

# **Economics 133: International Environmental Agreements**

## **Syllabus and Reading List**

### **Course Overview**

This course explains why trans-national environmental problems like stratospheric ozone depletion, global climate change, whaling, acid rain, pollution of the Black Sea, over-fishing, and biodiversity conservation are different from local or intra-national environmental problems. The essential difference is sovereignty, and at a general level this course explains how and why sovereignty matters.

Though the above-mentioned environmental problems differ in the details, they share one thing in common: to correct all these externalities requires international cooperation. Countries must cooperate within the international system, however, and the principle of sovereignty can be unkind to cooperation. From an institutional perspective, sustaining cooperation in these areas is among the greatest of all social challenges.

Cooperation in the environmental area is usually codified in an international treaty. This course will explain why treaties are needed, how they get negotiated and implemented, and whether they do any good.

To do this, we will need to develop a theory of international cooperation, but the aim of the course is to understand real problems, and the theory is applied to a large number of case studies.

The treaty that has been most in the news recently is the Kyoto Protocol on Global Warming. This Treaty came into force on February 16, 2005. In the last class we shall see whether the critics are right that this agreement is, in President Bush's words, "fatally flawed," or whether the supporters of this agreement are right that Kyoto is the best approach available for addressing global climate change.

### **Approach**

The subject of this course has been addressed by a number of disciplines, including economics, international relations, international law, negotiation analysis, and game theory. This course doesn't rely exclusively on any of these disciplines, although it will emphasize economics and elementary game theory. Although the only pre-requisite for the course is a Principles of Economics course (in particular, microeconomics), we will develop and use economic models and concepts that are discussed more fully in the

Intermediate Microeconomic Theory courses, Economics 100 and 170. You should be able to master this course without having one or more of these intermediate theory courses, but you should be prepared to use the microeconomics you learned in the Principles class very heavily and to stretch beyond it as required.

## **TA's, Sections, and Office Hours**

There will be two T.A.'s for the course: Mr. Ian McConnaha and Mr. Marius Rodriguez. They will hold sections and office hours at times to be announced. The sections will be used to go over pre-requisite economics material, questions arising from the lectures, and, especially exam-style questions that will be posed from time to time during the lectures or posted on the UCSD WebCT course website.

All instructors' office hours will be posted on the class website. Please take advantage of office hours and also use e-mail to contact any instructor at other times or if you need to make an appointment.

Please use WebCT for all course-related e-mail. E-mail sent to other addresses (e.g. official UCSD accounts) may not receive a timely response and you may be requested to repost your message to our WebCT mailboxes. You must be logged into WebCT to send e-mail to WebCT mailboxes.

## **Assessment**

Your grade for this course will depend on a mid-term (35%) to be given in class on **October 27** and a final (65%) to be given on **December 7** from 11:30 A.M. - 2:30 P.M.

## **A note on the readings**

The readings from the textbook are required; readings from other sources are optional. You should read the required readings. You will gain more from the course if you also read at least one optional reading for each session. Readings marked by a \* are for the mathematically inclined student. The textbook for this course is Scott Barrett, *Environment and Statecraft: The Strategy of Environmental Treaty-Making*, Oxford: Oxford University Press, 2003.

Students may want to supplement this reading with Richard Elliot Benedick, *Ozone Diplomacy: New Directions in Safeguarding the Planet*, enlarged edition, Cambridge, MA: Harvard University Press, 1998. Richard Benedick was chief US negotiator at the Montreal Protocol talks, and this book nicely complements the theory developed in class. You should also consult the web page for this important agreement: <http://www.unep.org/ozone/treaties.htm>.

## **Course Outline and Reading Assignments**

## 1. What is the problem?

This session will explain why international cooperation is a problem, and why a theory is needed to understand whether our attempts at sustaining cooperation succeed or fail. *Case study: Acid Rain in Europe.*

### Required Readings:

*Environment and Statecraft*, Chapter 1.

### Optional Readings:

M.A. Levy (1993), "European Acid Rain: The Power of Tote-Board Diplomacy," in P.M. Haas, R.O. Keohane, and M.A. Levy (eds.), *Institutions for the Earth*, Cambridge, MA: MIT.

