
Advanced Environmental Economics: Modelling and Empirical Approaches

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Universität Hamburg

Hamburg, April 04th 2024



With which questions do you come to this course?

... What do you want to learn?

- Discuss with your neighbor [≈5 minutes]
- Introduction in the plenary: Name and learning goal

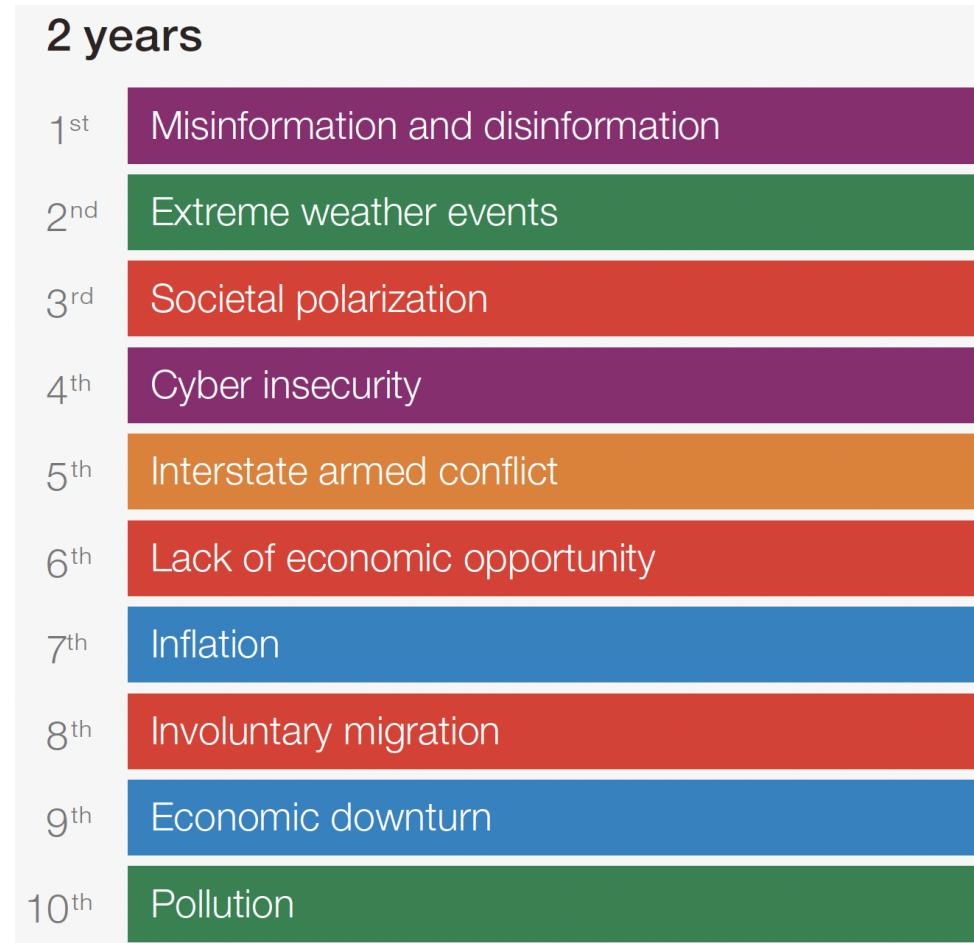
Plan for today

- Introduction
- Information on the rest of the course

Introduction

World Economic Forum Global Risks Report 2024

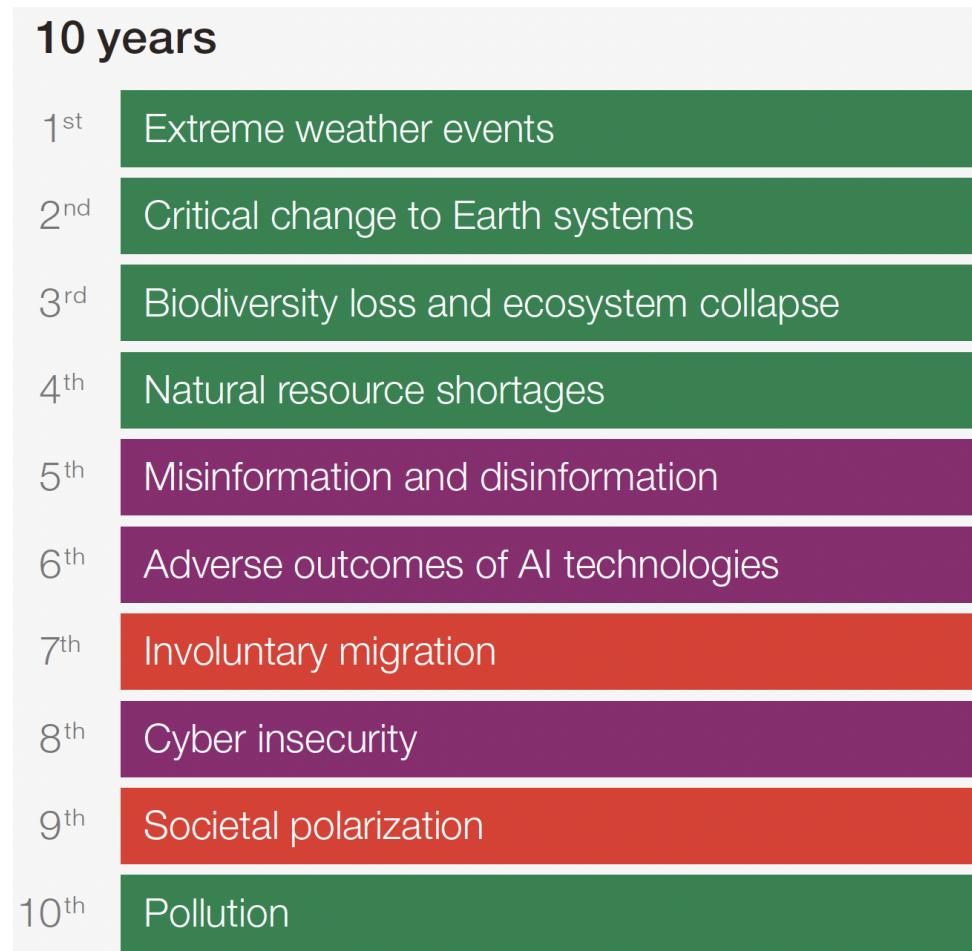
“Please estimate the likely impact (severity) of risks over a 2-year period.”



Introduction

World Economic Forum Global Risks Report 2024

“Please estimate the likely impact (severity) of risks over a 10-year period.”



Introduction

UN Environment Program:

“Airborne contaminants are the biggest direct environmental health risks of our time, with 99 per cent of the world’s population breathing unsafe air. Exposure to air pollution significantly increases the risk of strokes, heart and lung disease, cancer and other ailments, causing more than 6.7 million premature deaths a year.”

