



Bergen Summer Research School

› Global Development Challenges

Climate, Environment and Energy

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**Course 1: Economics of cooperation: The case of climate change
(Norwegian School of Economics and Business Administration
(NHH))**

Course Leader:

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Guest Course Leaders:

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Synopsis:

Climate change can be thought of as the 'ultimate' environmental challenge: The benefits of reducing greenhouse gas emissions will be shared globally by the world's rich and poor nations, by present and future generations. Reaping

these benefits requires efforts and sacrifices today. The course aims to give students a firm grasp of what this challenge represents, in order to be analysed as a problem of cooperation. It is centered on economics as a methodology and will use simple mathematical tools to formalize thinking.

Objectives:

Students will have established a working knowledge on how public goods and cooperation is analyzed with the tools of economics, and how this body of knowledge rests in the broader domain of social sciences. In addition, students will have acquired knowledge of climate change in terms of present science, and an ability to evaluate future policy developments.

Course blocks

1: Cooperation over common resources; an interdisciplinary introduction

Resources such as fisheries, grazing areas, air quality and the global atmosphere require a certain level of cooperation – or institutions that support cooperative behavior – in order not to be wastefully exploited.

2: Climate change: the natural sciences

What do we now about climate change, man's role in causing it, its impact on nature and human societies? The lectures will present the basic mechanisms, the impacts, and recent developments in science.

3: "The government" and its role in protecting the environment and the global climate.

The lecture develops the basic rationale for governments to assure protection of environmental goods and services. Environmental goods, whether air quality in Mexico City or the global climate, are public goods that are not in themselves provided by the market. Emissions of pollutants typically represent externalities. Government intervention, through regulation, taxes or tradable quotas can make sure environmental services are provided efficiently.

4: Cost benefit analysis and basic policy instruments applied to environmental problems, and climate change among these

The lecture explains the basic foundations of cost benefit analysis, and its application to environmental problems. Environmental goods and services, such as the global climate, are in principle superb examples for cost-benefit analysis, since government intervention (previous lecture) should be guided by assessment of how important 'the environmental good' is relative to other goods and services.

Part of the lecture involves those questions – and numbers – that are difficult in the case of climate change. What are the impacts, how do we value them,

what weight do we give to impacts several generations ahead, and how do the answers to these question influence the policy recommendations.

5: The mixed methods in the social sciences (plenary lecture)

This lecture places the analysis of climate change in a broader setting of the various methods used in the social sciences.

6: Mitigating climate change: Alternative energy sources, potential, and methods of development

Energy use through fossil fuel consumption is the principal contributor to climate change. What is the potential in renewable, in energy efficiency improvements, in nuclear, and in carbon capture and storage. How do we assess them, and policies to develop them?

7: The costs of mitigation, and rich countries taking the lead

Present policies in Europe include an emission trading system, a cap for emissions in 2020, support for renewable, for energy efficiency, and for Research and Development. The lecture presents a framework for analysis, and uses this to evaluate present policies.

8: The economics of cooperation: basic game theoretic treatment

With the basic methods of economics now placed in a broader context, we can turn to game-theoretic treatment of common resource management. Concepts of free-riding and overfishing are treated thoroughly, and the difficulty of establishing cooperation – joint emission reductions – are dealt with in the classroom.

9: Cooperating internationally:

Climate change used to illuminate fundamental challenges with the help of examples. Cooperation on other transnational commons, such as fisheries, are also used.

10: Policy proposals and the various roads ahead

In this concluding lecture, the lecturer, the students and some of the early student contributions are used to discuss future scenarios, centering around Nicholas Stern's 'towards a deal on climate change'.

Target Students and Prerequisites

The course is meant for PhD students and junior faculty with some prior training in economics. Other methodological background may serve as

substitute. For credit in the PhD programs of NHH, specific course requirements will be agreed.

Student assignments

Seminar paper will be the basis of course approval/credits. Reading is assumed completed before course commences. About 250 hours of work is required, inclusive all Bergen Summer School activities (this course plus plenary activities). Preparatory work includes completing the Required Reading prior to arrival in Bergen. Each student is to deliver a 10-20 page paper (double-spaced) on an agreed topic, within four weeks after the end of the course. The paper will receive careful attention from the Course Leaders and written feedback will be provided.

The activities of this course will be interspersed with Summer School Plenary Sessions, Plenary Panel Debates. NB: All these are mandatory for the full completion of the course. In addition, the overall program of the BSRS includes exhibitions, tours, sightseeing, etc, that all Summer School participants and faculty members will engage in. Please visit to the web pages regarding practicalities and program for further information.

Preliminary Required Reading:

(draft, subject to change)

Methods

Barrett, S. (2003): *Environment and Statecraft*. Oxford University Press, Oxford. Select chapters.

Barrett, S. (2006): Climate treaties and "breakthrough" technologies. *American Economic Review* 96: 22-25

Climate-change policy: why has so little been achieved? Dieter Helm; *Oxford Review of Economic Policy*, Volume 24, Number 2, 2008, pp.211-23;

Climate change and Africa

Paul Collier,* Gordon Conway,** and Tony Venables*** *Oxford Review of Economic Policy*, Volume 24, Number 2, 2008, pp.337-353

A new global deal on climate change

Cameron Hepburn* and Nicholas Stern**

Oxford Review of Economic Policy, Volume 24, Number 2, 2008, pp.259-279