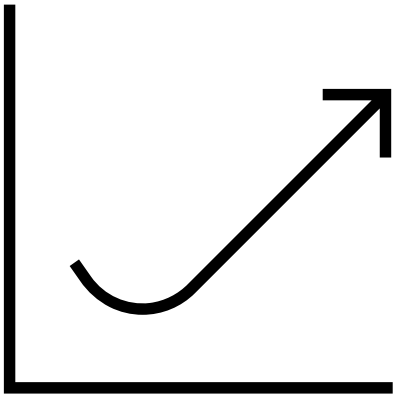
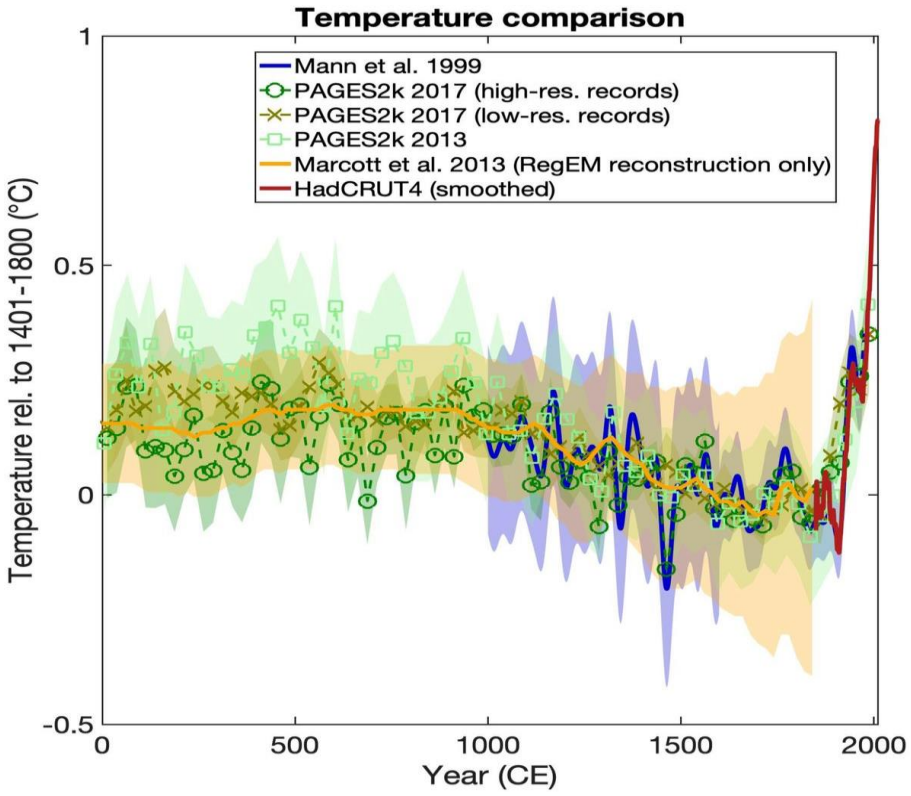
CLIMATE CHANGE

The Science of Climate Change

‘The Hockey Stick’