The screenshot shows a news article from the UN Environment Programme. At the top, there is a navigation bar with links for "Who we are", "Where we work", "What we do", and "Publications & data". To the right of the navigation is a circular logo consisting of colored dots. Below the navigation, the URL "Home / News, Stories & Speeches / story" is visible. The main headline is "World must band together to combat air pollution, which kills 7 million a year". Below the headline, the date "06 SEP 2023" and categories "STORY" and "AIR QUALITY" are shown. The background of the article features a photograph of a person's silhouette against a city skyline under a cloudy sky.

Introduction

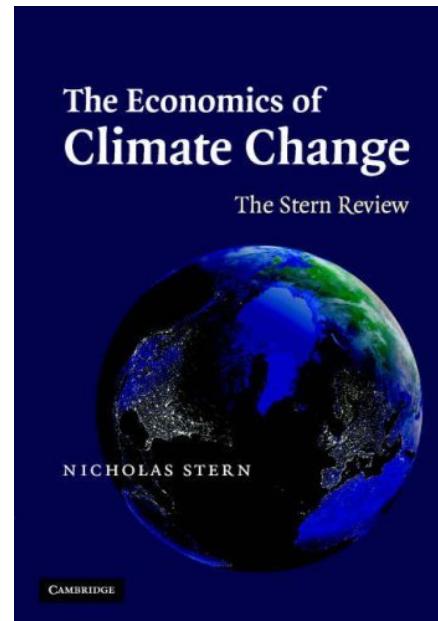
Widespread loss of ecosystems

- Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
- The Dasgupta Review “The Economics of Biodiversity”



