

**PLCY 686 / ENST 686 / ENVR 686 / PLAN 686 Environmental Policy Instruments (3)**

Spring 2013

MW 2:00-3:15

Genomic Sciences (GS) 1373

Instructor: Professor Richard Andrews  
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Public policy interventions are widely used to promote particular environmental management outcomes such as reduction of pollutant emissions and the sustainable management of natural species and ecosystems. This course introduces many of the most widely used types of these policy instruments, criteria for comparing and evaluating them, and applied examples of each. The objective of the course is to challenge students to understand, critically evaluate and design such instruments for use on contemporary environmental problems, both within the United States and internationally.

The course is intended primarily for advanced undergraduates and graduate and professional students in Public Policy, Environmental Studies, Environmental Sciences and Engineering, City and Regional Planning, and related fields. Advanced undergraduates and graduate students in other fields may be admitted with the permission of the instructor. Since many policy instruments are based on economic incentives, it is expected that all students will be familiar with basic concepts in microeconomics and their policy applications (at least at the level of ECON 101 or PLAN 210 or equivalent, preferably ECON 310 or 410. We will not be using mathematical aspects of economics in the course, but the concepts are important).

### **Readings**

The course has three assigned books:

- Sternier, Thomas. 2003. *Policy Instruments for Environmental and Natural Resource Management*. Washington, DC: Resources for the Future Press.
- Pearce, David, Anil Markandya, and Ed Barbier. 1989. *Blueprint for a Green Economy*. London: Earthscan Publications.
- Tietenberg, Tom H. 2006. *Emissions Trading: Principles and Practice*. Second Edition, RFF Press.

All three books are available from Student Stores, and probably on line as well. Much of the course material, however, will be drawn from articles, reports and other additional readings which will be posted on electronic library reserves or on UNC's Sakai course support site (<https://www.unc.edu/sakai/>), or accessed directly from Internet sites.

**Please start by going to the Sakai site and downloading an electronic copy of the full course syllabus** as soon as possible. This will allow you to access many of the readings directly from hotlinks in the syllabus.

## Format

The course will meet for two sessions each week. The format will be a mixture of lecture and discussion, with emphasis on critical analysis of readings and discussion of issues and cases. Readings listed as “*Additional background (optional)*” are not required but are listed as additional references that you may find useful for further knowledge on the topic. Even more additional optional materials are identified in a separate handout labeled “Additional resources” on Sakai.

## Expectations, Written Assignments and Grading

Student evaluation will be based on the following:

1. Paper on price vs. quantity instruments for greenhouse gas reduction (10%) (**due Feb. 20**)
2. A few class assignments and presentations, including debates on several topics (10%)
3. Term paper (40%)
4. Final Exam (30%)
5. Class participation (10%)

Class participation is an important element of the course, both in your grade and for the intellectual value of the class for everyone.

- *It is expected that all students will come to each class having read the assigned readings, thought about the questions they raise, and prepared to participate actively in discussions.*
- *It is also expected that during class periods, everyone will devote their full attention to the class, and will refrain from competing activities such as web-surfing, emailing, texting and other competing forms of multi-tasking.*

As defined by UNC, an “A” indicates *mastery of course content* at the highest level of attainment that can be expected at a given stage of development. A “B” indicates *strong performance*. A “C” indicates an *acceptable performance*. A “D” indicates *marginal performance*. “F” indicates *unacceptable performance*. At the graduate level, H (High Pass) indicates *clear excellence*; P (Pass) indicates *entirely satisfactory* graduate work; L (low pass) indicates *inadequate* graduate work; and F indicates failure. Your full participation in and observance of the Honor Code is also expected (see <http://honor.unc.edu/>).

## Term Paper

Analysis of an environmental policy tools application. Each student is expected to develop and submit a paper examining in detail the potential for applying one or more policy instruments to correcting an environmental problem of your choice. An initial version of the paper will be submitted for review and comments, and then revised and refined before submission for final grading. The paper should show your detailed understanding of the principles involved both with the tools and with the problem to which you propose to apply them, the essential characteristics and design characteristics that would need to be considered in designing such an application, and the likely challenges that would need to be considered and planned for in making it effective and avoiding potential unintended side effects. The paper may be either a critical analysis of an existing application, with your proposals for improving it; or it may propose a design for a new application of policy tools to a problem not yet well addressed by such instruments. In either case this is intended as an exercise in both critical analysis and creative policy design, with close attention to the essential details of designing such an application.

