

-NEW COURSE-

**ECON 490: THE ECONOMICS OF GLOBAL WARMING
(Spring, 2008)**

When we consider the fate of the planet as a whole, we must be under no illusions as to what is at stake. Earth's average temperature is around 59⁰F, and whether we allow it to rise by a single degree or 5⁰F will decide the fate of hundreds of thousands of species, and most probably billions of people. Never in the history of humanity has there been a cost-benefit analysis that demands greater scrutiny. (Flannery, p. 170).

If we are to understand climate change, we need to come to grips with three important yet widely misunderstood terms. The terms are *greenhouse gases*, *global warming*, and *climate change*. Green house gases are a class of gases that can trap heat near Earth's surface. As they increase in the atmosphere, the extra heat they trap leads to global warming. This warming in turn places pressure on Earth's climate system and can lead to climate change. (Tim Flannery, p. 19)

Sir Nicholas Stern, a highly respected economist and a long time British civil servant astutely proclaimed climate change as 'the biggest *market failure* the world has ever seen.' This failure refers to the fact that the atmosphere as a global commons will be subject to great *abuse* if production and consumption decisions contributing to greenhouse gas emissions are based on the unfettered decisions of private actors through markets. The primary focus of this seminar is, therefore, to examine how a *market failure* of this nature and magnitude can be remedied so that the threats posed by rising future global temperature will not unduly and irrevocably jeopardize the well-being of future generations and the integrity of the global natural ecosystems.

In this seminar we will examine six key issues that are specifically relevant to the above broadly stated objective of the course. First, from the outset, it is very important to note that climate change is a concern primarily because of its anticipated negative effects on the well-being of *future generations*. To this extent it makes sense to start the seminar with a discussion of whether or not the current generation has any obligations to care for posterity. This issue of *intergenerational equity* as it pertains to climate change will be discussed from its philosophical, theological, ethical and economic perspectives (see the reading list for weeks 1 & 2).

Ethical consideration on what to do (or not do) to mitigate the anticipated threats of climate change to humanity and the natural ecosystems will be followed by discussions on the *scientific uncertainty* of global warming. This uncertainty has two broadly recognized origins: (i) the extent to which climate change is a result of

human activities, and (ii) the magnitudes as well as the specific natures of the long-term impacts of climate change on planet Earth—life as we know it today (see the reading list for weeks 3 & 4).

The third major topic to be addressed in this seminar deals with three generalized alternative positions economists appear to uphold on the conceptualization and assessment of the threats of global warming (i.e., incremental changes in the average temperature of the Earth) on the world economy. The key issue to be discussed in this section is the economic arguments on how much *investment* present generation should make (i.e., act now) in order to mitigate greenhouse gas emissions and in so doing avoid increased future environmental damages. Economists often take the position that investments incurred now to slow future global warming should pass the traditional cost-benefit test (see the reading list for week 5).

The fourth issue that will be covered in this seminar is the assessment of the merits of alternative public policies instruments designed to curb greenhouse gas emissions. For example, is a carbon tax more effective than cap-and-trade program to mitigate worldwide greenhouse gas emissions or the vice versa? The economic arguments for questions of this nature are discussed in this part of the seminar (see the reading list for week 6).

Serious efforts to mitigate greenhouse gas emissions would require careful considerations of alternative energy resources that can be used as substitutes for fossil fuels. This subject matter pertains to the fifth major theme of this seminar (see the reading list for Weeks 7 and 8).

The last section of the seminar will deal with a comprehensive evaluation of the Kyoto Protocol—the only international treaty in existence created to combat climate change. The focus here is on what can be done in the future Kyoto-type treaties to further strengthen future commitments to reduce global greenhouse gas emissions (see the reading list for weeks 9 and 10).

Required Text: [The Weather Makers](#), by Tom Flannery.