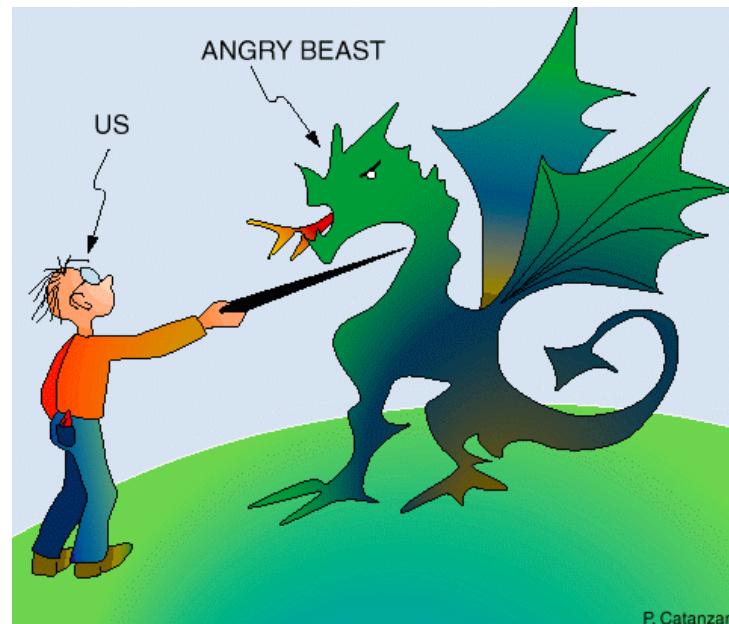
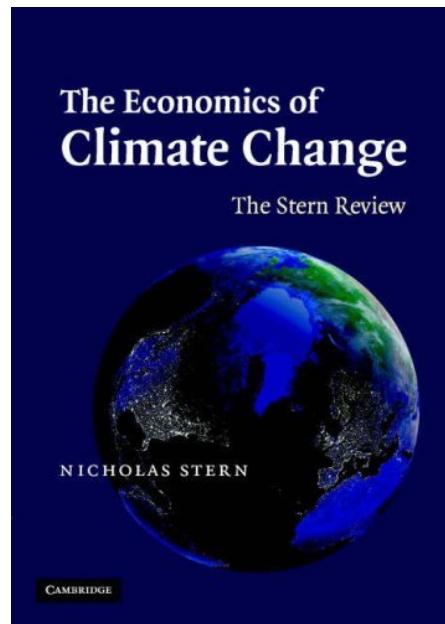
Introduction

- *Climate change is the greatest market failure the world has ever seen*
(Stern 2007: viii)



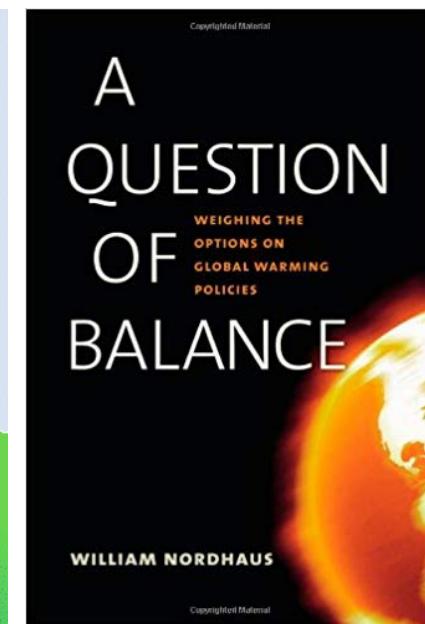
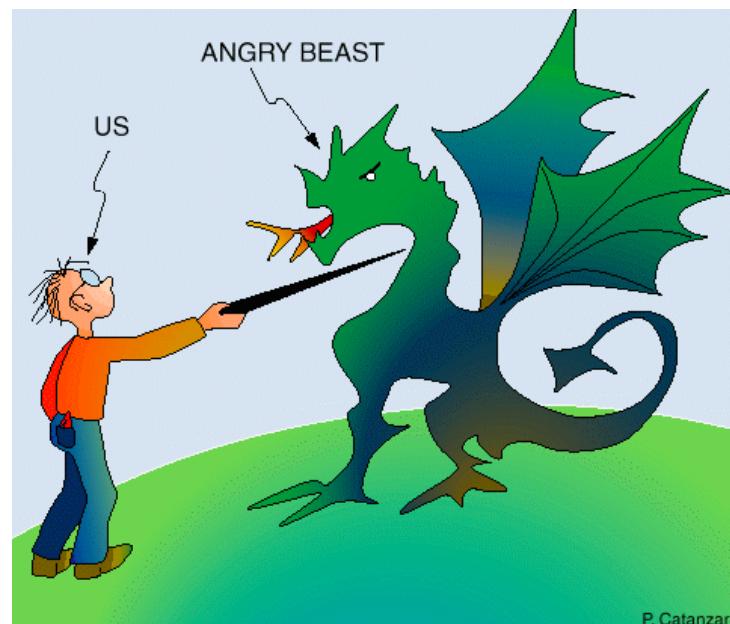
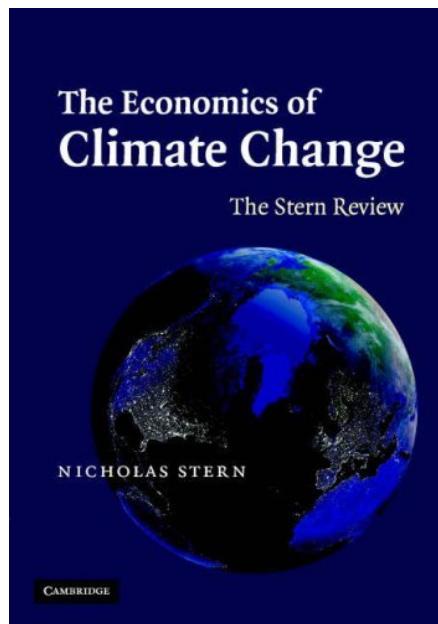
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- *The climate system is an angry beast and we are poking it with sticks.*
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- *Good policies must lie somewhere between wrecking the economy and wrecking the world*
(Nordhaus 2013)

