Environmental Economics & Policy (34:833:619)

Rutgers University, Edward J. Bloustein School of Planning and Public Policy
Fall 2023
Tuesday, 6-8:45 PM, Room 369B

Course Information

Professor: Mark Paul (mark.paul@rutgers.edu)
Office: Room 544, Civic Square Building
Office hours: Tuesday 4:00-5:30 (or by appointment)—I encourage you to come at least once

Course Description

A safe and stable environment is essential to human well-being, yet the stability of the planet is in dire jeopardy due to human-induced climate change. The United Nations Intergovernmental Panel on Climate Change (IPCC) has said that to have a reasonable chance of keeping global heating to the safest level of heating (1.5 degrees Celsius), we must cut global carbon emissions by nearly half by 2030, and must make "far-reaching and unprecedented changes in all aspects of society." Economics is at the core of most environmental problems, including the climate crisis. Economics—which can be used to guide the economy in the "right" or "wrong" direction—is also fundamental to the solution. In this course we will develop some of the fundamental economic tools for environmental policy analysis through a focus on the climate crisis. We will discuss how economics frames—at times incorrectly—the central problem as one of tradeoffs, where scarce resources are allocated among competing ends. How might this vision change if Keynesian insights are incorporated, as the Green New Deal seeks to do? In this light, we will discuss the roles, and limitations of, markets and regulations in governing the environment. Further, we will take a political economy approach throughout the course, centering both the political processes and power dynamics that shape the economy, the policy debates, and the very world in which we live.

Prerequisite: There are no course prerequisites for this class; however, you should be competent in algebra. We will cover introductory economic concepts as we progress in the class.

Course Objectives

1. To gain a basic understanding of environmental economics, and the key questions and methods of analysis at play.
2. To understand the issues associated with the climate crisis, including the broad mechanisms of global warming, the greenhouse effect, sea-level rise, ice melt, albedo, etc., and their anthropogenic causes, including fossil fuel consumption, agriculture, deforestation, etc.
3. To investigate the policies and potential tradeoffs involved in addressing the climate crisis.
4. To communicate effectively about the issues associated with climate change through writing and in-class discussion.
5. To appreciate both the interdisciplinary nature of any inquiry into the topic of climate change and the specific disciplinary perspectives of philosophy and economics.

Readings
All required readings will be made available on Canvas.

Course Expectations

- You are expected to contribute thoughtfully and respectfully to discussions with classmates, having read the assigned material prior to class
- Please be mindful that our goal is to investigate questions together and sometimes challenge one another, but not to win arguments or 'be right'
- I expect you to generally help to create a safe, supportive, and intellectually stimulating classroom environment
- **Attendance** is required, both for your benefit and that of the classroom community. If you do miss a class, please submit any assignment before class and consult a classmate to find out what you missed. Please never hesitate to reach out to me or your peers for help if class is missed. More than three absences from class will seriously imperil your participation grade.
- **Late work is strongly discouraged.** Each day an assignment is late, ten percent will be subtracted from the assignment. Assignments that are more than a week late are not accepted. Please make sure you communicate with me if there are any problems in completing the work in the allotted time. If you miss an assignment for a college sanctioned reason please be sure to provide me with proper documentation. *Communication is key*.
- **Laptops**. No, thank you. Unless you have a relevant accommodation for note taking, or I have asked you to bring it to class for an activity, please refrain from using your laptop in class. Cell phones must be kept on silent mode in your bag, unless again, otherwise indicated. That said, you will be expected to have access to a computer for the completion of at home assignments and some group activities.

Course Structure
Each week you are expected to have read the required readings prior to attending class.

1. Reading: Students *must* prepare for each lecture by reading the assigned units, working with interactive figures, and answering the questions embedded in the text. Engaging with the assigned readings is crucial to succeeding in this course. Economics is a very abstract discipline, and the readings will provide you with a foundation to understanding the lectures and complete assignments.
2. Lectures: There will be a weekly lecture where I will present course material. During this time I will regularly call on students to participate. Class time is most productive when students actively participate by asking and answering questions.
3. Discussion: Engaging in classroom discussion will be an integral part of the learning process. Not only do we sharpen our intellect through such discussion, but learning to engage in deep discussions on complex issues will serve you well in your role as active citizens.

