

ESM 229 (Winter 2024):

# The Economics, Politics and Ethics of Slowing Climate Change

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Class Meeting Times: MW 9:30-10:50. Bren 1424 (no class Jan. 15 & Feb 19)

Office Hours for Prof Kolstad (BH 3416): M 1:15-3:15 or by appointment

Office Hours for Mr. Danziger (location TBD): TuTh 9-11

**Course Description:** Climate change is one of the greatest environmental problems facing mankind – big consequences, difficult to avoid and lots of uncertainty. What makes the problem tough is people (eg, CO2 on Venus is not a problem at all). In this masters level graduate class we focus on climate change, in the context of the social sciences and policy (particularly economics). Topics covered include ethical issues of climate change, including responsibility for historic emissions, and the politics and economics of solving this global pollution problem. What we will not do (after today) is discuss much of the natural science dimensions of the problem, except to the extent necessary to understand the human dimensions of the issue.

The class is a seminar with a little bit of lecture thrown in. What I look forward to is engaging with a group of very smart and motivated students from a variety of disciplines. That should make for terrific discussions. And to make those discussions as productive as possible, students are expected to have read the assigned and required readings prior to class. Class participation is important and most of that occurs during discussions.

**Health Note:** Standard UC rules apply. If you feel like you might be airborne contagious, or if you are particularly concerned about catching something, please take standard precautions (eg, mask/distancing).

**Note on collaborative work:** Not to sound impolite or bossy, but all work you do is expected to be yours and yours alone. No use of AI, other people, copying from other sources, joint work with other students, etc.. One exception—feel free to collaborate formally with a partner on the final paper. This is standard practice and as environmental professionals, you are expected to meet these standards. Any work submitted that contains contributions from others should be acknowledged at the time of submission. Verbatim use of language from others should be in quotes. General use of findings from others should be cited in a footnote or the equivalent.

**Prerequisites:** ESM204 or equivalent is expected. Some additional relevant coursework in economics, political science or philosophy is recommended.

**Exams:** There will be one midterm in class (Feb 14 – sorry) and no final.

## Grading:

- The final paper, including the steps leading up to it: 40%;
- midterm: 30%;
- class participation (questions, class discussion, attendance, etc.), 30%.

**Readings:** Each class will start with a discussion of one or more of the readings. I will randomly call on students with pointed questions. Be prepared! The readings marked with \* are priorities. Some readings will be available on Canvas; others will be on reserve at the main library; some will be in the Bren library. There are no required texts, though the texts (a) Kolstad: *Environmental Economics* [abbreviated Kolstad (2011)] and (b) Keohane and Olmstead: *Markets and the Environment* (2016) [abbreviated K&O (2016)] may be helpful for background info on environmental economics and should be available in the Bren Library. Keep in mind that I may add and subtract readings as we go along so don't get too far ahead in your readings and check Canvas for updates regularly.

**Disabled students and others needing assistance:** Students with disabilities may request academic accommodations through the UCSB Disabled Students Program ([dsp.sa.ucsb.edu](http://dsp.sa.ucsb.edu)). I am happy to discuss concerns any students have to facilitate their participation in the class. It is best to raise any issues as early in the term as possible.

**Final Paper:** A paper will be due on or before Monday, March 18. Submit via canvas. The paper should not exceed 2000 words, excluding appendices, references and figures. The paper should be argumentative or expository (see <https://www.scribbr.com/academic-essay/essay-types/>). In plain English, convincingly prove a point using evidence by asking a question or proposing a hypothesis and either answer the question or accept/reject the hypothesis, based on the work of others (or of you). What I do not want is a book review or a general review of literature in a certain area. **You may work with a partner (and are encouraged to) on this paper.** There will be four deliverables on the paper (always include your name(s) and word count):

- A title, author(s) and one paragraph statement of your question or hypothesis. Provide one supporting reference. Due on canvas Feb 4.
- A one page proposal for your paper, including your hypothesis/question and your approach to your analysis. Results will come later. Include 3-5 of the most relevant references you will draw on in the paper. Due on Canvas Feb 25.
- A presentation (5 minutes plus 5 min of Q&A) in class during our final week of classes (Mar 11 & 13).
- A written paper, submitted via Canvas, due March 18 (firm).