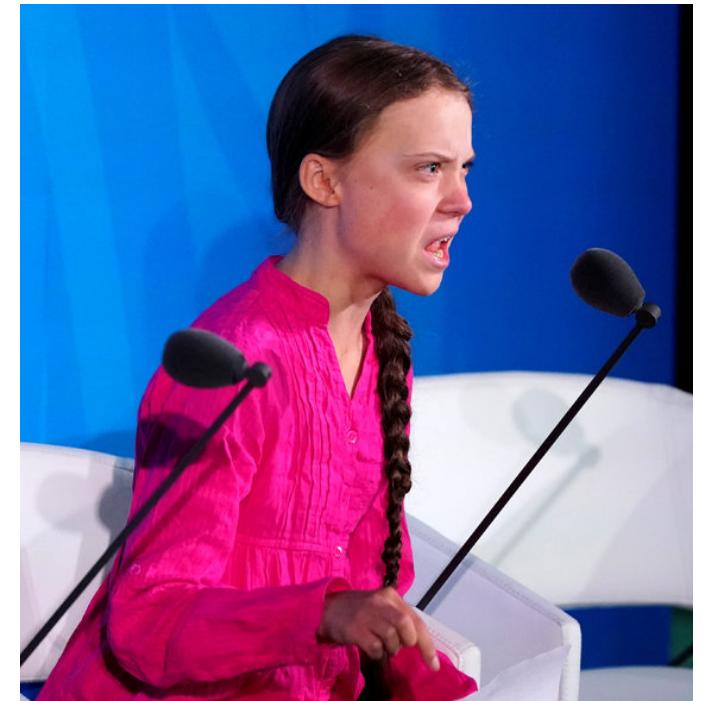


Introduction

“How dare you....”

