

Energy and climate change economics

Professor: Patrice Geoffron
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Department: LSO
Semester: 1

Course level: L3 Undergraduate
Domain: Economics
Teaching language: English
Number of in-class hours: 36
Number of course sessions: 12
ECTS: 6

Course description and objectives

Climate change is mainly linked to an energy model that has historically been based on fossil fuels (coal, oil, and natural gas) since the first industrial revolution. Limiting the main effects of climate change (extreme weather events, sea level rise, etc.) and their economic costs involves deploying low-carbon energy sources (wind power, solar power, etc.), improving energy efficiency and, more broadly, transforming the organization of our societies. The course addresses the main economic challenges and public policies related to these transformations.

In this context, the course examines:

- Economic theory, empirical perspectives, and political economy of energy supply and demand, both for fossil fuel and low carbon sources of energy.
- Public policies affecting energy markets including taxation, price regulation and deregulation, energy efficiency, and control of emissions.
- A specific attention will be given to economic policies such as carbon taxes and tradable emission permits and to the problems of displacing fossil fuels with new energy technologies.

Prerequisites

No

Learning outcomes.

By the end of the course, students will be able to:

- Understand the economic drivers of energy supply, demand, and climate change.
- Analyze major public policies such as carbon taxes, emission permits, and energy efficiency measures.
- Evaluate the challenges of transitioning from fossil fuels to low-carbon energy sources.
- Interpret long-term climate and energy scenarios.
- Discuss global issues related to climate governance, geopolitics of energy, and access to energy.

Assignments and grading

Final exam (50%): The final examination takes the form of an essay on two topics chosen from a list of five topics.

Group project (50%): students, in groups of five, will be asked to work on one of the topics on the COP 31 agenda.

The numerical grade distribution will dictate the final grade. The passing grade for a course is 10/20.

Class participation: Active class participation – this is what makes classes lively and instructive. Come on time and prepared. Class participation is based on quality of comments, not quantity.

Exam policy: In the exam, students will not be allowed to bring any document (except if allowed by the lecturer). Unexcused absences from exams or failure to submit cases will result in zero grades in the calculation of numerical averages. Exams are collected at the end of examination periods.

Course structure

Session	Topic
1	Introduction
2	The causes and consequences of climate change
3	The international framework: From the Kyoto Protocol to the Paris Agreement
4	The paradox of inaction
5	What economic tools can be used for climate action?
6	Geopolitics of energy
7	The issue of universal access to energy
8	The challenge of biodiversity loss
9	Long term scenarios
10	Live analysis of COP 31
11	Conclusion
12	Final Exam

Bibliography

- **All course support documents will be made available via Moodle before the start of the sessions.**
- Stern, Nicholas (2025), [The Growth Story of the 21st Century: The Economics and Opportunity of Climate Action](#). LSE Press, November 2025
- Stern, Todd (2024), [Landing the Paris Climate Agreement: How It Happened, Why It Matters, and What Comes Next](#). Brookings Institution Press, October 2024.
- Rebonato, Riccardo (2024), [How to Think About Climate Change: Insights from Economics for the Perplexed but Open-Minded Citizen](#). Cambridge University Press.

Lecturer's biography

Patrice Geoffron holds a PhD in industrial organization and is a professor of economics. He was interim president of Paris-Dauphine in 2020, and previously served as international vice president and director of the economics laboratory (LEDa). He currently heads the energy-climate team. His research focuses on the convergence between electricity and telecommunications in the context of the low-carbon energy transition, with a particular emphasis on the development of smart cities, smart grids, and the emergence of new organizations and business models, with a recent focus on blockchain.

Moodle

This course is on Moodle: **Yes**

Academic integrity

Be aware of the rules in Université Paris Dauphine about plagiarism and cheating during exams. All work turned in for this course must be your own work, or that of your own group. Working as part of a group implies that you are an active participant and fully contributed to the output produced by that group.