

## B8212 Climate Policy Spring 2023

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TEACHING ASSISTANT

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Office Hours by appointment.

Office Hours:

Wednesday 2:30-4:30 pm

Please sign up via [calendly.com/gwa/oh](https://calendly.com/gwa/oh), or join me on a [morning run](#) or (the occasional) [afternoon climb](#). If none of these times work, please [email me](#).

Communications from professor and teaching assistants about the course will take place through Canvas. Students should make sure they regularly check for announcements and messaging notifications.

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### **COURSE DESCRIPTION**

Climate change is the world's most perfect public policy problem: it's more global, more long-term, more uncertain, and more irreversible than most others. It stands alone in the combination of all four. That also turns it into the world's most perfect global externality problem: the benefits of fossil-fuel use are internalized, the costs largely externalized. And while misguided market forces are the root cause of climate change, guiding them in the right direction is fundamental to the solution. In this course we explore the fast-changing global climate policy landscape shaping business. We explore the economic principles at work, analyze individual corporate and finance efforts to lead, dive into the regulatory environments around the world, and look to how the clean-energy race creates unique challenges and opportunities.

### **STUDENT LEARNING OUTCOMES**

This course is designed for both MBA students planning careers in any kind of business or financial sector directly impacted by climate change, and for students planning careers in a climate change-related field (such as renewable energy companies, non-profit or government organizations), who want to understand the process of policy formulation and their impacts.

Specifically, the course objectives are to:

1. Understand and analyze both the risks of unmitigated climate change and the risks and opportunities posed by fast-changing climate policy and regulatory environments.
2. Gain an understanding of current and future climate policies and how they shape the clean-energy race affecting business, the economy, and other policy priorities like national security.
3. Develop tools to analyze competing technologies and business models in response to various policies, using e.g. net-present value analyses.

4. Detect the difference between earnest efforts to lead toward a low-carbon future and attempts to greenwash, obfuscate, or otherwise delay the inevitable transition.

### REQUIRED COURSE MATERIALS

All cases, articles, and background notes will be available via [Canvas](#). Given the fast-changing nature of the climate policy landscape, readings and topics might change throughout the semester. All changes will be announced via Canvas.

### CONNECTION TO THE CORE

The learning in this course will utilize, build on and extend concepts covered in the following core courses:

Core Course	Connection with Core
Corporate Finance	1. Time value of money (& discounting)
Managerial Economics	1. Consumer demand 2. Externalities (& public goods) — building on the congestion charging game from your core micro class(!) 3. Cost analysis 4. Agency and incentives

Students will be expected to have mastered these concepts and be able to apply them in the course.

### CLASSROOM NORMS AND EXPECTATIONS

Students are expected to adhere to CBS Core Culture in this class by being Present, Prepared, and Participating. Students are required to prepare for each class by reading and analyzing the assigned cases and other materials and utilizing any study guidance questions provided via [Canvas](#). In class, students are expected to add thoughtful points to each class discussion and to engage in any online exercises and assignments.

### COURSE ROADMAP/SCHEDULE

Session	Topic(s)	Required Pre-Readings	Assignments Due (Type)
<b>Module 1 (25 January 2023): The Policy Gap</b>			
8:30-10:00	The Cost to Achieve Net-Zero	Wagner & Usher, " <a href="#">The Cost to Achieve Net-Zero</a> ," Columbia CaseWorks #220310	Please come prepared to discuss and engage with the readings...beginning with Module 2. No pre-reading <i>required</i> for this week, though you will be required to do one of your weekly policy memos/op-eds after this class. [See assignments below.]
10:00-10:15	Break  [*Won't be called out explicitly going forward, but we will make sure to stick to this schedule each week.]		
10:15-10:45	Course overview	Syllabus	Read syllabus carefully (C: Indiv)