A brief statement of your proposed topic and an initial working bibliography of anticipated reference sources will be due on **Monday, February 25**. A draft of the paper is to be submitted by **Monday, March 25**, for review and comments and a provisional grading by the instructor. Oral presentations of the highlights of the papers will be assigned in **early April**. The final graded version of the paper (anticipated length ~15-20 pages, but length flexible depending on what you have to say), with revisions and refinements, will be due at the final class of the semester, **Wednesday, April 24**.

There are many interesting current examples of environmental policy tool applications for your consideration. Just a few examples include carbon taxes (for example British Columbia's "tax and dividend"); "cap and trade" examples, such as the Kyoto Protocol strengths and weaknesses, RGGI, or California's new system; "feed-in tariffs" for promoting renewable energy; gasoline taxes to reduce carbon and other emissions; the EU proposal to charge aircraft carbon emission fees; water charges; individual transferable quotas and other options for sustainable fishery management; federal and state tax credits and/or rebates to promote renewable energy technologies (or for other purposes, including also "perverse" subsidies for some practices such as fossil fuels and agriculture); energy efficiency and renewable energy (EE/RE) portfolio standards, "public benefit funds" (taxes on energy use to subsidize EE/RE technologies), payments for ecosystem services for forest conservation and watershed protection; extended producer responsibility mandates for product wastes over their full life cycles (e.g. for packaging, and for computers and other electronic products), pollution credits with developing countries (REDD to sequester carbon by preventing deforestation, emissions credits to reduce ozone-layer depleting chemicals such as CFCs), liability and insurance policy proposals for dealing with the prospect of sea-level rise and other issues (for instance the federal flood insurance program, and state coastal property insurance rates); subsidies and tax credits of various sorts for promoting environmental policy goals; "nudges" to influence environmental and energy behavior; dedicated user fees; and many others. Please see the instructor about these or other ideas for topics.

### **Documenting source materials and avoiding plagiarism**

It is very important that you develop good habits of documenting the sources of both factual statements and the ideas and arguments of other people that you use in any paper you write. In written work (including overheads or handouts used in presentations) words drawn from others should be indicated by quotation marks, and ideas drawn from others should refer to their source. The sources of factual information stated in the text should also be referenced.

One basic reason for this practice is to be able to support the statements you make and the facts you use, both for your own future use and if anyone else should question them or want to track them down themselves. A second reason is to distinguish clearly between someone else's ideas and arguments and your own, and not confuse the two. And a third reason is to protect your own integrity against either deliberate or accidental representation of someone else's ideas or work as your own, which if intentional is known as plagiarism and is a serious violation of the UNC Honor Code and of the standards of ethical writing. If you are unsure about what needs to be cited, please talk with me or ask for assistance from the writing center. For additional detail on plagiarism and proper use of other authors' materials, see <http://writingcenter.unc.edu/handouts/plagiarism/>.

Listing references and citing sources: I strongly encourage all students to use the "author, date:page" system for citing references, since it is the simplest and allows you to cite references directly from an alphabetical reference list and avoids having to use footnotes. Please use proper citations, not just your own shorthand notations of sources. For a description and samples of this form of citation see the handout under "Resources/Assignments" on Sakai. For an excellent discussion of criteria for evaluation of the quality of source materials on Internet web sites, see <http://www.lib.berkeley.edu/TeachingLib/Guides/Internet/Evaluate.html>. For handouts on other

good writing practices, see <http://www.unc.edu/depts/weweb/handouts/>.

### Course Schedule (summary)

The professor reserves to right to make changes to the syllabus (excluding the officially scheduled final examination) when unforeseen circumstances occur. These changes will be announced as early as possible so that students can adjust their schedules.