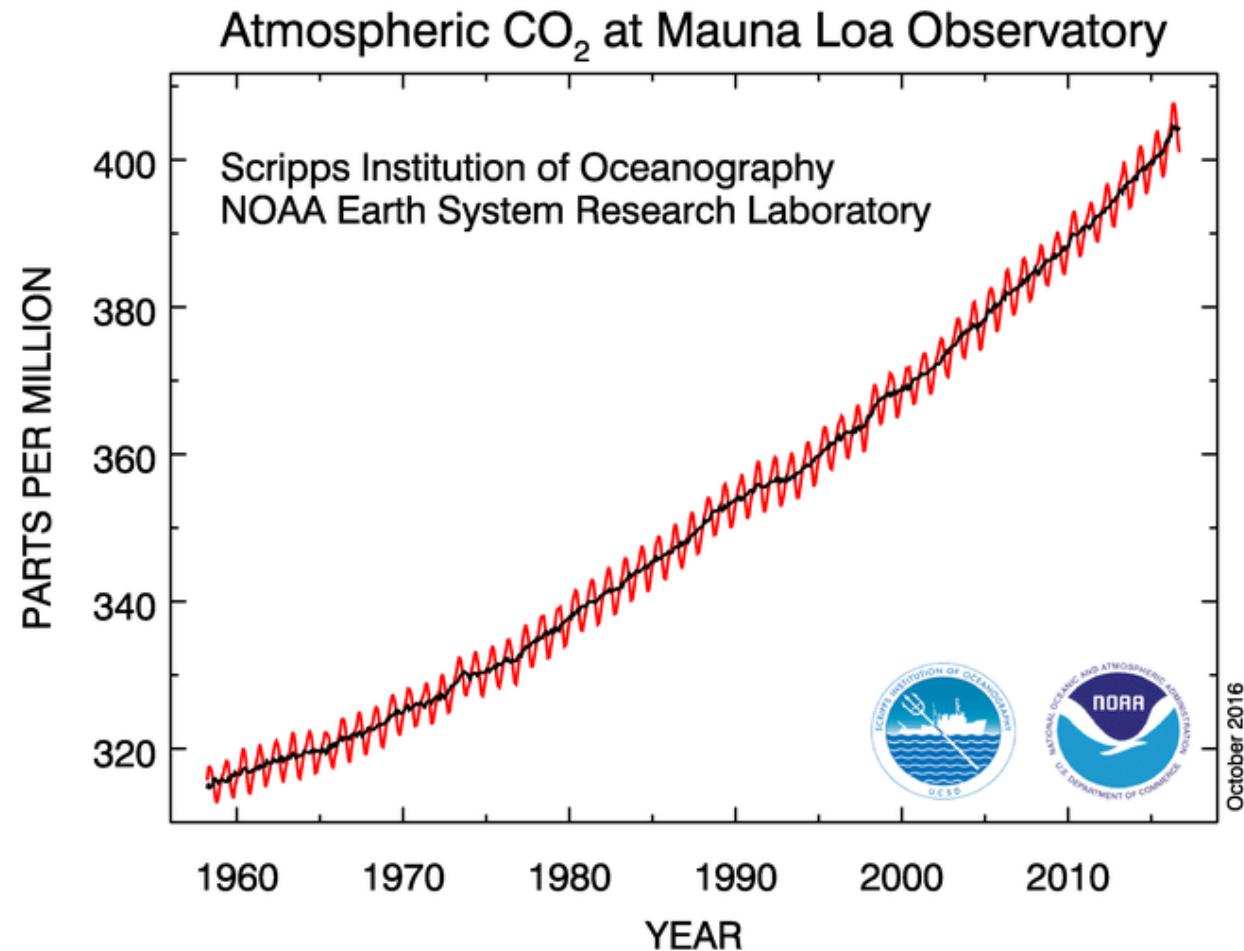


G7 summit, 2018



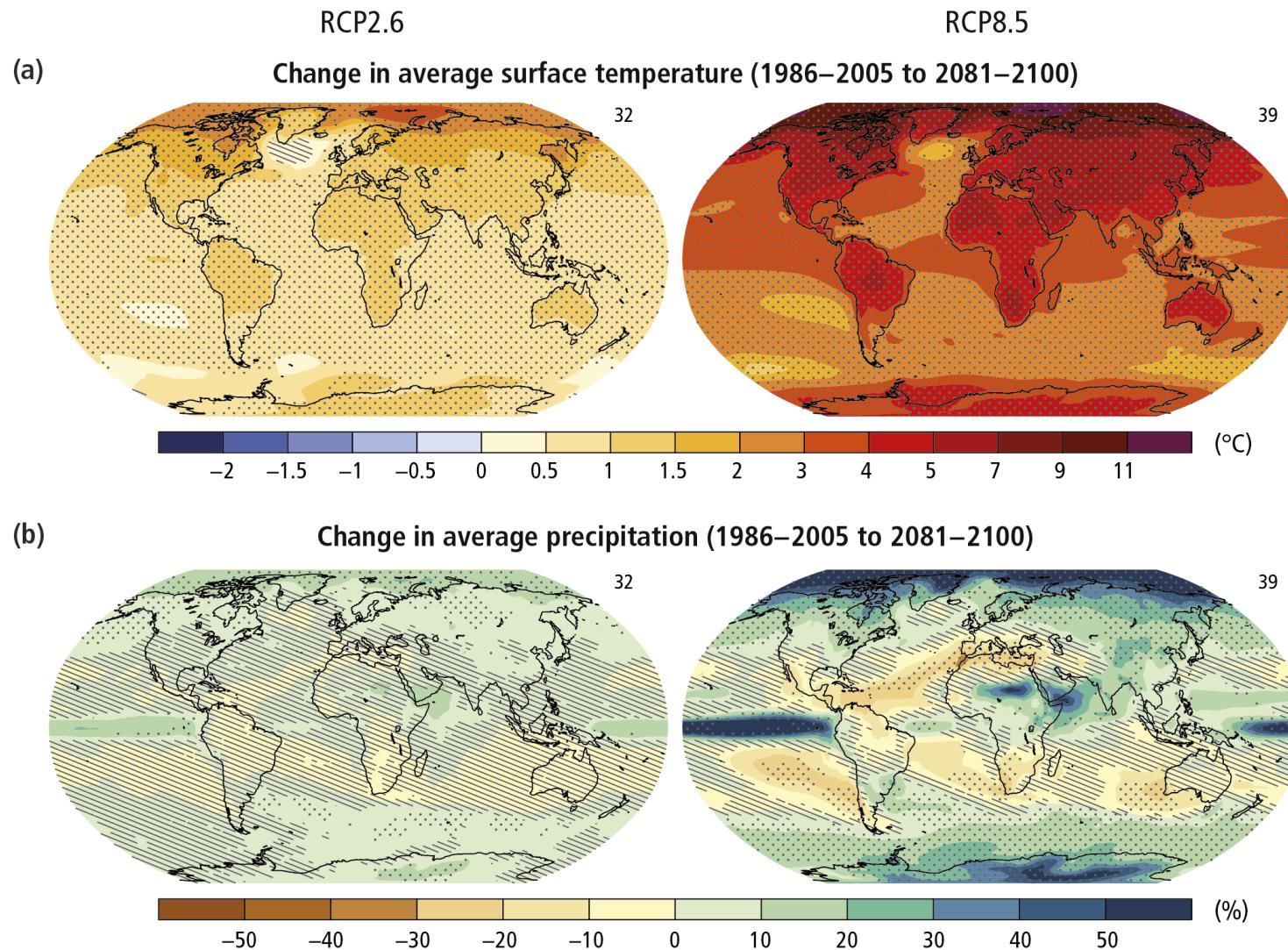
