

Introduction to the Economics of Climate Change Mitigation (2021/2022 Spring)

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[Machine translated from Hungarian]

The aim of the course is to provide an overview of climate change and the related mitigation and adaptation measures, as well as issues of inequality, primarily from an economic perspective. The core readings of the course are reports by the IPCC and UNEP, complemented by academic and other articles.

Topics covered in the course include: the economic impacts of climate change; pathways for climate change mitigation; the possibilities and necessity of adaptation; the financing of policy measures; global and local inequalities; and the post-COVID “green recovery.” The course consists of 12 sessions and a weekend seminar in Lakitelek. Some sessions will be taught by invited guest lecturers, for example: Zsófi Kőműves (economic impacts of climate change), Viktória Szücs (agriculture and adaptation), Livia Kósa (inequalities), and Dávid Mihályi (developing countries and natural resources).

Throughout the course, students are expected to prepare for each session based on the assigned readings (most of which are in English). Course requirements also include a midterm paper (to be submitted by Week 7, following academic formatting standards) and a final course paper. The aim of the final paper is to be suitable for publication in the media and to present, in an accessible way, one of the concepts discussed in the course (there are no formal requirements for this paper).

While the course has no strict prerequisites, basic micro- and macroeconomic knowledge is assumed.

Schedule and readings:

1. The process of climate change, what happens and why we should care

- a. The Economy (CORE project): Economics of the Environment, Unit 20
- b. UNEP: Emission Gap Report 2020, Chapter 3
- c. IPCC SR1.5: Summary for Policymakers

2. Economic impacts of climate change

- a. Burke, M., Hsiang, S. & Miguel, E. Global non-linear effect of temperature on economic production. *Nature* 527, 235–239 (2015). <https://doi.org/10.1038/nature15725>

3. Mitigating climate change – assumptions, models, sectors

- a. IPCC AR5 WGII, 6. chapter
- b. IPCC SR1.5, 2. Chapter
- c. CarbonBrief: Explainer: How ‘Shared Socioeconomic Pathways’ explore future climate change
- d. O’Neill, Brian C., et al. "A new scenario framework for climate change research: the concept of shared socioeconomic pathways." *Climatic change* 122.3 (2014): 387-400.

4. Mitigating climate change – energy (power & heating)

- a. IPCC AR5 WGII, 7-9-10. chapter
- b. <https://masfelfok.hu/2020/04/20/mi-az-borzaszto-draga-de-kozben-megis-megeri-a-vilag-energiaszektoranak-a-kizolditese/>

5. Mitigating climate change – transport (transport)

- a. IPCC AR5 WGII, 8. chapter
- b. Mercure, JF., Lam, A., Billington, S. et al. Integrated assessment modelling as a positive science: private passenger road transport policies to meet a climate target well below 2 °C. *Climatic Change* 151, 109–129 (2018). <https://doi.org/10.1007/s10584-018-2262-7>

6. Mitigating climate change – nature-based solutions (nature & agriculture)

- a. IPCC AR5 WGII, 11. Chapter
- b. https://wwf.panda.org/discover/our_focus/climate_and_energy_practice/what_we_do/nature_based_solutions_for_climate/
- c. Girardin, Cécile A. J., Stuart Jenkins, Nathalie Seddon, Myles Allen, Simon L. Lewis, Charlotte E. Wheeler, Bronson W. Griscom, and Yadvinder Malhi. 2021. 'Nature-Based Solutions Can Help Cool the Planet — If We Act Now'. *Nature* 593 (7858): 191–94. <https://doi.org/10.1038/d41586-021-01241-2>.

7. Mitigating climate change – demand-side solutions

- a. UNEP: Emission Gap Report 2020, Chapter 6
- b. ZOE: 1.5 Degree Policy Mix, <https://zoe-institut.de/en/publication/3776/>
- c. Ivanova, Diana, John Barrett, Dominik Wiedenhofer, Biljana Macura, Max Callaghan, and Felix Creutzig. 2020. 'Quantifying the Potential for Climate Change Mitigation of Consumption Options'. *Environmental Research Letters* 15 (9): 093001. <https://doi.org/10.1088/1748-9326/ab8589>.

8. Adaptation

- a. <https://masfelfok.hu/2021/06/14/tul-sok-es-tul-keves-viz-hogyan-alkalmazkodjunk-az-egyre-szelsosegesebb-eghajlathoz/>
- b. <https://masfelfok.hu/2020/08/19/alkalmazkodas-az-eghajlatvaltozashoz-nemcsak-muszaj-de-az-eu-szerint-meg-is-eri/>

9. Financing mitigation

- a. Hector Pollitt & Jean-Francois Mercure (2018) The role of money and the financial sector in energy-economy models used for assessing climate and energy policy, *Climate Policy*, 18:2, 184-197, DOI: 10.1080/14693062.2016.1277685
- b. Jean-Francois Mercure, Florian Knobloch, Hector Pollitt, Leonidas Paroussos, S. Serban Scriciu & Richard Lewney (2019) Modelling innovation and the macroeconomics of low-carbon transitions: theory, perspectives and practical use, *Climate Policy*, 19:8, 1019-1037, DOI: 10.1080/14693062.2019.1617665

- c. Steve Keen: The Cost of Climate Change, <https://economics.com/steve-keen-nordhaus-climate-change-economics/>
- d. Climate Economics and the DICE model, <https://www.exploring-economics.org/en/discover/climate-economics-and-the-dice-model/>
- e. <https://masfelfok.hu/2020/08/27/zold-kotvenyek-befektetes-a-jovo-generacionak/>

Intensive week: Hungary

- a. Szathmáry Eörs: Klímaváltozás és Magyarország [részletek]
- b. <https://masfelfok.hu/2020/06/12/a-kormany-klimacelja-azt-is-jelentheti-hogy-meg-10-evig-alig-teszunk-valamit/>
- c. Nemzeti Energia és Klímastratégia

10. Green recovery

- a. UNEP: Emission Gap Report 2020, Chapter 4
- b. Hummelen, Stijn, Richard Lewney, Bence Kiss-Dobronyi, and Luca Barbieri. 2021. 'Modelling a Global Inclusive Green Economy COVID-19 Recovery Programme'. UN PAGE, ILO. <https://doi.org/10.13140/RG.2.2.13015.19367>.
- c. <https://masfelfok.hu/2020/04/21/hogyan-tegyuk-klimabaratta-a-covid-valsag-utani-hazai-gazdasagosztonzest/>

11. Inequalities / just transition and intergenerational justice

- a. TBD

12. Inequalities / natural resources and developing countries

- a. IPCC SR1.5, 5. fejezet
- b. Dennig, Francis, et al. "Inequality, climate impacts on the future poor, and carbon prices." Proceedings of the National Academy of Sciences 112.52 (2015): 15827-15832.
- c. Hallegatte, S., Rozenberg, J. Climate change through a poverty lens. Nature Clim Change 7, 250–256 (2017). <https://doi.org/10.1038/nclimate3253>