Evaluation

- **20% – Participation.** This is based on your attendance and active participation in class. You will be expected to attend class regularly, contribute to discussions, and turn in work on time.
- **10% – GHG Reduction Response.** This should be 2-4 pages in length. The brief response should explore how you think you can/should contribute to global efforts to reduce GHG emissions. *Due Sept 19th before class*

- **10% – One short written memo.** This should be 2-3 pages in length—12 pt font, double spaced—and written based on one of the readings (required or supplemental), or an outside policy-relevant reading that may relate to your final project, such as a policy report. We will discuss how to write a memo in class. *Due Oct 3rd - you may hand it in earlier, however.*
- **20% – In-class presentation and discussion.** Everyone will work with 1-2 colleagues to lead the discussion of one supplemental assignment over the course of the semester. In the syllabus these are listed as "group readings." The group presentation should be roughly 10-15 minutes and cover the main themes of the assignment and what questions or critiques the group has of the author's main points. The group should then prepare 3-4 discussion topics or questions and plan to lead a discussion for 10-15 minutes with the entire class.
    - Please sign up here.
- **40% – Final Project—paper and presentation.** Final assignment that you will work on throughout the semester. You and a classmate will choose a particular policy problem you aim to solve. You will 1) write a brief 10-12 page white-paper on the topic that clearly outlines the policy problem, the scale of government you choose to focus on (local, state, federal, etc.), and provides policy recommendations. You will also present these findings to your classmates during a 15-20 minute presentation.
    - Form a group and decide on the topic: *Oct 3*—You'll have some time in class in your groups on this day.
    - Hand in 2-3 paragraphs on your topic, along with a short annotated bibliography covering at least 5 sources: *Oct 24th*
    - Rough draft of white paper due for in-class peer review *December 5th.* Must submit a copy online.
    - Final paper due: *December 12th at midnight*

Course Evaluation Criteria

Final Grade Scale

A = 90-100

B+ = 85-89

B = 80-84

C+ = 75-79

C = 70-74

D = 60-69

F < 60

Rutgers University's Academic Integrity Policy

Academic misconduct is a growing concern at institutions of higher education around the country. Each and every year, Rutgers University students are suspended, expelled or receive failing grades due to violations of academic integrity. Many of the students who are caught cheating were unaware of the consequences or even unaware that their actions constituted cheating at all. Academic misconduct includes (for example) cheating, plagiarism, failure to cite sources, fabrication and falsification, stealing ideas, and deliberate slanting of research designs to achieve a preconceived

result. (The University's Academic Integrity Policy can be found at http://nbacademicintegrity.rutgers.edu/home/academic-integrity-policy/). Students should visit this link and carefully review the University's Academic Integrity Policy.
Academic and intellectual integrity is not only at the center of the policymaking process, but are also values of the Bloustein and Rutgers communities. Because of this, we will hold all students to the following standards:

- Prompt arrival at all course sessions and meetings
- Attendance, participation, and respectful behavior in all sessions and group work
- No use of cell phones during class
- Completion of all group activities and no "Free Riding" off your group members.

Student Accommodations Policy

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: https://ods.rutgers.edu/students/documentation-guidelines . If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: https://ods.rutgers.edu/students/getting-registered .

Religious observance

No student shall be compelled to attend class or sit for an examination at a day or time when they would normally be engaged in a religious observance or on a day or time prohibited by their religious beliefs. Students are expected to notify their instructors if they intend to be absent for a class or announced examination, in accordance with this policy, prior to the scheduled meeting.