Link to the infamous Hockey Stick article, the controversy, and fact check

2.1 WHAT ARE THE CAUSES OF CLIMATE CHANGE?

UNMUTE; USE CHAT BOX OR THE ANNOTATE FEATURE

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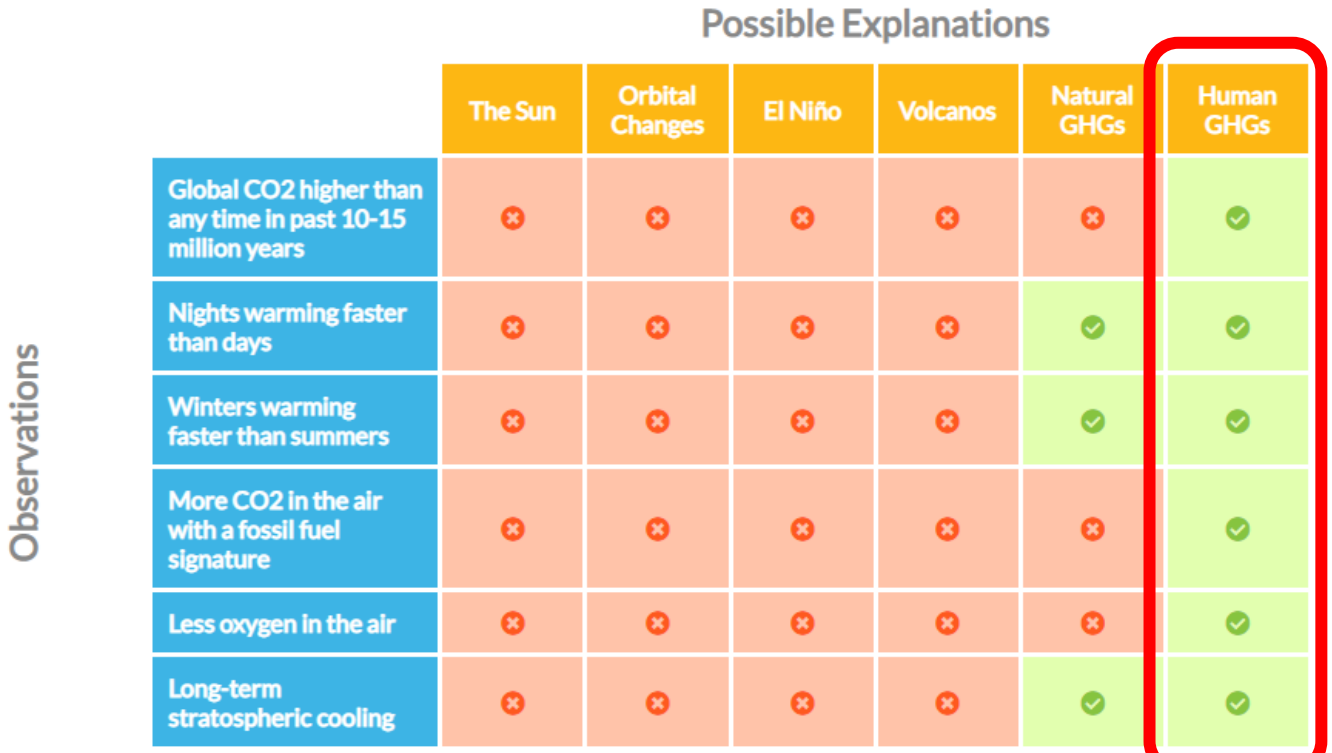
CAUSES OF CLIMATE CHANGE



Observations	Possible Explanations: The Sun	Orbital Changes	El Niño	Volcanos	Natural GHGs	Human GHGs
Global CO2 higher than any time in past 10-15 million years	✗	✗	✗	✗	✗	✓
Nights warming faster than days	✗	✗	✗	✗	✓	✓
Winters warming faster than summers	✗	✗	✗	✗	✓	✓
More CO2 in the air with a fossil fuel signature	✗	✗	✗	✗	✗	✓
Less oxygen in the air	✗	✗	✗	✗	✗	✓
Long-term stratospheric cooling	✗	✗	✗	✗	✓	✓

