

The Limits to Growth: Sustainability and the Circular Economy

Lecture 4: What Happened So Far?

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- Updated versions of these slides will be available in our [Github repository](#).

Updated BBB Links

- We had to update the BBB links
 - Lecture: [Link](#)
 - Q&A: [Link](#)

Update Bonus Task Registration

- No projects :(

Update Bonus Task Registration

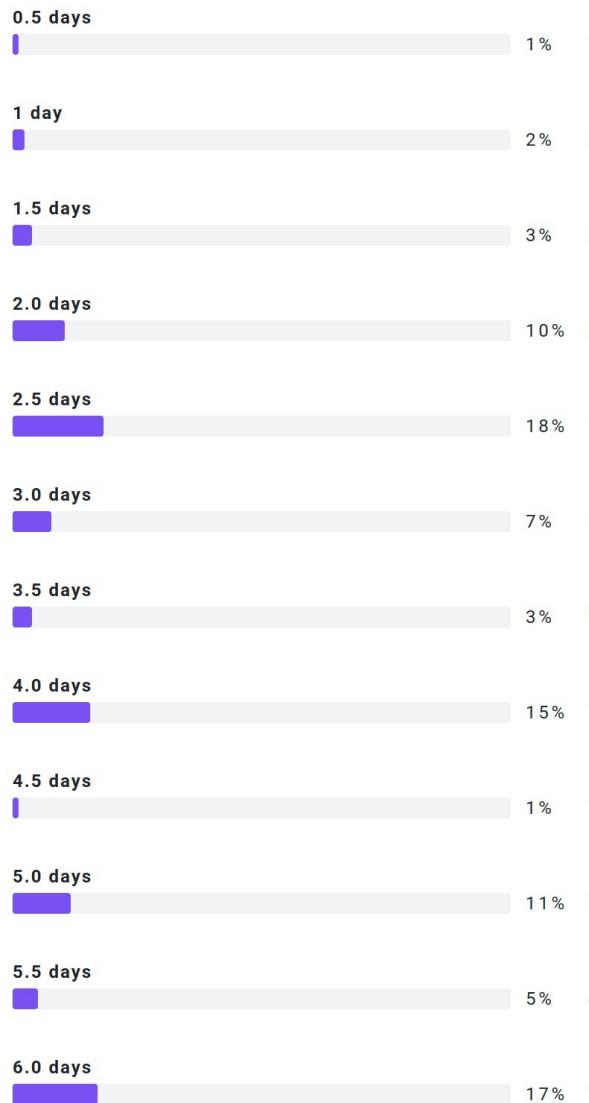
- No projects :(
- Why?
 - a) no team
 - b) no project
 - c) no time
 - d) not interested

E02 - A JAR OF WASTE

E02 - Household Waste

Results

E02 - Household Waste Results



E02 - Household Waste Results



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E02 - Household Waste Results



E02 - Household Waste Results

- “*Tips for Zero Waste Living – How a Family of 5 Makes Almost No Waste! | Life With Less Waste*” by Happen Films – [Link](#)

E02 - Household Waste Results

- “*Tips for Zero Waste Living – How a Family of 5 Makes Almost No Waste! | Life With Less Waste*” by Happen Films – [Link](#)
- How long did the family of 5 (all of them together) manage to squeeze all their trash into a jar?

INTRODUCTION

Introduction

Sustainability

„Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.“

Introduction

Sustainability - Origins

„Wie eine sothane [solche] Conservation und Anbau des Holzes anzustellen / daß es eine continuirliche beständige und **nachhaltende** Nutzung gebe / weiln es eine unentbehrliche Sache ist / ohne welche das Land in seinem Esse nicht bleiben mag“ - Hans Carl von Carlowitz (1713)

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→ “continuously enduring and sustainable use”

Introduction

Sustainability - Origins

„Sowing and planting of trees had to be regarded as a national duty of every landowner, in order to stop the destructive over-exploitation of natural resources“ - John Evelyn (1662)

Introduction

Sustainability - Origins

- Carl von Carlowitz and *Sustainability*
 - Coined the term at a time when Europe was in need of vast quantities of wood (mining, ore-smelting, ship building, etc.)
→ Fear of timber scarcity
- Growing population → Fear of food-shortage if food production cannot keep up with reproduction
 - World population in 1700 → ca. 0.6 billion people
 - World population in 1800 → ca. 1.0 billion people
- Industrial revolution (ca. 1760 – 1840) fostered environmental degradation → society chose prosperity rather than sustainability