Student Wellness Services

Report a Concern: To report a concern about student well-being, a bias incident, sexual harassment or abuse, or a violation of the code of student conduct: http://health.rutgers.edu/do-something-to-help/

Report a Bias Incident: If you experience or witness an act of bias or hate, report it to someone in authority. You may file a report online and you will be contacted within 24 hours. The bias reporting page is http://inclusion.rutgers.edu/report-bias-incident/

Crisis Intervention: Students who are experiencing a psychological or emotional crisis often need immediate help and intervention. A CAPS on-call counselor is available for crisis intervention/emergencies every day during regular business hours (Monday – Friday, 8:30am–4:30pm, except university holidays). Students can access the on-call counselor by visiting 17

Senior Street on the College Ave Campus or calling 848-932-7884.
http://health.rutgers.edu/medical-counseling-services/counseling/crisis-intervention/

Violence Prevention & Victim Assistance (VPVA): If you or someone you know has experienced sexual violence, dating violence, or stalking, contact The Office for Violence Prevention and Victim Assistance to speak with a confidential advocate. Advocates are available 24 hours a day, 7 days a week at 848-932-1181. http://vpva.rutgers.edu/

Counseling, ADAP & Psychiatric Services (CAPS): Services include crisis intervention, individual therapy, group therapy, a variety of workshops, alcohol and other drug assistance programs, psychiatric care (medication management), and community referrals.
http://health.rutgers.edu/medical-counseling-services/counseling/

Mask Mandate and COVID-19 Protocols

These are indeed crazy times, and will remain so into the foreseeable future. Please keep up to date with the Universities' COVID-19 protocols. They can be found at:
https://coronavirus.rutgers.edu/important-updates-and-changes-to-rutgers-covid-19-protocols/

Schedule and Reading Assignments[1]

1. **Sept 5: Intro to Environmental Economics**

- How the U.S. Protects the Environment, From Nixon to Trump, by Robinson Meyer. 2017. *The Atlantic.*
- Goodstein and Polasky, *Economics & the Environment*, intro & Chapter 2

Supplemental Material

- Goodstein and Polasky, Economics & the Environment—*a helpful foundational book on environmental economics. You can pick up an older edition to save $$$.*

2. **Sept 12: Intro to the Economics of Climate Change (I)**

- Hsiang, S., & Kopp, R. E. 2018. An economist's guide to climate change science. *Journal of Economic Perspectives 32*(4): 3-32. — *This paper provides an overview of the science of climate change.*
- *IPCC. 2022. Summary for Policymakers. In Climate Change 2022: Mitigation of Climate Change. Summary for Policymakers. Working Group III contribution to the Sixth Assessment Report of the*

[1] Please note that course content and readings are subject to change.

Intergovernmental Panel on Climate Change. — Skim to get a sense for style and messages of the most significant scientific process and reports on climate change:

Supplementary materials

- Hal Harvey, Robbie Orvis, and Jeffrey Rissman. 2018. *Designing Climate Solutions: A Policy Guide for Low-Carbon Energy*. Island Press. Introduction – the rest of the book is an excellent resource on climate policy basics. *I strongly recommend reading some of this if you can.*
- IPCC. 2021. *Summary for Policymakers. In V. Masson-Delmotte & et al., Climate Change 2021: The Physical Science Basis*. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.
- IPCC 2022. *Summary for Policymakers. In Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.
- Gernot Wager and Martin Weitzman. 2016. *Climate Shock: The Economic Consequences of a Hotter Planet*. Princeton University Press. *I strongly recommend picking up a used copy and at least skimming this at some point.*

3. Sept 19: Intro to the Economics of Climate Change (II)

- Stern, Nicholas. 2008. "The Economics of Climate Change." *American Economic Review,* 98(2): 1-37.
- Auffhammer, Maximilian. 2018. Quantifying Economic Damages from Climate Change. *Journal of Economic Perspectives*, 32 (4): 33-52. — *This paper provides an overview of both the social cost of carbon and the use of empirical data to calibrate estimates of the relationship between climate and human impacts.*

Supplementary materials

- Nordhaus, 2019. "Climate Change: The Ultimate Challenge for Economics. " *American Economic Review* 109 (6): 1991-2014.