Source: Climate Atlas, 2021

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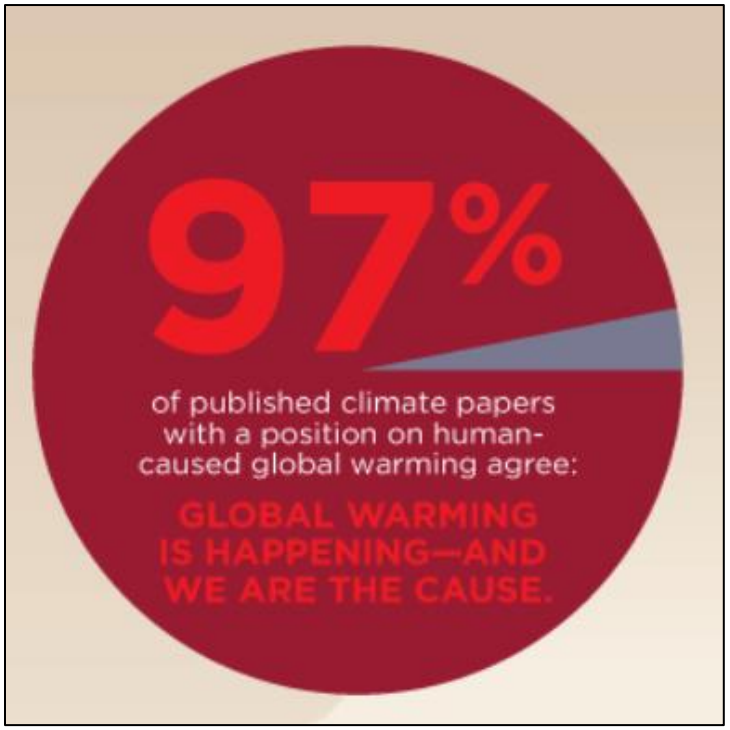
CAUSES OF CLIMATE CHANGE II



- Consensus has been achieved: NASA, Intergovernmental Bodies, Scientific Societies, and a list of 200+ global organizations that agree climate change is human caused

- What if we are incorrect – the precautionary principle

Source & more about The Consensus Project.

The Science of Climate Change

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CLIMATE CHANGE 101

Click on the i for more info.

- Weather vs. climate
- Global warming vs. climate change
- Natural vs. anthropogenic drivers of variation
- Climate change is real!

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2.2 THE GREENHOUSE EFFECT

The result is '*like a greenhouse, where the glass is too thick*'.

Since the industrial revolution…

concentrations of GHGs have **increased,**

contributing to **rising temperatures,**

resulting in **climate change.**

Read more about the Greenhouse Effect.

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THE GREENHOUSE EFFECT II

Source: National Geographic, 2017

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GREENHOUSE GASES

The Science of Climate Change

"The concentration of carbon dioxide (CO_2) in our atmosphere, as of July 2021, is the highest it has been in human history." (Conservation International, 2022)

Greenhouse Gas		Pre-industrial levels (1750)	Current levels (2021)
Carbon Dioxide	CO_2	280 ppm	419 ppm
Methane	CH_4	715 ppb	1893 ppb
Nitrous Oxide	$N2_0$	270 ppb	333 ppb
Chlorofluorocarbons	CFC	0 ppm	~653 ppt

IPCC, 2021
NOAA, 2021

Source & more info on GHG levels.

Info. on Canadian GHG emissions.

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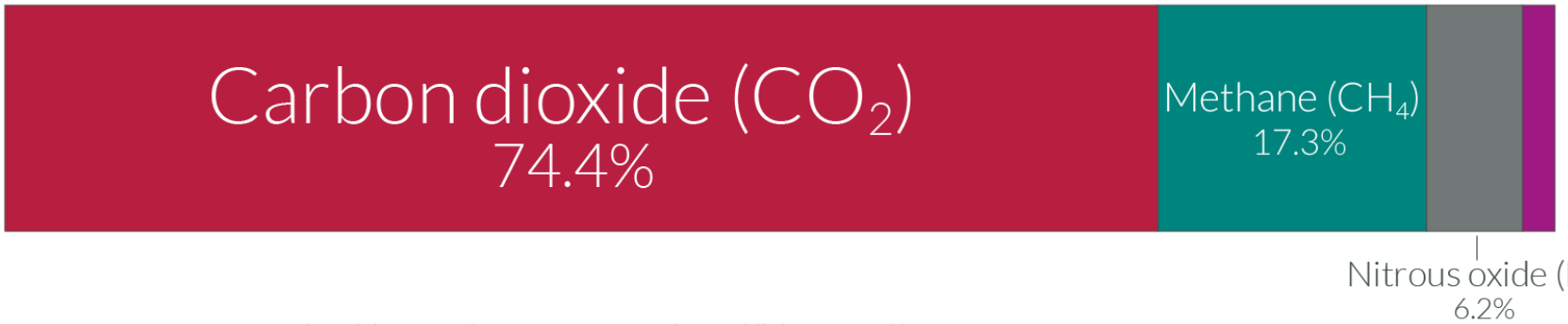
TYPES OF GHGS