Global Climate Action Summit, 2019

CO₂ Emissions



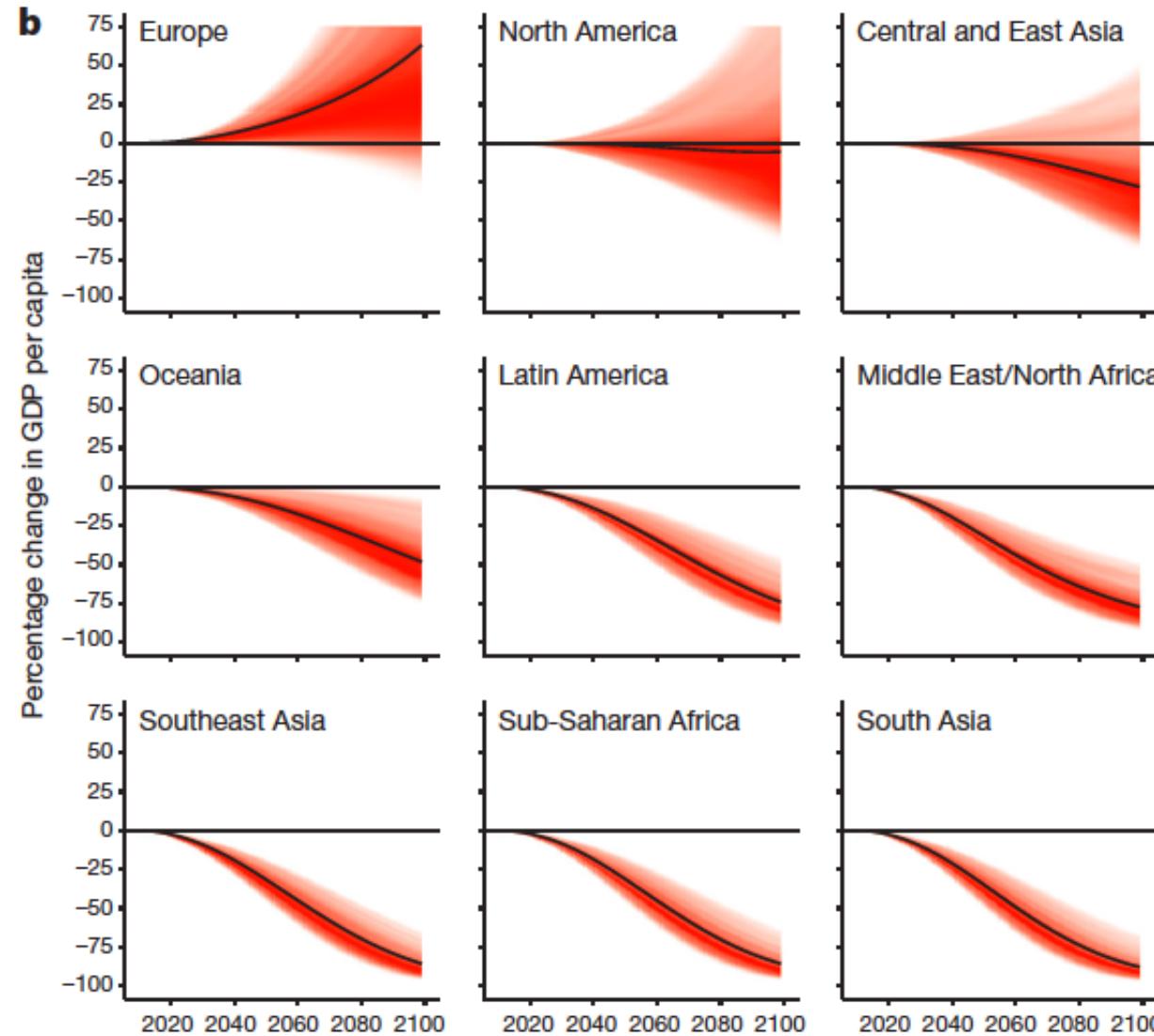
<http://www.esrl.noaa.gov/gmd/obop/mlo/>