4. **Sept 26: Markets, Carbon Pricing, and the Social Cost of Carbon**

- David Roberts. 2012. Discount Rates: A Boring Thing You Should Know About (With Otters!). *Grist*.
- Stern, Nicholas, Joseph Stiglitz, Kristina Karlsson, and Charlotte Taylor. 2022. A Social Cost of Carbon Consistent with A Net-Zero Climate Goal. The Roosevelt Institute.
- Fremstad, Anders & Mark Paul. 2019. "The Impact of a Carbon Tax on Inequality." *Ecological Economics*, 163(1):88-97

Group Reading 1

- Podcast: Do dividends make carbon taxes more popular? Apparently not. A new study finds evidence that frustrates a common theory.
- Paper to accompany the podcast: Mildenberger, M., Lachapelle, E., Harrison, K., & Stadelmann-Steffen, I. 2022. Limited impacts of carbon tax rebate programmes on public support for carbon pricing. *Nature Climate Change*, 12(2), Article 2

Supplemental materials

- Fremstad, Anders, Matto Mildenberger, Mark Paul, and Isabelle Stadelmann-Steffen. 2022. "The role of rebates in public support for carbon taxes." *Environmental Research Letters*, 17(8).
- Aldy, J. E., Kotchen, M. J., Stavins, R. N., & Stock, J. H. 2021. Keep climate policy focused on the social cost of carbon. *Science*, 373(6557), 850–852.
- Kaufman, N., Barron, A. R., Krawczyk, W., Marsters, P., & McJeon, H. (2020). A near-term to net zero alternatives to the social cost of carbon for setting carbon prices. *Nature Climate Change*, *10*(11), Article 11
- Green, J. F. 2021. Does carbon pricing reduce emissions? A review of ex-post analyses. *Environmental Research Letter*s, 16(4), 043004
- World Bank. 2022. State and Trends of Carbon Pricing 2022. Washington, DC: World Bank.
- Environmental Protection Agency. 2022. External Review Draft of Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances. https://www.epa.gov/system/files/documents/2022-11/epa_scghg_report_draft_0.pdf —

This technical report presents the history and most recent update of the social cost of carbon numbers used by the US government.

5. **Oct 3: Climate Change, Macroeconomic Costs, & Macro Risk**

- White House, CEA, & OMB. 2022. Climate-related macroeconomic risks and opportunities.
- Fremstad, Anders and Mark Paul. Revisiting Integrated Assessment Models: Incorporating a Keynesian Multiplier Supports Rapid Decarbonization.

Group Reading 2

- Campiglio, E., Dafermos, Y., Monnin, P., Ryan-Collins, J., Schotten, G., & Tanaka, M. 2018. Climate change challenges for central banks and financial regulators. *Nature Climate Change*, 8(6), 462-468.
- Shrago, Yevgeny and David Arkush. 2022. Looking over the Horizon: The Case for Prioritizing Climate-Related Risk Supervision of Banks. The Roosevelt Institute.

Supplemental materials

- White House, CEA, & OMB. 2023. Methodologies and Considerations for Integrating the Physical and Transition Risks of Climate Change into Macroeconomic Forecasting for the President's Budget.
- Fiedler, T., Pitman, A. J., Mackenzie, K., Wood, N., Jakob, C., & Perkins-Kirkpatrick, S. E. (2021). Business risk and the emergence of climate analytics. *Nature Climate Change*, *11*(2), 87-94.
- Semieniuk, G., Holden, P.B., Mercure, JF. *et al.* 2022. Stranded fossil-fuel assets translate to major losses for investors in advanced economies. *Nat. Clim. Chang.* 12(1), 532–538. https://doi.org/10.1038/s41558-022-01356-y
- National Academies of Science, Engineering, and Medicine. Incorporating Climate into Macroeconomic Modeling: A Workshop.

6. **October 10: The Green New Deal & Investment Led Decarbonization**

- Alexandria Ocasio-Cortez et al. (July 2019). H. Res. 109, Recognizing the Duty of the Federal Government to Create a Green New Deal. 116th Congress. https://www.congress.gov/bill/116th-congress/house-resolution/109/text.
- Paul, Mark, Anders Fremstad, and J.W. Mason. 2019. Decarbonizing the US Economy. Pathways Toward a Green New Deal. Roosevelt Institute. —*Read the entire report, however you may choose to read any 2 of the 8 policies covered in section 1.2, and you may skim section 2.1.*
- [Podcast] Meet the policy architect behind the Green New Deal. The Gray Area with Sean Illing. Guest host David Roberts. —*Try to listen to all of this, but please cover at least the first half.*

Group Reading 3

- Mason, J.W. and Arjun Jayadev. Rethinking Supply Constraints.