### CLASS SESSIONS AND READINGS

- 1/9 Introduction, course overview, and instrument choice example**
- 1/14 Overview of environmental policy instruments**
- 1/16 Criteria: what makes a good environmental policy instrument?**
- 1/21 No class (MLK holiday) – read Pearce book.**
- 1/23 Valuing Environmental Assets**
- 1/28 Regulatory instruments**
- 1/30 Regulatory instruments**
- 2/4 Environmental taxes, charges, and fees**
- 2/6 Debate: environmental taxes and charges**
- 2/11 Tradable permits**
- 2/13 *Paper due (~5 pp.): compare price vs. quantity control approaches for GHG reduction***
- 2/13 Debate: Price vs. quantity controls for greenhouse gas reduction**
- 2/18 Carbon emissions: offsets trading (*Guest: Dr. Lydia Olander, Duke*)**
- 2/20 Markets for Ecosystem Services**
- 2/25 *Topic statement and initial working bibliography due***
- 2/25 Markets for Ecosystem Services (*Guest: Professor Jim Salzman, Duke Law*)**
- 2/27 Expenditures, investments, subsidies, rebates**
- 3/4 Debate: subsidies, public investments, and tax breaks**
- 3/6 Product responsibility (life-cycle analysis, extended producer responsibility, liability)**
- 3/11, 3/13 No class (spring break)**
- 3/18 Information tools: disclosure/reporting (cases: US Toxics Release Inventory, Indonesia’s PROPER program)**
- 3/20 Information tools: labeling (cases: “ecolabels,” “carbon footprint” labels)**
- 3/25 *Draft research papers due***
- 3/25 Insurance (*Guest: Prof. Don Hornstein*)**
- 3/27 “Voluntary” approaches**
- 4/1 Choice architecture (“nudges”)**
- 4/3 State-level instruments**
- 4/8 International applications**
- 4/10 Presentations**
- 4/15 Presentations**
- 4/17 Presentations**
- 4/22 Presentations**
- 4/24 *Final papers due***
- 4/24 Instrument combinations, institutional challenges to instrument choice, and concluding discussion**
- 5/4 FINAL EXAM: Saturday, May 4, 4:00-7:00 p.m.**

## CLASS SESSIONS AND READINGS

### 1/9 Introduction, course overview, and instrument choice example

### 1/14 Overview of environmental policy instruments

- Discussion: What kinds of policy instruments do governments have available in principle to promote achievement of desirable environmental outcomes? What are the implications of thinking of environmental policies as “instruments” or “tools”? Tools for what purpose, and to do what to whom? What would it take for an environmental policy tool to actually influence an individual’s (or a business’s) environmental behavior?

Stern 67-70

Gunningham, Neil, and Peter Grabosky. 1998. Instruments for Environmental Protection. Chapter 2 in their *Smart Regulation: Designing Environmental Policy*. New York: Oxford/Clarendon Press, pp. 37-91. **Skim for basic understanding of the variety of basic types of instruments, and ask yourself what additional instruments for environmental policy might have been overlooked.** We will discuss the details and strengths and limitations of each at greater length over the semester.

Stern, Paul C. 2005. Understanding Individuals’ Environmentally Significant Behavior. *Environmental L. Rev.* 35: 10785-10790.

Additional background (optional):

Richards, Kenneth R. 2000. Framing Environmental Policy Instrument Choice. *Duke Environmental Law & Policy Forum* 10:221-285. An extremely valuable article on ways of thinking about and categorizing different environmental policy instruments. On line at <http://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1157&context=delpf> (accessed 12-18-2012). For additional articles commenting on Richards, see also <http://scholarship.law.duke.edu/do/search/?q=Richards&start=0&context=1022222>

U.S. EPA. 2001. *The United States Experience With Economic Incentives for Protecting the Environment*, Report No. EPA-240-R-01-001, January 2001. On line (accessed 1/4/2011) at [http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/\\$file/EE-0216B-13.pdf](http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/$file/EE-0216B-13.pdf)

Goodstein, Eban. 2005. Incentive-Based Regulation: Theory, and Incentive-Based Regulation: Practice. Chapters 16 and 17 in his *Economics and the Environment*, 4<sup>th</sup> ed. (NY:Wiley). *On Sakai*.

### 1/16 Criteria: what makes a good environmental policy instrument?

Assignment: Using the blank options matrix available below, list the criteria you would use to evaluate the desirable characteristics and strengths and weaknesses of an environmental policy instrument. Print out a copy with your name on it to turn in.