You choose the topic, which should be relevant to events from sometime in this academic year. **You will receive comments back promptly if your assignment was submitted on time.**

Examples of possible topics:

- Critique of an existing agreement (taking a position), such as UNFCCC, Loss and Damage action taken at COP27 in Sharm El Sheikh or Fossil Fuel Phaseout discussed at COP28 in Doha.
- Critique one country's (eg, UK, US or India) NDC (Nationally Determined Contribution).
- What survey data tells us about changing popular perceptions of climate change over the last half century. What does it mean?
- Find a climate regulation somewhere that has been proposed and is open for public comment. Write an analytic comment and officially submit (if allowed) your comment to the appropriate authority.
- Argue pro or con: Should countries bear responsibility for historic emissions (eg, 19<sup>th</sup> century) or only more recent GHG emissions?
- Should the US (or any country) care about extraterritorial climate damage?

## **Outline of Course (NB—dates are approximate):**

### **Week 1 [Jan 8-10] History and physical**

1. Basic information on the history of climate change, basic science behind climate change, necessary to understand the policy problem, the distinction between weather and climate, greenhouse gases, where in space and time the problem is originating, what is certain and what is not?
2. People: what is our experience with trying to deal this problem, particularly at the international level?

### **Week 2-3 [Jan 17-22] Climate Solutions (Technical and Policy)**

We turn to solving “the problem.” We distinguish between mitigation (generally a public good) and adaptation (more of a private good or a local public good). We also consider adaptation in its various forms.

We first consider how this problem of climate change could physically be solved – mostly through electrification and the decarbonization of electric supply (current thinking). We look at the technological mechanisms that are most promising for ameliorating the problem – electrification, renewables, storage and the duck curve.

We then turn to policy choices, including California’s cap and trade. We also distinguish innovation from behavioral change, both of which may be needed to address the climate issue. We also consider free-riding, leakage, fairness, unanimity, and international institutions.

### **Week 3-4 [Jan 24-29] Public Choice and Ethics**

The issues is how much climate change should we aim for? None? 1.5 degrees? Some other metric? Public choice is the method by which groups (countries, worlds, communities) make choices (such as majority rule or maximizing aggregate net benefits). All methods have advantages and disadvantages. Related to this are issues of fairness, rights and obligations.

### **Week 4-5 [Jan 31-Feb 5] Regulatory Instruments**

In this class we will consider other important aspects of taking action to control emissions of greenhouse gases (GHG). This includes types of regulation (economic incentives, command-and-control, liability, and voluntary measures) It also includes tools to evaluate regulations, including the social cost of carbon, cobenefits, and incidence). We also consider policy models that have been widely used to project the consequences of policy actions.

### **Week 5-6 : (Feb 7-12) Costs, Benefits and the Social Cost of Carbon**

Adding up the costs and benefits of a proposed regulation or project is a common approach to policy analysis in many parts of the world, particularly in the US. This despite the shortcomings of CBA, including issues of income distribution and false equivalence between what is socially desirable and what passes the Cost-Benefit test.

Kolstad and Moore (2020): Estimating the Economic Impacts of Climate Change Using Weather Observations

### **Module 7-8 (Feb 21-28): Policy Modeling**

In order to ground truth policy choices, it is often helpful to develop a model of the climate change process which can be used to simulate different climate policies.

### **Week 9 [Mar 4-6] Special Topics**

#### **1. International agreements and cooperation**

Individual communities, countries/states or groups of countries (or any other subset of the world) can agree to take action with regard to climate change. Cooperative action by less than the entire globe can be easier than global agreement. What makes cooperation work is an important component of solutions to public goods problems (as evidence by 30 years of trying (mostly unsuccessfully) to achieve an international climate agreement). We investigate what is known about making such agreements work.

#### **2. Risk, Uncertainty and Insurance**

Uncertainty is a major feature of most environmental problems. One motivation for government regulation is to bear the risk of uncertain outcomes. But sometimes insurance markets can do that for us (for instance, automobile liability insurance or fire insurance). The three questions we ask here are (1) what are the types of risk we face in the context of climate change; and (2) how much climate risk can be managed by private markets; and (3) what changes in insurance markets can be pursued to make more risks self-managed.

### **Week 10 [Mar 11-13] Final Presentations**

Each final paper will be presented by the authors: 10 minute presentation followed by 5 minute Q&A