1985 Sulphur Protocol,  
[www.unece.org/env/lrtap/protocol/85sulp.htm](http://www.unece.org/env/lrtap/protocol/85sulp.htm). The second sulphur protocol and the other agreements under LRTAP can be found at: [www.unece.org/env/lrtap](http://www.unece.org/env/lrtap).

G. Hardin (1968), "The Tragedy of the Commons," *Science*, **162**: 1243-48. This is the "classic" reading on the main topic of this course, though not emphasizing the international problem.

U.S. Department of State (1997), *Environmental Diplomacy: The Environment and US Foreign Policy*; see <http://www.state.gov/www/global/oes/earth.html>. This is the Clinton Administration's view of the problem. To get a sense of the current administration's perspective on these problems, see <http://www.state.gov/g/oes/>.

## 2. What is the solution?

This session will demonstrate how an international cooperation problem can arise in the first place, and how it can be corrected by means of an international treaty. *Case study: fur seals.*

### Required Readings:

*Environment and Statecraft*, Chapter 2.

### Optional Readings:

N.S. Mirovitskaya, M. Clark, and R.G. Purvey (1993), "North Pacific Fur Seals: Regime Formation as a Means of Resolving

Conflict," in O.R. Young and G. Osherenko (eds.), *Polar Politics: Creating International Environmental Regimes*, Ithaca: Cornell University Press, pp. 22-55.

### **3. Environmental Interdependence**

This session will look abstractly and in more detail at the problem of international cooperation, and the situations in which unilateralism is likely to lead to unwanted outcomes. *Case study: whaling.*

#### **Required Readings:**

*Environment and Statecraft*, Chapter 3-4.

#### **Optional Readings:**

R. Hardin (1982), *Collective Action*, Washington, DC: Resources for the Future, especially Chapter 2.

R.O. Keohane (1984), *After Hegemony: Cooperation and Discord in the World Political Economy*, Princeton: Princeton University Press, especially Chapter 5.

D.C. North (1990), *Institutions, Institutional Change and Economic Performance*, Cambridge: Cambridge University Press, especially Chapter 2.

### **4. Legal Remedies: Custom and Treaties**

This session considers how trans-national externalities are addressed by the international legal system. *Case study: the Rhine.*

#### **Required Readings:**

*Environment and Statecraft*, Chapters 5-6.

#### **Optional Readings:**

P.W. Birnie and A.E. Boyle (1992), *International Law and the Environment*, Oxford: Clarendon Press, Chapter 3.

T. Bernauer (1996), "Protecting the Rhine River Against Chloride Pollution," in R.O. Keohane and M.A. Levy (eds.), *Institutions for Environmental Aid*, Cambridge, MA: MIT Press, pp. 201-232.

D. Bodansky (1995), "Customary (and not so Customary) International Environmental Law," *Indiana Journal of Global Legal Studies*, **3**: 105-119.

I. Brownlie (1990), *Principles of Public International Law*, Oxford: Oxford University Press, Chapter 25.

Commission on Global Governance (1995), *Our Global Neighbourhood*, Chapter 6, "Strengthening the Rule of Law World-Wide," pp. 303-334.

P.M. Haas, R.O. Keohane, and M.A. Levy, eds. (1993), *Institutions for the Earth: Sources of International Environmental Protection*, Cambridge, MA: MIT Press, Chapter 1.

P. Sands (1995), *Principles of International Environmental Law*, Manchester, UK: Manchester University Press, Chapters 4 and 6.

M.N. Shaw (1991), *International Law*, Cambridge, UK: Grotius, Chapter 3.

L.E. Susskind (1994), *Environmental Diplomacy*, Oxford: Oxford University Press, Chapter 2, "The Weaknesses of the Existing Environmental Treaty-Making System," pp. 11-42.

**October 27<sup>th</sup>, MIDTERM EXAM 12:30 - 1:50 P.M. (in class)**

## **5. Treaty Participation**

This session considers what determines the level of participation in an international environmental agreement.

### **Required Readings:**

*Environment and Statecraft*, Chapter 7.