A SHORT HISTORY OF ACTIONS ON CLIMATE CHANGE

A Short History of Actions on Climate Change

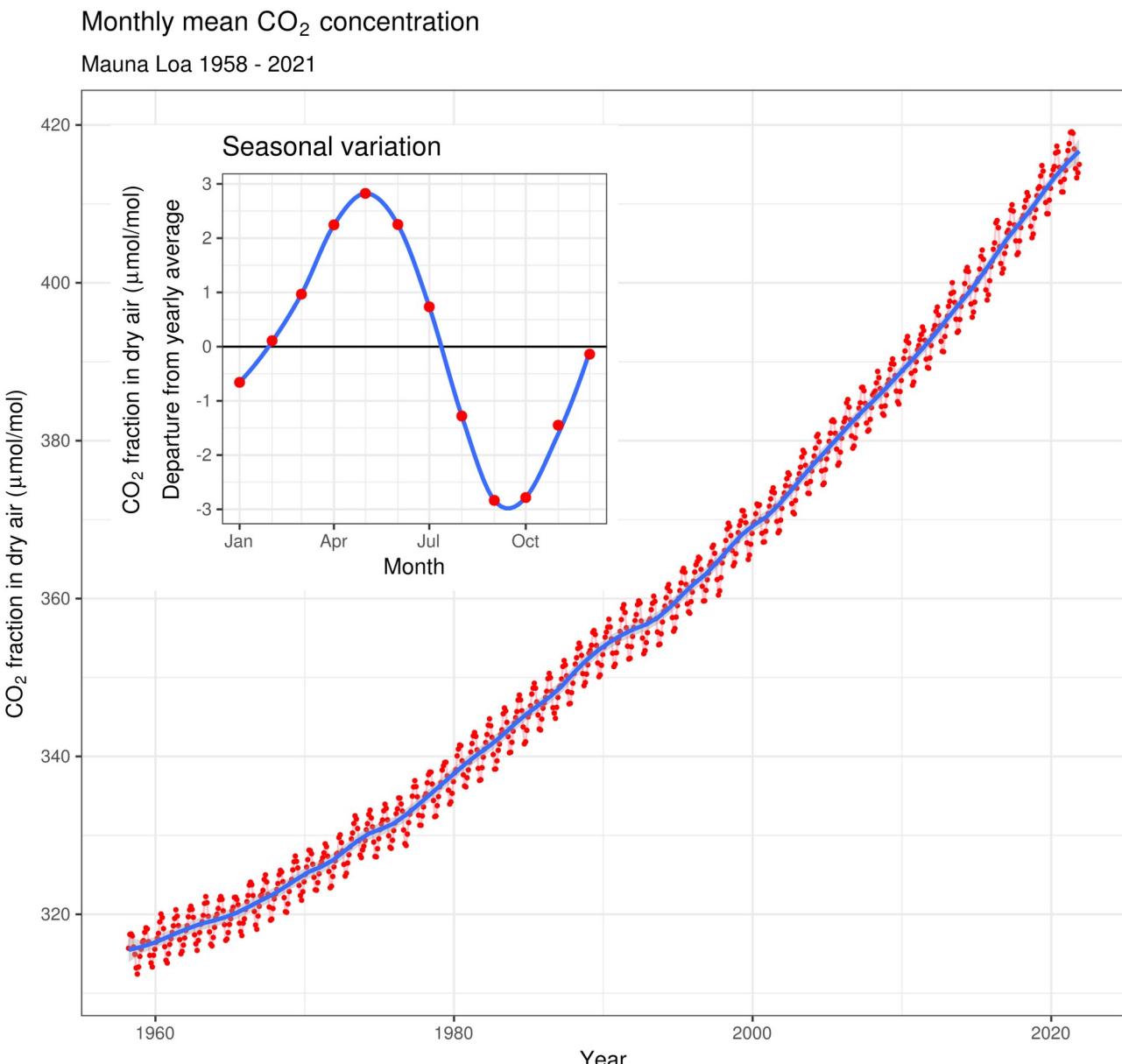
(Incomplete) Timeline

- 1957 – First climate change warnings issued by Roger Revelle and Hans Suess
- 1958 – Start of systematic measurements of atmospheric CO₂ by Dave Keeling
- 1972 – United Nations Conference on the Human Environment (Stockholm)
- 1979 – First World Climate Conference (Geneva)
- 1988 – IPCC (Intergovernmental Panel on Climate Change) founded
- 1992 – Earth Summit (Rio)
- 1997 – Kyoto Protocol
- 2009 – Copenhagen Accord
- 2015 – Paris Agreement
- 2021 – Glasgow Climate Pact

