

COURSE SYLLABUS

CM Issues of Climate Change

LECTURER

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COURSE PRESENTATION

As part of the Master *Transitions écologiques* at Université Paris 1, this class offers a general introduction to the problem of climate change from the perspectives of science, politics, economics, history, technology and international relations. Combining lectures with in-class discussions, it begins by examining the scientific framework of the Anthropocene introduced at the beginning of the twenty-first century by geologists and Earth system scientists, before turning to its intellectual ramifications within the nascent field of environmental humanities. How does the Anthropocene challenge the modern “Great Divide” between natural and human history? From this starting point, the seminar explores the major challenges posed by climate change to contemporary societies through an interdisciplinary approach. Moving from Earth system science and its focus on planetary stocks, flows and boundaries to the technological solutions proposed by climate engineering, we will examine the social, political, economic, and geopolitical foundations of technocratic projects aimed at a “global, sustainable, environmental management” of the Earth (Paul Crutzen).

Through major contributions from a range of disciplines, the course develops a totalizing perspective on the climate crisis. It moves from environmental economics and its emphasis on markets and price signals to the political science of the green state and industrial policy; from the political economy of fossil capital and class conflict to the international relations of green capitalism; and, finally, to the risky technological fixes of geoengineering and the emerging politics of adaptation through which political and economic elites seek to respond to an escalating ecological crisis.

LEARNING OUTCOMES

This class will pursue the following learning outcomes:

- 1. Provide a general introduction to the major conceptual and political debates in environmental humanities**
- 2. Interdisciplinary critical thinking, based on in-class participation and discussions**

WEEKLY CLASS DESCRIPTION

Required readings throughout the semester

- **Riofrancos, Thea.** *Extraction: The Frontiers of Green Capitalism*. New York and London: W. W. Norton & Company, 2025.
– *This contemporary book contextualizes today's climate politics in the long history of geoeconomic securitization of minerals, resources and energy.*
- All the readings are accessible in the [GoogleDrive](#).

Week 1 (11/09) – What Age Are We Living In? The Anthropocene Framework: From Earth System Science to Environmental Humanities

- **Mandatory readings**
 - **Crutzen, Paul J., and Eugene F. Stoermer.** “The Anthropocene.” *IGBP Global Change Newsletter* 41 (2000): 17–18; **Crutzen, Paul J.** “Geology of Mankind.” *Nature* 415 (2002): 23; **Crutzen, Paul J.** “The ‘Anthropocene.’” *Journal de Physique IV France* 12, no. 10 (2002): 1–5. – *These are the first texts introducing and popularizing the idea of a geological transition from the Holocene to the Anthropocene, a term associated with biologist Eugene F. Stoermer and atmospheric chemist Paul J. Crutzen. Read the third text and Maslin, Mark, 'What is climate change?', Climate Change: A Very Short Introduction, 4th edn, Very Short Introductions (Oxford, 2021)*
 - **Chakrabarty, Dipesh.** “The Climate of History: Four Theses.” *Critical Inquiry* 35, no. 2 (2009): 197–222 - *In this foundational text of the environmental humanities, Chakrabarty asks what taking climate change seriously means for how we think about human history and the “Great Divide” between nature and culture.*
- **Optional readings**
 - **Steffen, Will, Jacques Grinevald, Paul Crutzen, and John McNeill.** “The Anthropocene: Conceptual and Historical Perspectives.” *Philosophical Transactions of the Royal Society A* 369, no. 1938 (2011): 842–867. – *This paper introduces the idea of a “Great Acceleration” after World War II and reconstructs the conceptual and historical origins of the Anthropocene.*
 - **McNeill, John Robert, and Peter Engelke.** *The Great Acceleration: An Environmental History of the Anthropocene since 1945*. Cambridge, MA: Harvard University Press, 2016. – *A classic book on the Great Acceleration by two environmental historians.*
 - **Lewis, Simon L., and Mark A. Maslin.** “Defining the Anthropocene.” *Nature* 519 (2015): 171–180. – *This article provides an overview of different scientific proposals for dating the beginning of the Anthropocene, including changes in diet, megafaunal extinction, the domestication of plants and the rise of agriculture and deforestation, the colonization of the Americas, industrial capitalism, and the post-World War II nuclear age or “Great Acceleration.”*

Week 2 (18/09) – Periodizing and Naming The Geological Revolution: The Critical Environmental Humanities View

- **Mandatory readings**

- **Bonneuil, Christophe, and Jean-Baptiste Fressoz.** *The Shock of the Anthropocene: The Earth, History and Us*. London: Verso, 2016. Chapters 1–4. – “If the natural sciences are essential to understanding the intrinsic dynamics of the Earth and its inhabitants, conceiving the Anthropocene also requires new environmental humanities.” Written by two French environmental historians, the book challenges the Anthropocene’s “grand narrative” by developing a series of critical counter-narratives, including the Thermocene, Anglocene, Thanatocene, Agnotocene, Capitalocene, and Plantationocene.
- **Haraway, Donna.** “Tentacular Thinking: Anthropocene, Capitalocene, Chthulucene.” *e-flux Journal* 75 (2016). – The philosopher and biologist rejects both “Anthropocene” and “Capitalocene” as framings centered on human mastery, arguing instead for the “Chthulucene” as a call to think through multispecies entanglements, symbiosis, and interdependence rather than domination.