### **Optional Readings:**

R.D. Putnam (1988), "Diplomacy and Domestic Politics: The Logic of Two-Level Games," *International Organization*, **42**: 427-60.

R.D. Congleton (1992), "Political Institutions and Pollution Control," *Review of Economics and Statistics*, **74**: 412-21.

\*J. Black, M.D. Levi, and D. de Meza (1992), "Creating a Good Atmosphere: Minimum Participation for Tackling the 'Greenhouse Effect,'" *Economica*, **60**: 281-93.

\*W. Vuchholz, C. Haslbeck, and T. Sandler (1998), "When Does Partial Cooperation Pay?" *Finanzarchiv*, **55**: 1-20.

\*M. Hoel (1992), "International Environment Conventions: The Case of Uniform Reductions of Emissions," *Environmental and Resource Economics*, **2**: 141-59.

\*G. Heal (1993), "Formation of International Environmental Agreements," in C. Carraro, ed., *Trade, Innovation, Environment*, Dordrecht: Kluwer.

## 6. The Gains to Cooperation

This session considers how the payoffs in the game of international cooperation can be measured. *Case study: Montreal Protocol*.

You should also consult the web page for this important agreement:  
<http://www.unep.org/ozone/treaties.htm>

### Required Readings:

*Environment and Statecraft*, Chapter 8.

### Optional Readings:

R. Benedick (1998), *Ozone Diplomacy*.

\*J.C. Murdoch and T. Sandler (1997), "The Voluntary Provision of a Pure Public Good: The Case of Reduced CFC Emissions and the Montreal Protocol," *Journal of Public Economics*, **63**: 331-49.

K. Palmer, W.E. Oates, and P.R. Portney (1995), "Tightening Environmental Standards: The Benefit-Cost or the No-Cost Paradigm?" *Journal of Economic Perspectives*, **9**: 119-132.

M.E. Porter and C. van der Linde (1995), "Toward a New Conception of the Environment-Competitiveness Relationship," *Journal of Economic Perspectives*, **9**: 97-118.

## 7. Tipping and Thresholds

This session will look at how treaties can solve coordination problems; how the Montreal Protocol created a “tipping” phenomenon; and how strategy was able to exploit this same phenomenon in the case of MARPOL. *Case study: international oil tanker regulation.*

### **Required Readings:**

*Environment and Statecraft*, Chapter 9.

### **Optional Readings:**

R. Mitchell, “International Oil Pollution of the Oceans,” in P.M. Haas, R.O. Keohane, and M.A. Levy (eds.), *Institutions for the Earth*, Cambridge, MA: MIT.

\*M. Hoel and K. Schneider (1997), “Incentives to Participate in an International Environmental Agreement,” *Environmental and Resource Economics*, **9**: 153-70.

C.F. Runge (1984), “Institutions and the Free Rider: The Assurance Problem in Collective Action,” *Journal of Politics*, **46**: 154-81.

## **8. Compliance and the Strategy of Reciprocity**

This session casts the international cooperation problem in the framework of an infinitely repeated game. Compliance will thus be made endogenous. The participation decision will also be re-examined.

### **Required Readings:**

*Environment and Statecraft*, Chapter 10.

### **Optional Readings:**

A. Chayes, and A.H. Chayes (1993), "On Compliance", *International Organization*, **47**: 175-205.

Downs, G.W., D.M. Rocke and P.N. Barsoon (1996), "Is the Good News About Compliance Good News About Cooperation?" *International Organization*, **50**: 379-406.

R. Axelrod (1984), *The Evolution of Cooperation*, New York: Basic Books, Chapter 2.

A. Chayes and A.H. Chayes (1995), *The New Sovereignty*, Cambridge, Mass: Harvard University Press, especially Chapter 1.

J. Hovi (1998), *Games, Threats, & Treaties*, London: Pinter, Chapters 5 and 6.

M. Olson (1965), *The Logic of Collective Action*, Cambridge: Harvard, especially Chapter 1.

L.E. Susskind (1994), *Environmental Diplomacy*, Oxford: Oxford University Press, Chapter 6, "Monitoring and Enforcement in the Face of Sovereignty," pp. 99-121.

