University of Cambridge, Department of Land Economy

EP02: Fundamentals of the Economics of Climate Change

Course description
The course aims to provide MPhil students coming from different backgrounds with the knowledge necessary to make informed decisions and robust analysis when thinking about the economy-environment nexus with application to climate change. Alternative approaches available in the literature on the economics of the climate will be put forward. The emphasis will be on comparing and contrasting different approaches to the economics of climate change, such as traditional economics with its sub-discipline of environmental economics, ecological economics, and elements shaping a new economics trans-disciplinary approach with corresponding policy implications. Traditional economics of climate change tends to take a fragmented view of the economy-environment nexus and is mainly concerned with the economy’s insertion into the environment through anthropogenic greenhouse gas emissions. Alternative and new economics of climate change, on the contrary, adopts a whole systems integrated approach and regards energy-environment-economy linkages as foundational, core to our understanding and managing the climate and economics of our world. The course will cover fundamental concepts and key methods and tools employed in discourses on the economics of climate change. Regulatory instruments in dealing with climate change mitigation with a focus on institutional issues, taxes and tradable pollution permits will be discussed. The course will consist of eight lectures.

Course outline

Lecture 1: Introduction to the course and an overview of the economics of climate change
Şerban Scrieciu

The first lecture will introduce students to the aim of the course, contents, literature, logistics and others. It will then continue by providing an overview of the economics of climate change by comparing and contrasting different approaches to climate change economics, for instance neoclassical traditional economics with its sub-discipline of environmental economics versus ecological economics or other alternative approaches.

Core Readings:
Additional Readings:

- Kolstad, C.D.: *Environmental Economics*. Oxford University Press, 2000 (Chapters 1, 2, and 3)

Lecture 2: The treatment of values in the economics of climate change

Şerban Scrieciu

This lecture will focus on how traditional neoclassical/environmental economics and alternative approaches (ecological economics, new economics) deal with the problem of values when evaluating climate change damages and benefits. It will present the debates surrounding social choice, individual vs social benefits, welfare and wellbeing, preferences, the valuation of natural and social “assets”, and the strengths and limitations of the corresponding tools created to address the treatment of values. Concepts covered will include the double dividend, competitiveness issues, carbon leakage and co-benefits. The lecture will also refer to ethical and social justice issues surrounding the topic. Several references and application will be made to the issue of climate change.

Core Readings:

- Broome, J. Counting the cost of climate change

Additional Readings:

- Kolstad, C.D.: *Environmental Economics*. Oxford University Press, 2000 (Chapters 1, 2, and 3)
- Söderbaum, P. 2001 “Neoclassical economics, institutional theory and democracy. CBA and its alternatives”, *Economic and Political Weekly* 36 (21), 1846-1854 (Mumbai-India)
Lecture 3: The treatment of spatial and temporal effects applied to climate economics

Şerban Scrieciù

A further major differentiation between ecological and neoclassical environmental economics is the treatment of spatial and temporal effects. This lecture will discuss how environmental impacts across (geographical) space are dealt with in the two approaches which are of particular relevance to environmental problems. This lecture will also present the main environmental challenges and their characteristics facing today’s society.

Core Readings

Additional Readings:

Lecture 4: Climate change mitigation potentials and costs

Şerban Scrieciù / Terry Barker (?)

The Mitigation section from the IPCC Fourth Assessment Report introduces new definitions of the economic potential for mitigation policies and presents estimates of these potentials at different costs. The lecture will explain the concepts and provide a guide to the Report and the global, regional and sectoral estimates, both from top-down and bottom-up modelling and analyses. It will also summarise the different approaches (e.g. neoclassical versus new economics) to the economics of mitigation. Issues related to ancillary environmental benefits and co-benefits of climate change mitigation are also explored.

Core Readings

Additional Readings:
- IPCC WG3 Climate Change 2007: Mitigation, CUP.
Lecture 5: Institutional setup for climate policies

Annela Anger-Kraavi

This lecture will address the institutional settings surrounding the climate change problem needed for an effective, efficient and equitable climate policy. It will discuss the formal and informal institutional framework, top-down and bottom-up approaches in harnessing market based instruments to address climate change mitigation. The lecture will also cover the institutional aspects/architecture of the Kyoto Protocol, command-and-control policy measures, and the issue of property rights (including the Coase Theorem).

Core Readings
• Stern, N. (2007) *The Economics of Climate Change*, CUP

Additional Readings
• Kolstad, C.D.: *Environmental Economics*. Oxford University Press, 2000 (Chapter 6)

Lecture 6: Carbon taxes

Annela Anger-Kraavi

The lecture will discuss environmental taxes applied to climate change. The Pigouvian approach is discussed, its limitations highlighted and there will be some analysis of other regulatory or market based approaches.

Core Readings:
• Nordhaus reference?

Additional Readings
• Kolstad, C.D.: *Environmental Economics*. Oxford University Press, 2000 (Chapters 7,8,9 and10)
Lecture 7: Tradable carbon permits

Annela Anger-Kraav

This lecture will discuss carbon permit trading as an alternative or complementary market based instruments to address climate change. The Kyoto flexible mechanisms will be discussed.

Core Readings


Additional readings


Lecture 8: System dynamics of the energy-environment-economy nexus applied to climate change

Şerban Scrieciu / Terry Barker (?)

Human-induced climate change is a systemic problem spanning space and time. This lecture will discuss the complexities and uncertainties surrounding the economics of the climate change debate from a whole systems approach and evolutionary perspective. Central elements of the discussion will be technological change and uncertainties. Current research attempts to shape a new economics approach more suitable for analyzing the climate issue are put forward.

Core Readings


Course assessment

To be developed