IPCC (2014) report: Projections



IPCC (2014)

Climate damages: almost 25% of global GDP by 2100



Burke, M. et al. (2015). Global non-linear effect of temperature on economic production. *Nature*, 527(7577), 235.

Climate damages: Beer



DER TAGESSPIEGEL

Klimawandel

16.10.2018, 09:54 Uhr

Bier könnte zum Luxusgut werden

Trockenheit und Hitze bedrohen weltweit die Gerstenernte. Das wird das wichtigste alkoholische Getränk knapp und teuer machen. VON FLORIAN SCHUMANN

Xie, W. et al. (2018). Decreases in global beer supply due to extreme drought and heat. *Nature Plants*, 4(11), 964.

Climate damages: Learning



PBS NEWS HOUR

By – Neikan Akpan

213 comments

The hotter the planet grows, the less children are learning

Science Updated on Sep 6, 2019 10:19 AM EDT – Published on Sep 5, 2019 6:31 PM EDT

Park, R.J. et al. (2020). Heat and learning. *American Economic Journal: Economic Policy*, 12(2), 306-39.

Climate policy

Paris Climate Agreement, Article 2.1.(a): Countries commit to ... “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”

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- Nordhaus (2019 *AER*) suggests the 'optimal' global carbon price was \$45 in 2020.
 \Rightarrow The 2020 global average carbon price was around \$3...
Still, many climate policy initiatives active around the globe...
 \Rightarrow How well do they work?

General remarks on the seminar

Content

- Extension of the basics of environmental economics
- Selected empirical and modelling advances at the research frontier

Approach

- Introductory Lectures
- Individual programming
- Presentations

Previous knowledge

- Previous experience with economic modelling?
- Previous experience with data analysis?

Roadmap of the course

- 11.04. Overview of modelling
- 18.04. Overview of empirical analyses
- 25.04. Modelling
- 02.05. Empirics
- 16.05. Modelling/Empirics and topic distribution
- 30.05. Modelling/Empirics and Q&A
- .
- interim Own modelling/analysis and preparation of term paper
- 13.06. Q&A meeting
- interim Own modelling/analysis and preparation of term paper
- 20.06. Optional Q&A meeting on demand
- 21.06. Deadline to submit term paper
- interim Prepare presentations
- 27./28./29.06. Block-phase with presentations

Questions

Do you have questions?

Office hours:

On demand. Please make an appointment via e-mail!