10:45-11:45	Climate Risk & Policy Risk	Wagner, " <a href="#">How bad?</a> " Wagner, " <a href="#">Pretty bad</a> " Nordhaus, " <a href="#">Why the global warming skeptics are wrong</a> "	
<b>Module 2 (1 February 2023): Climate Economics 101</b>			
8:30-10:00	Negative externalities: The cost of carbon & carbon pricing	Wagner, " <a href="#">The True Price of Carbon</a> " Wagner, " <a href="#">Recalculate the social cost of carbon</a> " Wagner & Weitzman, <a href="#">Climate Shock</a> (chapter 3, "Fat Tails") Daniel, Litterman, Wagner, " <a href="#">Declining CO<sub>2</sub> Price Paths</a> " [abstract & conclusion] Arrow et al, " <a href="#">Determining Benefits and Costs for Future Generations</a> "	Module 1 Weekly policy memo/op-ed
10:15-11:45	Positive externalities: Why subsidize RD&D	Jaffe, Newell, Stavins, " <a href="#">A tale of two market failures: technology and environmental policy</a> " Acemoglu et al, " <a href="#">The Environment and Directed Technical Change</a> " [abstract & introduction]	
<b>Module 3 (8 February 2023): Political Economy 101</b>			
8:30-10:00	Getting policy sequencing right	Wagner et al, " <a href="#">Push renewables to spur carbon pricing</a> " Meckling, Sterner, Wagner, " <a href="#">Policy sequencing toward decarbonization</a> "	Module 2 Weekly policy memo/op-ed
10:15-11:45	Brief history of US climate policy	Lizza, " <a href="#">As the World Burns</a> " Mufson, " <a href="#">The surprising political shifts that led to the climate bill's passage</a> "	
<b>Module 4 (22 February 2023): 'Only technology will save us' vs 'It takes systemic/behavioral change'</b>			
8:30-10:00	Nuclear, carbon removal, geoengineering	Wagner, " <a href="#">Is Nuclear Power Part of the Climate Solution?</a> " Keefer & Nelson Decouple podcast, " <a href="#">The Lazard People Are Taking Over</a> " Ransohoff, " <a href="#">A mental model for combating climate change</a> " Temple, " <a href="#">A climate-focused venture firm plans to invest</a> "	Module 3 Weekly policy memo/op-ed

		<a href="#">\$350 million into carbon removal startups</a> Wagner & Zizzamia, " <a href="#">Green Moral Hazards</a> "	
10:15-11:45	Of 'Nudges' and 'Individual action'	Wagner, " <a href="#">How individual actions can combat climate change</a> "	
<b>Module 5 (1 March 2023): Unintended Consequences &amp; Corporate Net-Zero Goals</b>			
8:30-9:45	Rebound, leakage & 'Green Paradox'	Owen, " <a href="#">The efficiency dilemma</a> " & Lovins's <a href="#">Letter to the Editor</a> Gillingham, Rapson & Wagner, " <a href="#">The Rebound Effect and Energy Efficiency Policy</a> " [skim]  <i>Optional/background:</i> Levinson, " <a href="#">Offshoring Pollution: Is the United States Increasingly Importing Polluting Goods?</a> " Jensen et al, " <a href="#">An Introduction to the Green Paradox: The Unintended Consequences of Climate Policies</a> "	Module 4 Weekly policy memo/op-ed
10:00-11:45	How to distinguish true corporate leadership from greenwashing  10:00-10:30 Guest lecture/discussion with Erik Ranberg/Board Chair, <a href="#">Gjensidige Pension Fund</a>	" <a href="#">Case study: Gjensidige applies basic economics to net-zero</a> " (1 February 2023) Frank & Cullenward, " <a href="#">Climate-related financial risk and corporate net-zero commitments</a> " <i>CarbonPlan</i> (2021). Last Week Tonight with John Oliver on " <a href="#">Carbon Offsets</a> " (24 minutes; warning: coarse language!)	
<b>Exam Week and Columbia Spring Break (no classes on 8 March and 15 March 2023)</b>			
<b>Module 6 (22 March 2023): US federal policies &amp; regulations</b>			
8:30-10:00	Brief History of U.S. Climate Policies  <i>Guest (9:00-10:00am via Zoom):</i> <a href="#">Ana Unruh Cohen</a> , former staff director of the House Select Committee on the Climate Crisis	Lizza, " <a href="#">As the World Burns</a> ," <i>New Yorker</i> (2010) [skim] Wagner & Keith, " <a href="#">Climate after Trump</a> " <i>Foreign Affairs</i> (2016). Kormann, " <a href="#">The false choice between economic growth and combatting climate change</a> ," <i>New Yorker</i> (2019)	Module 5 Weekly policy memo/op-ed [due March 22 <sup>nd</sup> ]