Supplemental material

- *[Book]* Kate Aranoff, Alyssa Battistoni, Daniel Aldana Cohen, and Theo Riofrancos, 2019. *A Planet to Win: Why We Need a Green New Deal.* Verso.
- Meckling, Jonas, Thomas Sterner, and Gernot Wagner. 2017. Policy sequencing toward decarbonization. *Nature Energy*, 2(2017): 918-922.

7. **October 17: Degrowth & the Green Growth Paradox**

- John Cassidy. 2020. Can we have prosperity without growth? *The New Yorker.*
- Jason Hickel & Giorgos Kallis. 2019. Is Green Growth Possible? *New Political Economy*, DOI: 10.1080/13563467.2019.1598964
- Andrew McAfee. 2020. Why Degrowth Is the Worst Idea on the Planet. *Wired.*

Group Reading 4

a. Joseph E. Stiglitz. 2020. GDP Is the Wrong Tool for Measuring What Matters. *Scientific American.*
b. OSTP, OMB, Commerce. 2023. National Strategy to Develop Statistics for Environmental-Economic Decisions: A US System of Natural Capital Accounting

and Associated Environmental Economic-Statistics. — *You may choose to read selective parts in section IV and largely skip section V unless you're excited about it!*

Supplemental Material

c. Schmelzer, Matthias, Andrea Vetter, and Aaron Vansintjan. 2022. *The future is degrowth: A guide to a world beyond capitalism*. Verso Books.

d. Keyßer, L.T., Lenzen, M. 2021. 1.5 °C degrowth scenarios suggest the need for new mitigation pathways. *Nature Communications.* 12, 2676. https://doi.org/10.1038/s41467-021-22884-9

e. Dean Baker. 2018. Saving the Environment: Is Degrowthing the Answer? CEPR Blog.

f. Kate Raworth. 2017. *Doughnut Economics: 7 Ways to Think Like a 21st Century Economist*. Chelsea Green Publishing.

g. Semieniuk, Gregor, Lance Taylor, Armon Rezai, and Duncan K. Foley. "Plausible Energy Demand Patterns in a Growing Global Economy with Climate Policy." *Nature Climate Change* 11 (2021): 313–318.

8. October 24: The Return of Industrial Policy: Green Edition

- Isabel Estevez. 2023. "Industrial Transformations." *Phenomenal World.*
- Mazzucato, M. and Semieniuk, G., 2017. Public financing of innovation: new questions. *Oxford Review of Economic Policy*, *33*(1), 24-48.
- [Podcast] The Economics of Green Industrial Policy, with Jason Furman. 2023. Center on Global Energy Policy, SIPA.

Supplemental Material

- Chang, Ha-Joon. 2003. *Globalisation, Economic Development, and the Role of the State*. London: Zed Books.

- Fazili et al. 2023. Industrial Policy Synergies: Reflections from Biden Administration Alumni. The Roosevelt Institute. — *Read section on Industrial Policy + Climate Policy by Jane Flegal.*

9. October 31: The Inflation Reduction Act

- [Podcast] Volts: What to Make of the Democrats' Last-minute Climate Bill. 2022. —*1 hr 25 min, please listen to all of it.*
- Bloomberg NEF. 2023. Report Shows That Inflation Reduction Act Alone Won't Set United States on Track for Net Zero.
- Larsen, J. et al. (2022). A Turning Point for US Climate Progress: Assessing the Climate and Clean Energy Provisions in the Inflation Reduction Act.