A Short History of Actions

Detour - Keeling Curve

- Named after Charles David Keeling
- Graph representation of the accumulation of CO₂ in the atmosphere based on continuous measurements (Mauna Loa Observatory - Hawaii) from 1958 to the present day



Data : Dr. Pieter Tans, NOAA/ESRL (<https://gml.noaa.gov/ccgg/trends/>) and Dr. Ralph Keeling, Scripps Institution of Oceanography (<https://scrippsc02.ucsd.edu/>). Accessed 2021-12-16 <https://w.wiki/4ZWn>

A Short History of Actions on Climate Change

1979 - First World Climate Conference (Geneva)

- First major meeting on climate change
- Initiated by the World Meteorological Organization (WMO)
- Scientific gathering explored how climate change might affect human activities
- Led to the creation of the Intergovernmental Panel on Climate Change (IPCC)

- Urged governments “*to foresee and prevent potential man-made changes in climate that might be adverse to the well-being of humanity*”

A Short History of Actions on Climate Change

1988 - IPCC (Intergovernmental Panel on Climate Change)

- Intergovernmental body of the United Nations
- Task: *“Provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation”*

A Short History of Actions on Climate Change

1988 - IPCC (Intergovernmental Panel on Climate Change)

- Intergovernmental body of the United Nations
- Task: “*Provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation*”
- IPCC assessments:
 - *provide a scientific basis for governments to develop climate related policies*
 - *are policy-relevant but not policy prescriptive: they may present projections of future climate change based on different scenarios and the risks that climate change poses and discuss the implications of response options, but they do not tell policymakers what actions to take.*
 - *are written by hundreds of leading scientists who volunteer their time and expertise as Coordinating Lead Authors and Lead Authors of the reports. They enlist hundreds of other experts as Contributing Authors to provide complementary expertise in specific areas*

A Short History of Actions on Climate Change

1997 – Kyoto Protocol

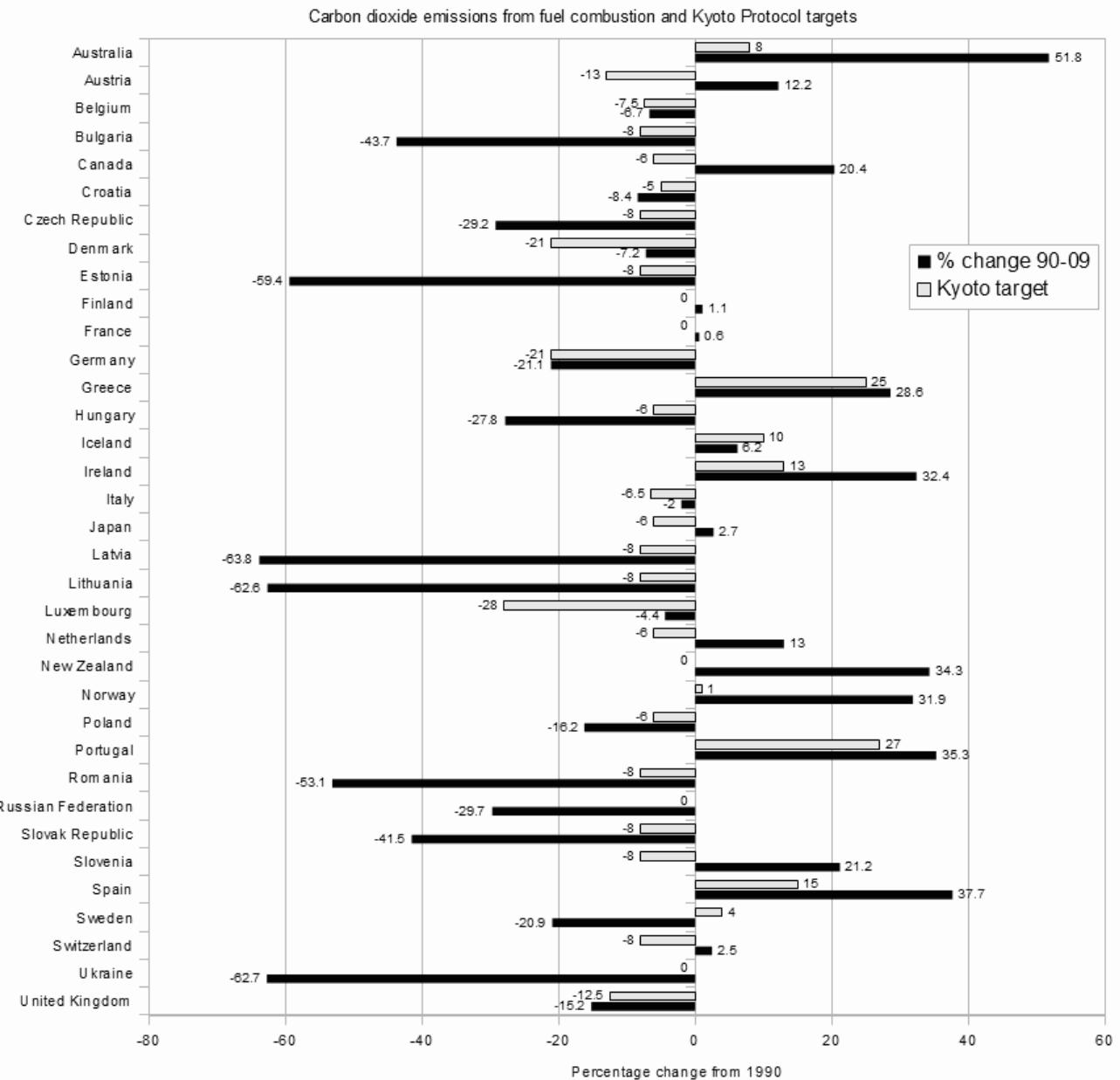
- Commitment to reduce GHG emissions and concentration in the atmosphere to “*a level that would prevent dangerous anthropogenic interference with the climate system*”
- Recognizing that global warming occurs and that human-made GHG emissions are driving it
- Developed nations pledge to reduce “overall emissions of such gases by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012”.
- Entered into force on 16 February 2005