		<a href="#">"Brian Deese, John Podesta and Jake Sullivan on the Inflation Reduction Act"</a> <i>Economist</i> By Invitation (24 January 2023)	
10:15-11:45	Inflation Reduction Act of 2022	McKinsey, <a href="#">"The Inflation Reduction Act: Here's what's in it"</a> (24 October 2022) Wagner, <a href="#">"The Clean-Energy Race Is On"</a>	
<b>Module 7 (29 March 2023): China &amp; India &amp; ...</b>			
8:30-10:00	Chinese climate leadership(!?)	Columbia Center on Global Energy Policy, <a href="#">"Guide to Chinese Climate Policy"</a> [skim]	Module 6 Weekly policy memo/op-ed
10:15-11:45	India & Southeast Asia  <i>Guest</i> (10:45-11:15 via Zoom): Priya Prasad, U.S. Commerce Law Development Program (CLDP)	AIGCC, <a href="#">"Asia's Net Zero Energy Investment Potential"</a> (2021) Zheng, <a href="#">"Which ASEAN countries will be the front-runners to decarbonize their power sectors?"</a> (2022) Camuzeaux, Sterner, Wagner, <a href="#">"India in the coming 'climate G2'?"</a>	
<b>Module 8 (5 April 2023): Power Sector</b>			
8:30-10:00	Coal phase-out policies & politics	<a href="#">"High stakes for Asian Development Bank's ambitious coal power retirement plan"</a> <i>IEEF</i> (Sep 2021) <a href="#">"Designing Coal Retirement Mechanisms for Equity and Impact"</a> <i>Sierra Club</i> (Nov 2021)	Module 7 Weekly policy memo/op-ed
10:15-11:45	Power Purchasing Agreements  <i>Guest</i> (10:15-11:00 via Zoom): Sugandha Srivastav, U Oxford	World Bank <a href="#">"Power Purchase Agreements (PPAs) and Energy Purchase Agreements (EPAs)"</a> [skim]	
<b>Module 9 (12 April 2023): Global climate policies</b>			
8:30-10:00	Kyoto to Copenhagen to Paris	Aldy, Barrett, Stavins, <a href="#">"Thirteen plus one: A comparison of global climate policy architectures"</a>	Module 8 Weekly policy memo/op-ed

		Victor, " <a href="#">Why Paris Worked: A Different Approach to Climate Diplomacy</a> " Kormann, " <a href="#">The false choice between economic growth and combatting climate change,</a> "	
10:15-11:45	Climate Finance in the Global South  <i>Guest: Varad Pande</i>		
<b>Make-up class (Friday, 14 April 2023, Geffen 390): Final paper discussion</b>			
8:30-11:45	Guiding principles for final paper and Q&A		
<b>Module 10 (19 April 2023): US state &amp; local policies</b>			
8:30-10:00	New York City decarbonization policies	Greenberg and Wagner, " <a href="#">Our City Could Become One of the World's Greenest, but It Won't Be Easy</a> " (NYT, February 2023)	Module 9 Weekly policy memo/op-ed
10:15-11:45	US state-level policies: Connecticut  <i>Guest: David Beech, Connecticut Green Bank</i>	" <a href="#">Connecticut Green Bank: In Pursuit of Institutional Legitimacy,</a> " Yale School of Management Case Study #18-016	
<b>Module 11 (26 April 2023): The Business Opportunity</b>			
8:30-10:00	The Global Opportunity: stopping deforestation  <i>Guests: Federica Bietta &amp; Kevin Conrad, Coalition for Rainforest Nations</i>	explore <a href="http://rainforestcoalition.org">rainforestcoalition.org</a> , especially "our work"  Elgin, " <a href="#">This Timber Company Sold Millions of Dollars of Useless Carbon Offsets</a> " <i>Bloomberg</i> (2022).	Module 10 Weekly policy memo/op-ed & Substantive country and/or technology memo
10:15-11:45	Shaping the future of policy	" <a href="#">Managing the net-zero transition</a> " <i>BlackRock Investment Institute</i> (Feb 2022)  Jessop, " <a href="#">BlackRock expects 75% of company and govt assets to be net zero-aligned by 2030</a> " <i>Reuters</i> (14 April 2022)	
			Module 11 Weekly policy memo/op-ed [due May 3 <sup>rd</sup> ]

## METHOD OF EVALUATION

Ten weekly policy memos/op-eds (B <sup>1</sup> Indiv + Discussion)	50%
Country and/or technology memo (B <sup>2</sup> Indiv + Concepts only)	25%
Participation (C Indiv)	25%

## ASSIGNMENTS

- Weekly policy memos/op-eds (B<sup>1</sup> Indiv + Discussion):** Due within a week after each class, these brief (~800-word) papers are either written as internal ‘policy memos’ or public ‘op-eds’. They are brief, well-sourced and researched, and always come with a point of view. The best might even find a public outlet in publications like *The Gigaton*. You’re required to submit 10 memos/op-eds (out of 12 weeks); the *best* 10 of the *first* 11 submitted count toward your grade.
- Substantive country and/or technology memo (B<sup>2</sup> Indiv + Concepts only):** Pick one country and/or technology discussed throughout the semester (or choose another country/technology, with prior permission), and write an 8-to-10-page paper. Argue for or against the business case for the country’s climate policy vis-à-vis a particular technology (or survey the global policy landscape for the technology).