MacRae, Duncan, and Dale Whittington. 1997. *Expert Advice for Policy Choice*. Introduction. Skim pp. 1-15 for background; read pp. 15-22.

MacRae and Whittington (1997). *Expert Advice for Policy Choice*. Chapter 2: Selecting Criteria. pp. 66-111.

W. K. Kellogg Foundation. The options evaluation matrix. (*skim as example; do not assume that you would use the same criteria for an environmental policy instrument*). On line (accessed December 12, 2012) at <http://ww2.wkkf.org/advocacyhandbook/page4b3.html>

**Blank options matrix:**

[http://ww2.wkkf.org/advocacyhandbook/docs/Blank\\_Options\\_EvaluationMatrix.doc](http://ww2.wkkf.org/advocacyhandbook/docs/Blank_Options_EvaluationMatrix.doc)

Additional background (optional):

Whitfield, Dexter. 2007. Options Appraisal Criteria Matrix. European Services Strategy Unit. On line (accessed December 12, 2012) at

<http://www.european-services-strategy.org.uk/news/2007/pfi-ppp-appraisal-matrix/>

**1/21 No class (MLK holiday) – read Pearce book.**

**1/23 Valuing Environmental Assets**

-Discussion: What were the most interesting and useful ideas you took from David Pearce's book? How does he characterize "sustainable development," and how does he think we should integrate it as an idea into the appraisal of policy project decisions? How does he think we should *value* the environment, and *account for* it in the economy, including future as well as present consequences? How might his ideas influence our consideration of environmental policy tools?

Pearce, David, et al. *Blueprint for a Green Economy*.

Additional background (optional, on Sakai):

Frank Convery commentary on David Pearce (Kyoto, July 2006)

Professor David Pearce (obituary, 2005)

World Bank. 2005. *Where is the Wealth of Nations? Measuring Capital for the XXI Century*. Draft.

**1/28 Regulatory instruments**

Discussion: What kinds of regulatory tools are used as environmental policy instruments? Make a list of as many different *types* of environmental regulations (not just specific laws or regulatory programs) as you can think of (*to discuss and turn in*). What are the pros and cons of using regulations as a primary instrument of environmental policy?

Cole, Daniel H., & Peter Z. Grossman 2005, Institutional and Technological Constraints on Environmental Instrument Choice: A Case Study of the U.S. Clean Air Act. Chapter 10 in *Environmental Policymaking: Assessing the Use of Alternative Policy Instruments*, edited by Michael T. Hatch (Albany, NY: SUNY Press), pp.225-44.

Harrington/Morgenstern/Stern (HMS) chap. 1 (SO<sub>2</sub> emissions in Germany), chap. 3 (industrial water pollution in the US)

Lynch, David J. 2011. The Regulator: Why Business Loves Rules (Really). *Bloomberg Business Week*, January 20, 2011. On line (accessed 12-13-2012) at <http://www.businessweek.com/stories/2011-01-20/the-regulator-why-business-loves-rules-really-businessweek-business-news-stock-market-and-financial-advice>

Bravender, Robin. 2011. Does Industry Cry Wolf on Regulations? *Politico*, March 2, 2011. <http://www.politico.com/news/stories/0311/50443.html> (accessed 12-18-2012)

Additional background (optional):

Stern, Chapter 6, p. 71-81.

## 1/30 Regulatory instruments

-Discussion (case study): Since Congress did not pass cap-and-trade legislation to control greenhouse gases, EPA has now announced its intention to begin issuing regulations to reduce greenhouse gas emissions, backed by a Supreme Court decision confirming its power and responsibility to do so. Are EPA's proposed regulations good policy tools for reducing greenhouse gas emissions (reducing the rate of global warming)? In what respects, and why or why not?

Walsh, Bryan. 2011. Battle Brews Over EPA's Emissions Regulations. *Time*, Jan. 3, 2011  
<http://www.time.com/time/health/article/0,8599,2040485,00.html>

McCarthy, Regina. 2012. Congressional testimony on EPA Regulation of Greenhouse Gases, June 29, 2012. [http://www.epa.gov/ocir/hearings/pdf/2012\\_GHG\\_testimony\\_final.pdf](http://www.epa.gov/ocir/hearings/pdf/2012_GHG_testimony_final.pdf) (accessed 12-18-2012)

*Additional background (optional):*

U.S. EPA Climate Change home page.