- **Optional readings**

- **Malm, Andreas, and Alf Hornborg.** “The Geology of Mankind? A Critique of the Anthropocene Narrative.” *The Anthropocene Review* 1, no. 1 (2014): 62–69. – A classic eco-Marxist critique of the Anthropocene narrative, arguing that an all-encompassing species concept obscures the historical and contemporary class dynamics of the Capitalocene.
- **Bonneuil, Christophe.** “The Geological Turn: Narratives of the Anthropocene.” In *The Anthropocene and the Global Environmental Crisis*, edited by Clive Hamilton, Christophe Bonneuil, and François Gemenne, 17–31. London and New York: Routledge, 2015. – The French historian introduces the concept of a “geological turn” in the humanities.

Week 3 (25/09) – Stocks, Flows, and Boundaries: The Earth System Science View

- **Mandatory readings**

- **Rockström, Johan, Will Steffen, Kevin Noone, Åsa Persson, F. Stuart Chapin III, Eric F. Lambin, et al.** “A Safe Operating Space for Humanity.” *Nature* 461, no. 7263 (2009): 472–475. – This paper introduced the concept of planetary boundaries: nine Earth-system processes that define a safe operating space for humanity, with several boundaries quantified for the first time. It connects Earth-system processes to the conditions for human well-being.
- **Brand, Ulrich, Barbara Muraca, Éric Pineault, Marlyne Sahakian, Anke Schaffartzik, Andreas Novy, and Christoph Görg.** “From Planetary to Societal

Boundaries: An Argument for Collectively Defined Self-Limitation.” *Sustainability: Science, Practice and Policy* 17, no. 1 (2021): 264–291. – *This paper introduces a critical social-science perspective on the planetary-boundaries framework through the concept of societal boundaries and collectively defined self-limitation.*

- **Optional readings**

- **Steffen, Will, Katherine Richardson, Johan Rockström, et al.** “The Emergence and Evolution of Earth System Science.” *Nature Reviews Earth & Environment* 1, no. 1 (2020): 54–63. – *This article traces the emergence and consolidation of Earth system science as an interdisciplinary field concerned with the interactions among the biological, geological, climatic, and increasingly social dimensions of the Earth system.*
- **Gupta, Joyeeta, Diana Liverman, Klaudia Prodani, Paulina Aldunce, Xuemei Bai, Wendy Broadgate, et al.** “Earth System Justice Needed to Identify and Live within Earth System Boundaries.” *Nature Sustainability* 6, no. 6 (2023): 630–638. – *This article extends the planetary-boundaries framework by asking who gets to use the remaining safe operating space, under what conditions, and according to which principles of justice.*

Week 4 (02/10) – Green Technocracy: The Engineer’s View

- **Mandatory reading**

- **Pacala, Stephen, and Robert Socolow.** “Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies.” *Science* 305, no. 5686 (2004): 968–972 ; [Stone, Maddie, with additional reporting by Amy Westervelt and Katie Worth.](#) “Beyond Denial: How Oil Execs Shaped a Landmark Climate Study.” *Drilled / ProPublica*, June 25, 2026. – *The first is an influential paper that argued that the climate problem could be addressed through a portfolio of existing technologies deployed in parallel as “stabilization wedges.” The second reconstructs how fossil-fuel industry actors helped shape the development and reception of this influential framework.*
- [Ember.](#) *The Electrotech Revolution*. Annual energy report. – *Read the latest annual Ember report on the “electrotech revolution,” which tracks the rapid expansion of electricity-based clean technologies and their implications for the global energy transition.*

- **Optional reading**

- **He, Gang, Jiang Lin, Froylan Sifuentes, Xu Liu, Nikit Abhyankar, and Amol Phadke.** “Rapid Cost Decrease of Renewables and Storage Accelerates the Decarbonization of China’s Power System.” *Nature Communications* 11, no. 1 (2020): 2486.

- **Stechemesser, Annika, Nicolas Koch, Ebba Mark, et al.** "Climate Policies That Achieved Major Emission Reductions: Global Evidence from Two Decades." *Science* 385, no. 6711 (2024): 884–892.
- **Quagraine, Kwesi A., Mark Lynas, and Erle C. Ellis.** "As We Breach 1.5 °C, We Must Replace Temperature Limits with Clean-Energy Targets." *Nature* 649, no. 8099 (2026): 1103–1106.
- Use the **En-ROADS Climate Solutions Simulator**:
<https://www.climateinteractive.org/en-roads/>. Optionally, you can play the Half-Earth game at <https://play.half.earth/>. - *An opportunity to experience the simulation effect of climate action*

Week 5 (23/10) – Managing Climate With Markets: The Mainstream Economist's View

● Mandatory reading

- **Stern, Nicholas.** *The Economics of Climate Change: The Stern Review*. Cambridge: Cambridge University Press, 2007. Read the executive summary and chapter 2. – *A classic analysis of climate change as "the greatest market failure the world has seen," arguing for a broadly neoclassical policy of internalizing negative environmental externalities.*
- **Doganova, Liliana.** *Discounting the Future: The Ascendancy of a Political Technology*. Brooklyn, NY: Zone Books, 2024. Introduction.