A Short History of Actions on Climate Change

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- However
 - USA, Australia and other countries refused to ratify the agreement
 - Canada withdrew from the Kyoto Protocol in 2012

A Short History of Actions 1997 – Kyoto Protocol



Enescot – [https://commons.wikimedia.org/wiki/File:Kyoto_Parties_with_first_period_\(2008-2012\)_greenhouse_gas_emissions_limitations_targets_and_the_percentage_change_in_their_carbon_dioxide_emissions_from_fuel_combustion_between_1990_and_2009.png](https://commons.wikimedia.org/wiki/File:Kyoto_Parties_with_first_period_(2008-2012)_greenhouse_gas_emissions_limitations_targets_and_the_percentage_change_in_their_carbon_dioxide_emissions_from_fuel_combustion_between_1990_and_2009.png) – CC BY-SA 3.0.

A Short History of Actions on Climate Change

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- Drafted by only 5 countries
- Not legally binding
- No real targets

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- Content:
 - **Endorses** the continuation of the Kyoto Protocol
 - “**We emphasise our strong political will** to urgently combat climate change in accordance with the principle of common but differentiated responsibilities and respective capabilities”
 - “**We shall, recognizing** the scientific view that the increase in global temperature should be below 2 degrees Celsius”

A Short History of Actions on Climate Change

2015 – Paris Agreement

- *Reach global peaking of greenhouse gas emissions **as soon as possible***

A Short History of Actions on Climate Change

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- Increasing the ability to **adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development**, in a manner that does not threaten food production; and

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- Increasing the ability to **adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development**, in a manner that does not threaten food production; and
- Making **finance flows** consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

A Short History of Actions on Climate Change

2021 - Glasgow Climate Pact

- **Reaffirms** the Paris Agreement temperature goal of holding the increase in the global average **temperature to well below 2 °C** above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels

A Short History of Actions on Climate Change

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- Including accelerating efforts **towards the phase-out of unabated coal** power and inefficient fossil fuel subsidies

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- **Reaffirms** the Paris Agreement temperature goal of holding the increase in the global average **temperature to well below 2 °C** above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels
- Including accelerating efforts **towards the phase-out of unabated coal** power and inefficient fossil fuel subsidies
- **Urges developed country** Parties to provide enhanced **support, including through financial resources**, technology transfer and capacity-building, to assist developing country

A Short History of Actions on Climate Change

2021 - Glasgow Climate Pact

- 140 countries pledged to reach net-zero emissions
- 100+ countries pledged to reverse deforestation by 2030
- 40+ countries pledged to move away from coal

ACTIVISM

Activism

- Bla, bla bla - [Link](#)

Activism

Fridays for Future



Activism

Extinction Rebellion (XR)



*"I am afraid of losing my child
to a resource war because of a
climate collapse"*

Activism

Extinction Rebellion (XR)



Activism

"Climate activists are sometimes depicted as dangerous radicals, but the truly dangerous radicals are the countries that are increasing the production of fossil fuels."