Global greenhouse gas emissions by gas

Greenhouse gas emissions are converted to carbon dioxide-equivalents (CO_2eq) by multiplying each gas by its 100-year 'global warming potential' value: the amount of warming one tonne of the gas would create relative to one tonne of CO_2 over a 100-year timescale. This breakdown is shown for 2016.

Our World in Data



OurWorldinData.org – Research and data to make progress against the world's largest problems.
Source: Climate Watch, the World Resources Institute (2020).

Source: Our World in Data, 2020.

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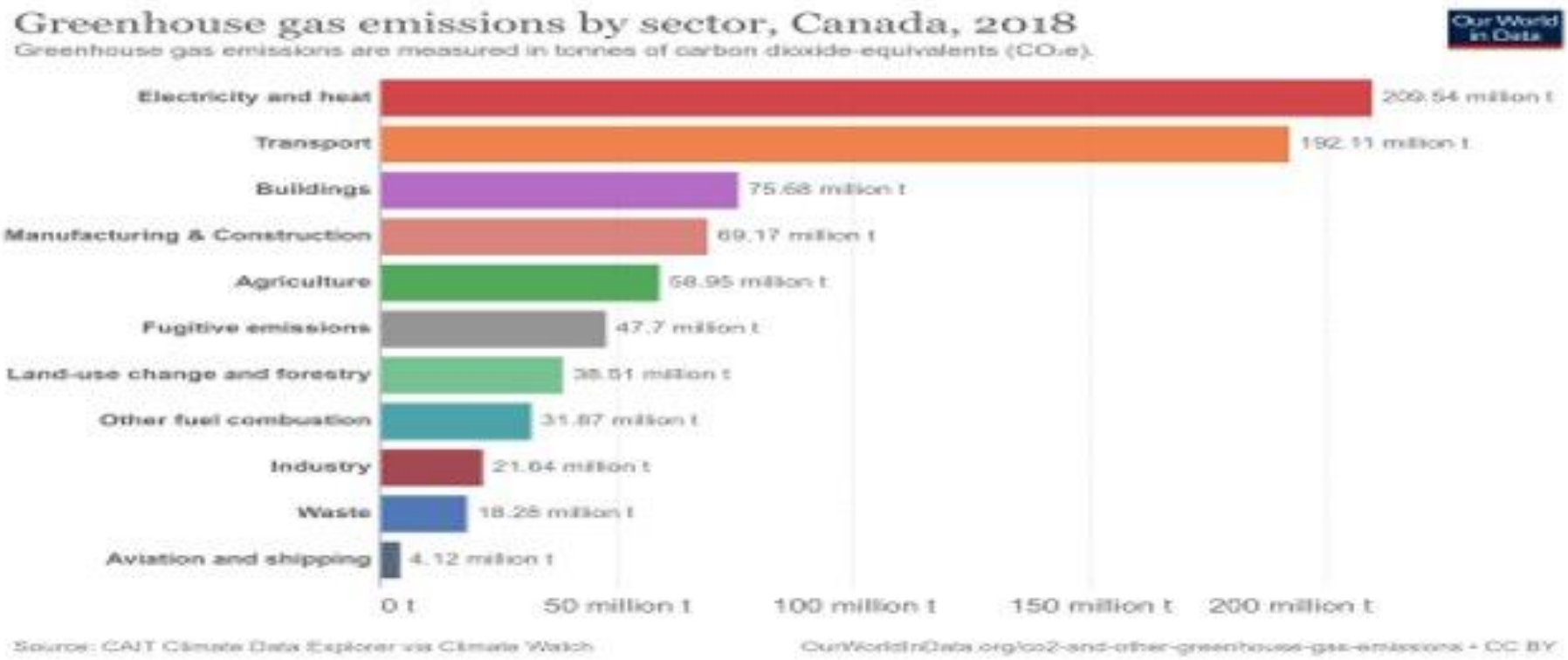
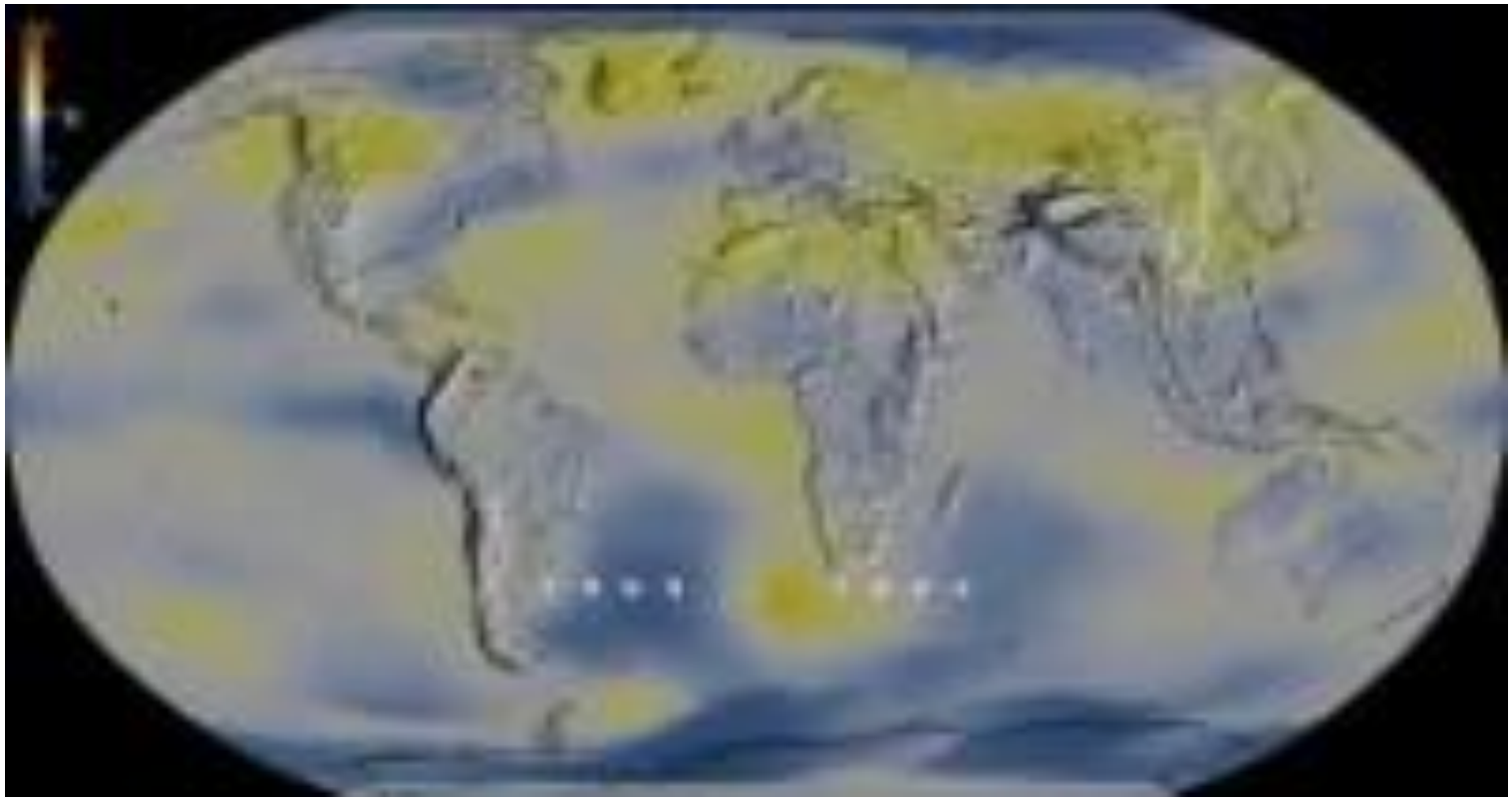
GHG EMISSIONS BY SECTOR - CND