All of your assignment submissions are subject to the [CBS Honor Code](#). Violations of the CBS Honor Code may lead to failing the assignment, failing the course, suspension, and/or dismissal. In order to avoid ambiguity that may lead to unintentional violations of the Honor Code, assignment description types have been standardized and specified below.

Type	Designation	Grade	Preparation of submission	Discussion of Submission*	Discussion of Concepts**
A	Group Work	Same grade for all group members	By the group	Permitted to discuss (within group)	Permitted
B <sup>1</sup>	Individual w/ Discussions of Concepts and Submission	Individual grade	Individual preparation	Permitted to discuss; sharing solutions or submission files is not allowed	Permitted
B <sup>2</sup>	Individual w/ Discussions of Concepts Only	Individual grade	Individual preparation	Not permitted to share/discuss solutions or submission	Permitted
C	Individual	Individual grade	Individual preparation	Not permitted to share/discuss solutions or submission	Not permitted***

The designated group can be either an assigned study group or a self-selected one.

\* Submission means any work and/or output pertaining to the specific assignment. If an assignment submission contains a calculation or decision related to a specific set of data and setting, discussing the details how to make this calculation or decision with regard the data/setting is to discuss the submission. Providing another student with a draft of the calculation or decision is sharing the submission.

\*\* Concepts mean any ideas, examples, readings, or other related materials from the class/course. Conceptual discussion should not be based on a specific set of data or setting related to a calculation or decision required in the assignment, but could be based on other related examples, preferably those from class/course materials.

\*\*\* As no conceptual discussion is permitted, Type C is akin to a take-home exam.

## ATTENDANCE POLICY

Students are required to attend each class. Students should reach out to the instructor or TA regarding excused absences (for religious observances; personal, medical, and family emergencies; military service; court appearances such as jury duty). Unexcused absences will affect your course grade.

- Students that miss more than **33%** of their classes (unexcused absences) will at most receive a **P for the course grade**
- Students that miss more than **50%** of their classes (unexcused absences) will receive a **F for the course grade**

This course may use PollEverywhere as a tool to increase in-class student engagement. PollEverywhere may also be used to confirm student attendance and participation records. Students who have concerns regarding whether their responses have been recorded should contact the instructor.

If a student is not present in the classroom at the time of a poll (due to absences or any other reasons), the poll should not be answered. Responding to a poll when not present in the classroom is a violation of the Honor Code.

## **INCLUSION, ACCOMMODATIONS, AND SUPPORT FOR STUDENTS**

At Columbia Business School, we believe that diversity strengthens any community or business model and brings it greater success. Columbia Business School is committed to providing all students with the equal opportunity to thrive in the classroom by providing a learning, living, and working environment free from discrimination, harassment, and bias on the basis of gender, sexual orientation, race, ethnicity, socioeconomic status, or ability.

Columbia Business School will make reasonable accommodations for persons with documented disabilities. Students are encouraged to contact the Columbia University's Office of Disability Services for information about registration. Students seeking accommodation in the classroom may obtain information on the services offered by Columbia University's Office of Disability Services online at [www.health.columbia.edu/docs/services/ods/index.html](http://www.health.columbia.edu/docs/services/ods/index.html) or by contacting (212) 854-2388.

Columbia Business School is committed to maintaining a safe environment for students, staff and faculty. Because of this commitment and because of federal and state regulations, we must advise you that if you tell any of your instructors about sexual harassment or gender-based misconduct involving a member of the campus community, your instructor is required to report this information to a Title IX Coordinator. They will treat this information as private, but will need to follow up with you and possibly look into the matter. Counseling and Psychological Services, the Office of the University Chaplain, and the Ombuds Office for Gender-Based Misconduct are confidential resources available for students, staff and faculty. "Gender-based misconduct" includes sexual assault, stalking, sexual harassment, dating violence, domestic violence, sexual exploitation, and gender-based harassment. For more information, see <http://sexualrespect.columbia.edu/gender-based-misconduct-policy-students>.