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"Climate activists are sometimes depicted as dangerous radicals, but the truly dangerous radicals are the countries that are increasing the production of fossil fuels."

United Nations Secretary General Antonio Guterres

Activism

Extinction Rebellion (XR)

- Beyond just protesting (Lars Werner): [Link](#)

Activism

Last Generation (Letzte Generation)

- 2021 → before the elections in Germany
- 27 days hunger strike (picture day 25) → afterwards Intensive Care Unit
- Together with other climate activists, Jeschke wanted to use this drastic means to draw attention to the climate crisis and achieve a discussion with the candidates for chancellor.
- Olaf Scholz (Chancellor Germany) and Last Generation → [Video](#)



Activism

Neubauer, et al. vs. Germany

Activism

Neubauer, et al. vs. Germany

- Nine young people from Germany sued Germany
- They argue: *“that the goals and measures of the Federal Climate Protection Act are not sufficient to effectively protect their fundamental rights from the consequences of the climate crisis as well as to fulfill the government’s obligations under the Paris Agreement.”*

Activism

Neubauer, et al. vs. Germany

- Nine young people from Germany sued Germany
- They argue: *“that the goals and measures of the Federal Climate Protection Act are not sufficient to effectively protect their fundamental rights from the consequences of the climate crisis as well as to fulfill the government’s obligations under the Paris Agreement.”*

They won! → *“Freedoms and fundamental rights are already being violated today by insufficient climate protection. The legislator must adapt the Federal Climate Protection Act by the end of 2022”*

“Climate protection is not nice-to-have, fair climate protection is a fundamental right, that is now official. A huge success - for everyone and especially for us young people who have been on climate strike for their future for over two years. We will now continue to fight for a 1.5 degree policy that is fair to all generations.” – Luisa Neubauer

SUSTAINABLE DEVELOPMENT GOALS

Sustainable Development Goals

Overview

- Sustainable Development Goals → SDGs
- 17 interlinked goals
- Proposed in 2015 by the United Nations General Assembly
- To be achieved by 2030 by all UN member states
- Each goal typically has 8-12 targets, and each target has between 1-4 indicators used to measure progress toward reaching the targets.

“A blueprint to achieve a better and more sustainable future for all people and the world by 2030” – United Nations General Assembly

Sustainable Development Goals



Sustainable Development Goals

Issues

- No prioritization

*"The means of implementation targets under each Sustainable Development Goal and Goal 17, which are referred to above, are key to realizing our Agenda and are of **equal importance** with the other Goals and targets. We shall accord them **equal priority** in our implementation efforts and in the global indicator framework for monitoring our progress."*

Sustainable Development Goals

Issues

- Water, food and energy are vital prerequisites for any human life → other goals cannot be achieved without them

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Sustainable Development Goals

Issues

- Water, food and energy are vital prerequisites for any human life → other goals cannot be achieved without them
- Each goal by itself does not guarantee sustainability
- Achieving all goals is quite challenging → Stakeholders focus on particular goals which risks to achieve all goals (no sustainability if we just achieve 8 out of 17 goals)
- Potential/risk for/of greenwashing

CONCLUSION

Conclusion

- Short history of actions on climate change
 - Geneva, Kyoto, Copenhagen, Paris, Glasgow, etc.
 - Problem
 - → A lot of bla bla
 - → Lack of progress
 - → Policies favor business as usual instead of acting in accordance with science because they are afraid to make unpopular decisions
- Individual activism as a response / counter movement to inactive governments who ignore urgent issues (i.e., the three key challenges of the 21st century)
- Sustainable Development Goals → SDGs

EXERCISE E03

Exercise E03

My Favorite Fruit/Vegetable

- Pick your favorite fruit or vegetable that you regularly buy at the grocery store.
- Compile a comprehensive list of **all** required resources that go into the production of the chosen fruit/vegetable.
- Submit your result according to the submission guidelines posted in the exercise sheet → [E03](#).
- Note: Do not only consider primary inputs → primary inputs also have various inputs themselves (e.g., secondary, tertiary)

Additional Resources

- Podcast Episode: How to Save a Planet (2021) - *We Go Inside the COP26 Climate Talks* - [Link](#)
- Greta Thunberg mocks world leaders in 'blah, blah, blah' speech | BBC News (2021) - [Link](#)
- Rutger Bregman tells Davos to talk about tax: 'This is not rocket science' | Guardian News (2019) - [Link](#)
- IPCC (2022) - *About the IPCC* - [Link](#)
- Richard Black, BBC (2013) - *A brief history of climate change* - [Link](#)

Questions?