<http://www.epa.gov/climatechange/EPAactivities/regulatory-initiatives.html>

## 2/4 Environmental taxes, charges, and fees

Discussion: What are environmental taxes, charges, and fees, and what are the essential differences among them; and what especially is a “Pigovian” tax? What are their main arguments for and against taxes, charges and fees as environmental policy instruments? What effects would you expect them to have on environmental outcomes? On the behavior of individuals and businesses subject to them? On revenues? On innovation?

Frank, Robert. 2013. Heads, You Win. Tails, You Win Too. *New York Times*, January 6, 2013. *On Sakai* and (1-7-2013) at <http://www.sciencemag.org/content/338/6113/1424.full>

Stern, Chapter 8, p. 94-101.

Stavins, Robert N., and Bradley W. Whitehead. 1992. [Pollution Charges for Environmental Protection](#). *Ann. Rev. Energy Environ.* 17:187-210. Accessed 12-17-2012.

*Additional background (optional):*

Olmstead, Sheila. 2012. The Role of Market Incentives in Environmental Policy. Chap. 25 (pp. 553-581) in the *Oxford Handbook of U.S. Environmental Policy*, edited by Sheldon Kamieniecki and Michael Kraft. *On Sakai*.

Stavins, Robert N. 2001. [Experience with market-based environmental policy instruments](#). In *The Handbook of Environmental Economics*, edited by Karl-Göran Mäler and Jeffrey Vincent. Amsterdam: North Holland/Elsevier. Accessed 12-17-2012.  
[http://www.hks.harvard.edu/fs/rstavins/Papers/Handbook\\_Chapter\\_on\\_MBI.pdf](http://www.hks.harvard.edu/fs/rstavins/Papers/Handbook_Chapter_on_MBI.pdf)

## 2/6 Debate: environmental taxes and charges

-Discussion (2 cases): (1) What are the advantages and disadvantages of the federal and state taxes on gasoline as an environmental policy tool? What purpose(s) does it serve and how well does it serve them, and what would be the potential consequences of increasing it – or substituting a road use tax instead? (2) Would a carbon tax be a good solution to the “fiscal cliff” as well as to climate change?