Group Reading 5

- Orbis, Robbie, Anand Gopal, Jeffrey Rissman, Michael O'Boyle, Sara Bladwin, and Chris Busch. 2022. "Closing the Emissions Gap Between The IRA and 2030 U.S. NDC: Policies to Meet The Moment." Energy Innovation—*be sure to read/listen to required material on the IRA first.*

Supplemental Material

- [Podcast] Ezra Klein Show: The I.R.A Passed a Year Ago. Here's a Progress Check.
- The White House. 2023. Building A Clean Energy Economy: A Guidebook To The Inflation Reduction Act's Investments in Clean Energy And Climate Action—This breaks down exactly what's in the IRA.
- Bistline, John, Geoffrey Blanford, Maxwell Brown, Dallas Burtraw, Maya Domeshek, Jamil Farbes, Allen Fawcett et al. "Emissions and energy impacts of the Inflation Reduction Act." *Science* 380, no. 6652 (2023): 1324-1327.
- Darling, Pavel, Paul Hibbard, and Luke Daniels. 2021. "Economic Impact of a Clean Energy Payment Program." Analysis Group.
- Gillingham, K., & Stock, J. H. 2018. The Cost of Reducing Greenhouse Gas Emissions. *Journal of Economic Perspectives*, *32*(4), 53–72. https://doi.org/10.1257/jep.32.4.53

10. November 7: Utilities, Ownership, & Permitting [Guest Speaker Johanna Bozuwa]

- Johanna Bozuwa et al. 2021. "A New Era of Public Power." Climate + Community Project —*Read pages 6-40. New York recently passed the Build Public Renewables Act, which you can read about here, here, or here.*
- Hanna, Thomas, Johanna Bozuwa, and Raj Rao. 2022. "The Power of Community Utilities." Democracy Collaborative and Climate + Community Project. —*Just skim a few sections of interest.*

Supplemental Material.

- Bozuwa, Johanna and Dustin Mulvaney. 2023. "A Progressive Take on Permitting Reform." Climate + Community Project & Roosevelt Institute. —*Skim this if you can.*
- Leah C. Stokes. 2020. *Short Circuiting Policy*. Oxford University Press. — *This is an excellent climate book, but takes a more critical approach to public ownership.*
- Sud, Rajan, Sanjay Patnaik, and Robert Glicksman. 2023. "How to Reform Federal Permitting to Accelerate Clean Energy Infrastructure." Brookings.

11. November 14: Winding down Fossil Fuels & Constraining Fossil Finance

- Grubert, Emily. 2020. "Fossil electricity retirement deadlines for a just transition." *Science*. 370 (6521):1171-3.
- Mark Paul and Lina Moe. 2023. "An Economist's Case for Restrictive Supply Side Policies." Climate + Community Project.

Supplemental Material

- Green, F. and Denniss, R., 2018. Cutting with both arms of the scissors: the economic and political case for restrictive supply-side climate policies. *Climatic change*, *150*(1-2), pp.73-87.
- Trout, Kelly. 2019. "Drilling Towards Disaster: Why U.S. Oil and Gas Expansion is Incompatible with Climate Limits." Oil Change International.

12. November 28: A Just Transition—US Focus

- Cha, J. Mijin, Dimitris Stevis, Todd E. Vachon, Vivian Price, and Maria Brescia-Weiler. 2022 "A Green New Deal for all: The centrality of a worker and community-led just transition in the US." *Political Geography* 95 (1).
- Cohen, Daniel Aldana, J. Mijin Cha, Nick Graetz, Aaryaman Singhal, and Raka Sen. 2022. "Securing climate justice federally: A political economy approach to targeted investments." *Environmental Justice.*

Supplemental Material

- Purdy, Jedidiah. 2018. The long environmental justice movement. *Ecology Law Quarterly*, 44(4): 809-864.
- Bullard, R.D. (ed.), *Unequal Protection: Environmental Justice and Communities of Color*. 2nd ed. San Francisco: Sierra Club Books, 1996.
- Mohai, Paul, David Pellow, and J. Timmons Roberts. 2009. Environmental justice. *Annual review of environment and resources* 34 (1): 405-430

13. December 5: International Cooperation & Conflict OR Moonshot ideas: The economics of geoengineering, carbon dioxide removal, and direct air capture. [in-class peer review]

Readings to come

14. **December 12: Final Project Presentations**