University of California, San Diego
Department of Economics

Winter Quarter 2004
Professors T. Groves & D. Squires
tgroves@ucsd.edu & Dale.Squires@noaa.gov

Economics 182/281: 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. So are the assignments. In the penultimate class, an experienced treaty negotiator will give an "insider's view" of treaty negotiation.

The treaty that has been most in the news recently is the Kyoto Protocol. 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. It builds an approach integrating *all* of them. It also moves back and forth between theory and practice. It relies on lectures, classroom experiments, case study discussions, and invited speakers.

Assessment

Your grade for this course will depend on: (1) a first individual assignment (33%), (2) a group assignment (33%), (3) a final individual assignment (33%), and (4) class participation (we may adjust your final grade up or down depending on your participation in class). You are also encouraged to approach us outside of class, or to write e-mails if you feel more comfortable doing so.

Students are expected to arrive in class on time and to have done the readings before each class. As a courtesy, please also tell us if you are unable to make a class.

A note on the readings

Some readings are required; some 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 main reading for this course 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.

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. The second sulphur protocol and the other agreements under LRTAP can be found at: www.unece.org/env/lrtap.

Optional Readings:

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. Essentials of environmental and resource economics and game theory

These sessions reviews the essential elements of environmental and resource economics and develops the essential components of game theory.

Required Readings:

To Be Announced

3. 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.

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.

4. 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.

January 27, ***First assignment due today***

5. 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.

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.), i>Institutions for Environmental Aid, Cambridge, MA: MIT Press, pp. 201-232.

Optional Readings:

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.

6. Treaty Participation

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

Required Readings:

Environment and Statecraft, Chapter 7.

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

Optional Readings:

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.

7. 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.

8. 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.

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.

Optional Readings:

*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.

9. 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.

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.

Optional Readings:

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.

February 24, ***Second assignment due today***

10. 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.

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.

Optional Readings:

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.

11. 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 ke 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

12. 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.

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

http://www.halontrader.org./

Optional Readings:

*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.

13. A Negotiator's Perspective

Ambassador (Ret'd.) Richard E. Benedick, D.B.A., chief US negotiator at the Montreal Protocol talks; Deputy Assistant Secretary of State for Environment, Health and Natural Resources; currently Deputy Director, Environmental and Health Sciences Division, Pacific Northwest National Laboratory.

14. 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.

March 18th ***Third assignment due today.

Economics 182/281: International Environmental Agreements: Assignment 1

DUE: Tuesday, January 27

Treaty Evaluation

Your first assignment is to select one treaty from the 300 listed in *E&S* (or another of your choosing, subject to our approval) and address the following question: Does the treaty succeed or fail in its aims?

Obviously, there will be a problem in doing such an evaluation. There will not exist a counterfactual. Hence, you will have to apply abstract reasoning to your evaluation. You should look at the outcome, comparing it to the situation that existed before the treaty was negotiated or entered into force (if this is relevant). You should also look at the treaty itself, and ask if it contains the mechanisms needed to change behavior. Your evaluation should reflect an understanding of the challenge posed by the problem (for example, will enforcement be an issue?)

This evaluation should be five pages double-spaced, excluding references and appendices. Please include a copy of the treaty in an appendix.

Economics 182/281: International Environmental Agreements: Assignment 2

DUE: Tuesday, February 24

Great Apes Treaty

Your assignment is to write a first draft of a treaty for the protection of the great apes. These include chimpanzees, gorillas, orangutans, and bonobos. The purpose of this draft treaty is to create support and momentum for a real treaty.

This is not just a hypothetical problem. At the moment, a number of people are working on this idea. A confidential draft treaty has already been prepared. Some leading scientists have met with heads of state in the "range states" to promote the idea. At this point, no one knows if the idea will gain political support. Nor does anyone know what the treaty should look like.

Your treaty need not be very long, but there no page limit. However, in addition to writing a draft treaty, also prepare a five-page memo (double-spaced) explaining the design of your treaty.

You will need to think carefully about the objectives. You will need to think about the connection between this treaty and others (like CITES, the Convention on International Trade in Endangered Species). You will need to think about the means or instruments: how will the objectives be met? (CITES incorporates trade restrictions, for example, but these already apply to the great apes). You will need to think about participation (which countries have to be on board to make the treaty effective, and how can their participation be encouraged?). You will need to think about how the obligations of the treaty can be monitored or verified. You will need to think about compliance. In short, you will need to think about all of the issues addressed in the course.

You may want to look at other treaties—CITES, certainly, but also treaties concerned with individual species or classes of species, including polar bears, vicunas, and European bats.

You may want to consult The Great Ape World Heritage Species Project (http://www.4greatapes.com/index.html). This group is pursuing the idea of making the great apes a "world heritage species," an idea akin to the "world heritage sites" (See the World Heritage Convention). However, please note that this is not obviously the best way to secure an effective agreement for the great apes. An alternative approach, for example, is being promoted by the Great Apes Survival Project (http://www.unep.org/grasp/).

This assignment should be done by groups of about three or four students. Please let us know about the composition of your group. After your group has formed and have had a preliminary meeting, you are encouraged to meet with us to discuss your intended approach to this assignment.

Economics 182/281: International Environmental Agreements: Assignment 3

DUE: Thursday, March 18

The International Convention for the Conservation of Atlantic Tunas (ICCAT)

This treaty, negotiated in 1967 and amended twice since then, tries to limit the catch of different tunas and "tuna-like fishes" (including swordfish). The aim is to build up the stocks of these fishes, so that even larger harvests can be realized in the future.

The treaty has been burdened by two problems: non-participation and non-compliance. To try to deter both, resolutions were adopted in the mid-1990s recommending that parties "take non-discriminatory trade restrictive measures" against both non-parties and parties in non-compliance. Currently there are 35 parties to the treaty. For information on the ICCAT, see http://www.iccat.es/.

Another agreement, negotiated outside of the ICCAT, may have a bearing on the success of this treaty. The Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, negotiated in 1993 but not yet in force, says that all countries have an obligation not to undermine the effectiveness of international conservation measures. This obligation extends even to those agreements to which a country is not a party.

Please do some background research on these two agreements, and answer the following questions:

1. Do you think the trade measures incorporated in the ICCAT will be effective? Please explain.

2. Do you think the Compliance Agreement will help address the kinds of problems plaguing the ICCAT? Again, please justify your answer.

3. How do you think the international system will evolve to address these kinds of problems? To answer this question will require speculation.

Please limit your answers to each question to three pages, double-spaced; your entire paper should not exceed nine pages, double-spaced.