READING LIST

Weeks 1 & 2—April 1 and 8: The Ethical Imperatives of Slowing Global Warming

1. Baumol, W. J., "On the Social Rate of Discount," *American Economic Review*, vol. 58, 1968, pp. 788-802.
2. Gower, Barry, S., "What do we owe future generations?" *The Environment in Question*, in David E. Cooper and Joy A Palmer edition, 1992, Routledge, pp. 1-12.
3. Heilbroner, Robert, L., "What Has Posterity Ever Done for Me?" *the New York Times Magazine*, January 19, 1975.
4. Thompson, Thomas, H., "Are We Obligated to Future Others?" *Alternative Futures*, 1:1, Spring 1978.
5. Rawlsian Ethics (Justice and Fairness) as it Applies to Global Warming
6. The Precautionary Principle as it Applies to Global Warming:
 - Orr, David, "Saving Future Generations From Global Warming," *The Chronicle of Higher Education*, April 21, 2000, pp. 1-3.
 - "The Precautionary Principle: A Common Sense Way to Protect Public Health and the Environment," The Science and Environment Health Network, January, 200, pp. 1-7.
 - Goklany, Indur, "Applying the Precautionary Principle to Global Warming," A Summary Report by the National Center for Policy Analysis, pp. 1-2. [For expanded versions of this article, refer to Weidnbaum Center Working Paper No. PS 158, November 2000].
 - The Precautionary Principle in the Context of an Ecological Paradigm: Some Questions and Values," *Earth Ethics*, January 4, 2002.

Weeks 3 & 4—April 14 and 21: The Scientific Uncertainty of Climate Change:

1. Singer, Fred, S., "Global Warming: Man-Made or Natural?" *Imprimis*, a publication of Hillsdale College, vol. 36, no. 8, August, 2007.
2. Textbook: *The Weather Makers*, by Tom Flannery
 - Pages 11-35
 - The Science of Prediction: pp. 153-210.

3. IPCC Fourth Assessment Report (AR4)

- Climate Change 2007: The Physical Science Basis
- Climate Change 2007: Synthesis Report

Week 5—April 29: The Economics of Global Warming

1. Hussen, Ahmed, "The Economics of Global Warming: Not to Act at All, to Act Now or Later, A Paper Presented as an Inaugural Address at the University of Botswana, April, 2007, pp. 1-21.
2. Stern Review: 'The Economics of Climate Change, Executive Summary,' February, 2007.
3. Congressional Budget Office, "Uncertainty in Analyzing Climate Change: Policy Implications, January 2005. pp. 1-36.

Week 6—May 6: Assessment of Alternative Public Policy Options

1. Arrow, Kenneth, "Global Climate Change: A Challenge to Policy," *Economists' Voice*, the Berkeley Electronic Press, June 2007.
2. Shelling, Thomas, "Climate Change: The Uncertainties, the Certainties, and What They Imply About Action, *Economic Voice*, The Berkeley Electronic Press, and July, 2007.
3. Mankiw, Gregory, "One Answer to Global Warming: A New Tax," *The New York Times*, 9/16/2007.
4. Gans, Joshua, "Do Voluntary Carbon Offsets Work?" *Economic Voice*, The Berkeley Electronic Press, October, 2007.
5. Goulder, Lawrence, "California's Bold New Climate Policy," *Economic Voice*, The Berkeley Electronic Press, September, 2007.
6. Williams, Alex, "Buying Into the Green Movement," *The New York Times*, July 1, 2007.

Weeks 7 & 8—May 13 & 20 : The Energy Options

1. Textbook: The Weather Makers, by Tom Flannery
 - Pages 267-306
2. Gardner, Bruce and Wallace Tyner, “Explorations in Biofuels Economics, Policy, and History: Introduction to the Special Issue,” *Journal of Agricultural & Food Industrial Organization*, Vol 5, 2007.
3. The New York Times:
 - “Energy Bill Adopted by House Requires Utilities to Use Renewable Power Sources,” August 5, 2007.
 - “The High Costs of Ethanol,” September 19, 2007.
 - “Solar Power Wins Enthusiasts but Not Money,” July 16, 2007.
 - “The Jane Fonda Effect: Nuclear Energy,” September 16, 2007.

Weeks 9 & 10—May 27 & June 3: The Post-Kyoto Global Regime

1. Textbook: The Weather Makers, by Tom Flannery
 - Pages 222-248.
2. Olmstead, Sheila and Robert Stavins, “A Meaningful Second Commitment Period for the Kyoto Protocol,” *Economists’ Voice*, the Berkeley Electronic Press, May, 2007.
3. Barrett, Scott, “Proposal for a New Climate Change Treaty System,” *Economists’ Voice*, the Berkeley Electronic Press, October, 2007.
4. Stieglitz, Joseph, “A New Agenda for Global Warming,” *Economic Voice*, The Berkeley Electronic Press, July, 2006.
5. Hahn, Robert and Peter Passell, “Time to Change U.S. Climate Policy,” *Economic Voice*, The Berkeley Electronic Press, November, 2007.
6. *The Bali Action Plan*: The United Nations Climate Change Conference in Bali, 3-14, December 2007.
7. *The New York Times*:
 - “Climate Plan Looks Beyond Bush’s Tenure,” December 16, 2007.
 - “As China Goes, So Goes Global Warming,” December 16, 2007.