- Pryne, Eric. 2004. Oregon to test mileage tax as replacement for gas tax. *Seattle Times*, July 5, 2004. On line (accessed 12-17-2012) at [http://seattletimes.com/html/localnews/2001972174\\_mileagetax05m.html](http://seattletimes.com/html/localnews/2001972174_mileagetax05m.html)
- Plumer, Brad. 2012. How would a carbon tax work? Let's ask British Columbia. Washington Post, September 19, 2012. On line (accessed 12/12/2012) at <http://www.washingtonpost.com/blogs/wonkblog/wp/2012/09/19/how-would-a-carbon-tax-work-lets-ask-british-columbia/>
- British Columbia introduces carbon tax. February 22, 2008. <http://www.canada.com/vancouver/news/story.html?id=ecea1487-507c-43ef-ab88-5a972898e0b7&k=38130> (accessed 12-18-2012)
- British Columbia government. 2008. B.C.'s Revenue-Neutral Carbon Tax: Background. On line (accessed 12-12-2012) at [http://www.bcbudget.gov.bc.ca/2008/backgrounders/backgrounder\\_carbon\\_tax.htm](http://www.bcbudget.gov.bc.ca/2008/backgrounders/backgrounder_carbon_tax.htm)
- Plumer, Brad. 2012. Could a carbon tax help the U.S. avert the fiscal cliff? Washington Post blog, August 27, 2012. On line (accessed 12-12-2012) at <http://www.washingtonpost.com/blogs/wonkblog/wp/2012/08/27/how-a-carbon-tax-could-help-the-u-s-avert-the-fiscal-cliff/>
- Hoffman, Andrew. 2009. The Limits of Carbon Pricing: Can High Prices Alone Cut Emissions? *Business Week*, November 18, 2009. On line (accessed 12-12-12) at [http://www.businessweek.com/investing/green\\_business/archives/2009/11/the\\_limits\\_of\\_c\\_1.html](http://www.businessweek.com/investing/green_business/archives/2009/11/the_limits_of_c_1.html)
- Additional background (optional):*
- Fogarty, Colin. 2012. Oregon Begins Mileage Tax Pilot Project. NW News Network, November 21, 2012. On line (accessed 12-17-2012) at <http://nwnewsnetwork.org/post/oregon-begins-mileage-tax-pilot-project>
- Whitty, James M. 2007. *Oregon's Mileage Fee Concept and Road User Fee Pilot Program: Final Report*. Oregon Department of Transportation. On line (accessed 12-17-2012) at [http://www.oregon.gov/odot/hwy/rufpp/docs/rufpp\\_finalreport.pdf](http://www.oregon.gov/odot/hwy/rufpp/docs/rufpp_finalreport.pdf)
- Siceloff, Bruce. 2007. Drivers might pay road taxes by mile. *Raleigh News & Observer*, June 17, 2007. On line (accessed 12-18-2012) at <http://rebc.com/library/North%20Carolina/061707%20TNO%20Drivers%20might.pdf>
- Sustainable Prosperity Program, University of Ottawa. 2012. British Columbia's Carbon Tax Shift: The First Four Years. 17 pp. On line (accessed 12-12-2012) at <http://www.sustainableprosperity.ca/dl872&display>
- Tax Executives Institute. 2012. British Columbia Carbon Tax Review. On line (accessed 12-12-2012) at [https://www.tei.org/news/articles/Documents/TTE\\_SO12\\_Sub\\_BCCTR.pdf](https://www.tei.org/news/articles/Documents/TTE_SO12_Sub_BCCTR.pdf). Full submission at <https://www.tei.org/news/Documents/Carbon%20Tax%20Review.pdf>
- Rausch, Sebastian, and John Reilly. 2012. Carbon Tax Revenue and the Budget Deficit: A Win-Win-Win Solution? MIT Joint Program on the Science and Policy of Global Climate Change, Report 228. 18 pp. + refs. On line (accessed 12-12-2012) at [http://globalchange.mit.edu/files/document/MITJPSPGC\\_Rpt228.pdf](http://globalchange.mit.edu/files/document/MITJPSPGC_Rpt228.pdf)

## 2/11 Tradable permits

-Discussion: What are tradable environmental permits, and how many different kinds can you think of? How are they similar to and different from environmental taxes, charges or fees? What are the essential considerations in designing effective cap-and-trade programs, and under what circumstances would you choose them (or not choose them) in comparison with an environmental tax? Why have tradable permits worked better for air pollution than water pollution, and what lessons might one learn from this difference?

- Tietenberg, T. 2006. *Emissions Trading: Principles and Practice*. Read Chapters 1 and 9 (Introduction and Lessons), and the chapter summaries: pp. 45-46, 60-73 (esp. 72-72), 102-03, 123-25, 141-42, 161-63, and 183-86; other material optional if interested.
- U.S. EPA. (No date). *Cap and Trade: Acid Rain Program Results*. On line (accessed 12-18-2012) at <http://www.epa.gov/capandtrade/documents/ctresults.pdf>
- Stavins, Robert N. 1998. What Can We Learn from the Grand Policy Experiment? Lessons from SO<sub>2</sub> Allowance Trading. *J. Economic Perspectives* 12: 69-88. <http://belfercenter.ksg.harvard.edu/files/What%20Can%20We%20Learn%20from%20the%20Grand%20Policy%20Experiment...pdf> (accessed 12-18-2012)
- Newell, Richard G.; Pizer, William A.; and Daniel Raimi. 2013. Carbon Markets 15 Years after Kyoto: Lessons Learned, New Challenges. *Journal of Economic Perspectives* 27: 123-146. <http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.27.1.123> (accessed 3-7-2013)

### Additional background (optional):

Kerr, Robert L.; Steven J. Anderson, and John Jaksch. 2000. Cross-cutting analysis of trading programs: case studies in air, water, and wetland mitigation trading systems. *Learning from Innovations in Environmental Protection*, Research Paper No. 6. Washington, DC: National Academy of Public Administration. On Sakai.