D.G. Victor, K. Raustiala, and E.B. Skolnikoff, eds. (1998), *The Implementation and Effectiveness of International Environmental Commitments*, Cambridge, MA: MIT Press.

## **9. Negotiation Strategies**

This session will consider the problem of negotiation as opposed to treaty design. Concepts to be discussed include focal points, BATNAs, and coalitions. *Case study: European carbon tax negotiation.*

### **Required Readings:**

*Environment and Statecraft*, Chapter 11.

### **Optional Readings:**

S. Barrett (1996), "European Carbon Tax," in A.R. Beckenstein, F.J. Long, M.B. Arnold and T.N. Gladwin (eds.), *Stakeholder Negotiations: Exercises in Sustainable Development*, Chicago: Irwin, pp. 69-91.

H. Raiffa (1982), *The Art and Science of Negotiation*, Cambridge, MA: Harvard University Press.

S. Barrett (1992), "'Acceptable' Allocations of Tradeable Carbon Emission Entitlements in a Global Warming Treaty," in UNCTAD (ed.), *Combating Global Warming: Study on a Global System of Tradeable Carbon Emission Entitlements*, New York: United Nations, 1992, pp. 85-113.

## **10. Trade Leakage and Trade Sanctions**



This session links international trade and international environmental protection. It considers how trade linkages can frustrate unilateral attempts to correct trans-boundary externalities but also how it can assist multilateral approaches.

### **Required Readings:**

*Environment and Statecraft*, Chapter 12.

### **Optional Readings:**

D. Brack (1996), *International Trade and the Montreal Protocol*, London: Royal Institute of International Affairs.

\*H. Cesar and A. de Zeeuw (1994), "Issue Linkage in Global Environmental Problems," *Nota de Lavoro* 56.94, Fondazione Eni Enrico Mattei, Milano.

S. Charnovitz (1996), "Trade Measures and the Design of International Regimes," *Journal of Environment and Development*, **5**: 168-196.

\*H. Folmer, P.V. van Mouche, and S. Ragland (1993), "Intrconnected Games and International Environmental Problems," *Environmental and Resource Economics*, **3**: 313-36.

\*M. Hoel (1994), "Efficient Climate Policy in the Presence of Free Riders," *Journal of Environmental Economics and Management*, **27**: 259-74.

\*M. Hoel (1995), "Should a Carbon Tax be Differentiated Across Sectors?" *Journal of Public Economics*, **59**: 17-32.

L.E. Susskind (1994), *Environmental Diplomacy*, Oxford: Oxford University Press, Chapter 5, "The Advantages and Disadvantages of Issue Linkage," pp. 82-98

## **11. Side Payments and Market Mechanisms**

This session considers increasing participation by offering carrots when countries are asymmetric. We will also look at the effect of market mechanisms like "emissions trading" on cooperation.

### **Required Readings:**

*Environment and Statecraft*, Chapter 13.

## Optional Readings:

<http://www.unep.org/ozone/12mop-inf5.shtml>

<http://www.halontrader.org/>

\*C. Carraro and D. Siniscalco (1993), "Strategies for the International Protection of the Environment," *Journal of Public Economics*, **2**: 309-28.

\*P. Chander and H. Tulkens (1994), "A Core-Theoretic Solution for the Design of Cooperative Agreements on Transfrontier Pollution," *International Tax and Public Finance*, **2**: 279-93.

\*P. Chander and H. Tulkens (1997), "The Core of an Economy with Multilateral Environmental Externalities," *International Journal of Game Theory*, **26**: 379-401.

E.R. DeSombre and J. Kauffman (1996), "The Montreal Protocol Multilateral Fund," in R.O. Keohane and M.A. Levy, eds. (1996), *Institutions for Environmental Aid*, Cambridge, MA: MIT Press, Chapter 4; see also the other chapters in this book.

## 12. How to Negotiate Better Treaties: Climate Change and the Kyoto Protocol

This final session will apply the theory developed in the course to the most challenging of all environmental problems, global climate change. The emphasis will be on what is similar and different from ozone depletion.

### Required Reading:

*Environment and Statecraft*, Chapter 15.

**December 7<sup>th</sup> FINAL EXAM 11:30 A.M. - 2:30 P.M.**