Source: Our World in Data, 2018

‘WARMEST YEAR ON RECORD’

“Earth’s global average surface temperature in 2021 tied with 2018 as the sixth warmest year on record, according to an analysis by NASA.”



Source & more information: from NASA.

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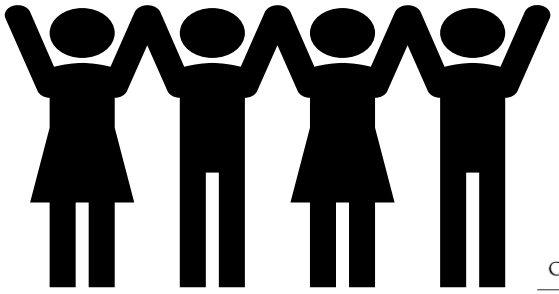
GLOBAL IMPACTS

The Science of Climate Change



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The Science of Climate Change

CARBON LITERACY TRAINING
GLOBAL IMPACTS

- Decreasing ice-cover
- Rising sea-level & temp.
- Increasing surface temperatures
- Ocean circulation changes
- More severe storms
- Increased drought
- Loss of species
- Changed growing seasons
- Food shortage
- Soil erosion
- Poverty & displacement

Source: Sixth Assessment Report — IPCC 2021.

Source: NASA, 2022.

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ACTIVITY

EN-ROADS

Climate Simulator

Visit the En-Roads Simulator

‘Business as Usual’, or in other words **inaction** results in:

+3.6°C

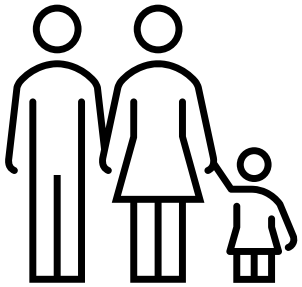
+6.5°F

Temperature Increase by 2100

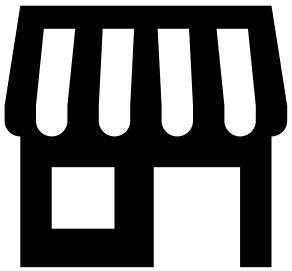
THE FUTURE WE WANT?

If we continue ***'business as usual'****, how will this impact:*

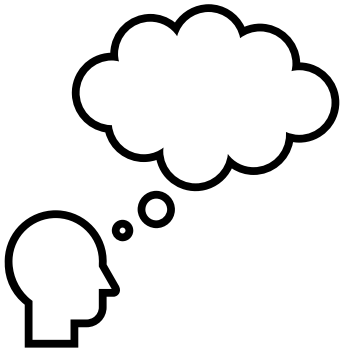
Your life?



Family?



Business?



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CLIMATE CHANGE 101 SUMMARY WITH BILL NYE

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POST CHECK IN

Steps:

1. Visit https://kahoot.it

2. Enter game PIN

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The Science of Climate Change

CARBON LITERACY TRAINING

ACKNOWLEDGMENTS

- The Carbon Literacy Project – **The Carbon Literacy Trust**
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- Professor Michael Quartermain - **Conestoga College, Strategic Global Business Management**
- Professor Laura Matheson - **Conestoga College, Sustainable Business Management**
- Professor **Deanna Murray, Conestoga College, Sustainable Business Management**
- **PRME Working Group** Committee Members – Conestoga College

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