● Optional reading

- **Nordhaus, W. (2018).** Nobel Prize Lecture, Stockholm [transcript and video, ~30 minutes].
- **Burke, M. and Goulder, L. (2021).** "The Social Cost of Carbon", Stanford University.
- **Condon, M. (2023).** "Damage Functions, or Why I Am Mad at Economists"

Week 6 (06/11) – Governing Nature: The Political Science of the Green State

- **Mandatory reading**

- **Eckersley, Robyn.** *The Green State: Rethinking Democracy and Sovereignty*. Cambridge, MA: MIT Press, 2004. Read the introduction and chapter 4.
- **Gabor, Daniela, and Benjamin Braun.** "Green Macrofinancial Regimes." *Review of International Political Economy* 32, no. 3 (2025): 542–568. – A widely read article on the logic of "green derisking" and the normative horizon of the "big green state."

Week 7 – The Critique of Fossil Capital: A Class Conflict View (I)

- **Mandatory reading**

- **Malm, Andreas.** *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming*. London: Verso, 2016. Chapters 1 and 11. – This classic book puts social classes and power relations at the heart of debates on climate change and energy transitions.
- **Mitchell, T. (2011).** *Carbon Democracy: Political Power in the Age of Oil* [Introduction and Chapter 1].

- **Optional reading**

- **Huber, Matthew T.** *Lifeblood: Oil, Freedom, and the Forces of Capital*. Minneapolis: University of Minnesota Press, 2013, introduction
- **Huber, Matthew T.** *Climate Change as Class War: Building Socialism on a Warming Planet*. London: Verso, 2022, introduction

Week 8 – The Critique of Fossil Capital: A Class Conflict View (II)

- **Mandatory reading**

- **Christophers, Brett.** *The Price Is Wrong: Why Capitalism Won't Save the Planet*. London: Verso, 2024, introduction + chapter 1
- **Malm, Andreas, and Wim Carton.** *Overshoot: How the World Surrendered to Climate Breakdown*. London: Verso, 2024, introduction + chapter 4.

- **Optional reading**

- **Semieniuk, G., Holden, P., Mercure, J.-F. et al. (2022).** "Stranded fossil-fuel assets translate to major losses for investors in advanced economies", *Nature*

Climate Change.

- **Carney, Mark.** “Breaking the Tragedy of the Horizon—Climate Change and Financial Stability.” Speech at Lloyd’s of London, September 29, 2015. – *A landmark speech on the financial risks of climate change, including the possibility of a carbon bubble and a disorderly repricing of carbon-intensive assets that could trigger a “climate Minsky moment.”*
- Copley, Jack. “Cement’s Stubborn Emissions: Fierce Competition and Overcapacity Crises Are Impeding Efforts to Decarbonize Cement Production.” *Phenomenal World*, August 19, 2026.

Week 9 – A Race to Net Zero? The Geoeconomic View of Green Capital (I)

- **Mandatory reading**

- **Riofrancos, Thea.** *Extraction: The Frontiers of Green Capitalism*. New York: W. W. Norton & Company, 2025. Chapters 1-3 (first group) + 4–5 (second group)

- **Optional reading**

- **Bhambra, Gurinder K.** “Colonial Global Economy: Towards a Theoretical Reorientation of Political Economy.” *Review of International Political Economy* 28, no. 2 (2021): 307–322.

Week 10 – A Race to Net Zero? The Geoeconomic View of Green Capital (II)

- **Mandatory reading**

- **Riofrancos, Thea.** *Extraction: The Frontiers of Green Capitalism*. New York: W. W. Norton & Company, 2025. Chapters 6-7 (first group) + 8–9 (second group)

- **Optional reading**

- **Charbonnier, Pierre,** *War Ecology*, introduction + chapter 1

Week 11 – Climate Politics When It is Too Late: The Adaptation View

- **Mandatory readings**

- **Felli, Romain.** *The Great Adaptation: Climate, Capitalism and Catastrophe*. London: Verso, 2021, introduction + chapter 1

- **Malm, Andreas, and Wim Carton.** *The Long Heat: Climate Politics When It's Too Late*. London: Verso, 2025, preface + chapter 2

Week 12 – Final Exam

COURSE ASSESSMENTS

Students will receive two grades, each accounting for 50% of the final grade. The first grade is based on an in-class group presentation (70%) and participation in class discussions (30%). The second grade is based on a final in-class exam held during the last session of the course.

At each session, two students will briefly recap the content and discussion from the previous session (5 minutes each). The first student group will then give a 15-minute presentation on mandatory reading A, followed by a 15-minute class discussion. The second student group will subsequently present mandatory reading B for 15 minutes, likewise followed by a 15-minute discussion.