## 2/13 Paper due (~5 pp.): compare price vs. quantity control approaches for GHG reduction

### 2/13 Debate: Price vs. quantity controls for greenhouse gas reduction

-Discussion: Would price- or quantity-based tools be the better policy for greenhouse gas reduction? Why? How would you design your preferred option to deal with the key issues it raises? Finally, can we generalize to what other circumstances are most appropriate for the use of one or the other?

- Pizer, William. 1999. *Choosing Price or Quantity Controls for Greenhouse Gases*. Climate Issues Brief No. 17. Washington, DC: Resources for the Future. On line (accessed 12-12-2012) at <http://www.rff.org/rff/Documents/RFF-CCIB-17.pdf>
- Bennett, Drake. 2005. Emission control. *Boston Globe*, December 18, 2005. On Sakai.
- Chameides, William, and Michael Oppenheimer. 2007. Carbon trading over taxes. *Science* 315:1670. And response by Sunil Somalwar. On Sakai and on line (accessed 12-12-2012) at <http://www.sciencemag.org/content/315/5819/1670.summary> and [http://www.sciencemag.org/content/315/5819/1670.summary/reply#sci\\_el\\_9924](http://www.sciencemag.org/content/315/5819/1670.summary/reply#sci_el_9924)
- Prasad, Monica. 2008. On Carbon, Tax and Don't Spend. *New York Times*, March 25, 2008. <http://www.nytimes.com/2008/03/25/opinion/25prasad.html> (accessed 12-18-2012)

### Additional background (optional):

Weitzman, Martin. 1974. Prices vs. Quantities. *Review of Economic Studies*. Vol. 41, No. 4, Oct. 477-491.

- Kaplow, Louis, and Steven Shavell. 2002. On the Superiority of Corrective Taxes to Quantity Regulation. *American Law and Economics Review*. Vol. 4, No. 1, pp. 1-17.
- Boyce, James K., & Matthew Riddle. 2007. Cap and Dividend: How to Curb Global Warming While Protecting the Incomes of American Families. On line (accessed 1/03/11) at [http://www.peri.umass.edu/fileadmin/pdf/working\\_papers/working\\_papers\\_101-150/WP150.pdf](http://www.peri.umass.edu/fileadmin/pdf/working_papers/working_papers_101-150/WP150.pdf)
- Murray, Brian C.; Newell, Richard G.; and William A. Pizer. 2009. Balancing Cost and Emissions Certainty: An Allowance Reserve for Cap-and-Trade. *Review of Environmental Economics and Policy*, January 6, 2009, pp. 1-20.

**2/18 Carbon emissions: offsets trading** (Guest: Dr. Lydia Olander, Duke)

-Discussion: What are emissions offsets, what various kinds are there, and what are the essential design considerations for each type – for greenhouse gas reduction, for instance, or for conventional air pollutants – to work effectively for their intended purposes? How would REDD+ need to be designed to be an effective tool for protecting tropical forests and not merely to be gamed by a new generation of forest-extraction business strategists? Would consumer credits for carbon offsets be a worthwhile policy?

- Olander, Lydia, and Brian Murray (2008). *Offsets: An Important Piece of the Climate Policy Puzzle*. Duke University: Nicholas Institute Policy Brief. Accessed 12-18-2012 at <http://www.lindentrust.org/pdfs/Offsets-An-Important-Piece-of-the-Climate-Policy-Puzzle.pdf>
- Wara, Michael W., and David G. Victor. 2008. A Realistic Policy on International Carbon Offsets. Stanford Law School, Program on Energy and Sustainable Development Working Paper #74. On Sakai and on line (accessed 12-18-2012) at [http://iis-db.stanford.edu/pubs/22157/WP74\\_final\\_final.pdf](http://iis-db.stanford.edu/pubs/22157/WP74_final_final.pdf)
- Center for International Forestry Research (CIFOR). (no date). *Simply REDD: CIFOR's guide to forests, climate change, and REDD*. On Sakai.
- Angelson, Arild. 2008. REDD Models and Baselines. *International Forestry Review* 10:465-75.
- Dutschke, Michael, and Sheila Wertz-Kanounnikoff. 2008. Financing REDD: linking country needs and financing sources. *CIFOR Inbrief* No. 17, November 2008. On Sakai.
- Karsenty, Alain. 2011. Combining conservation incentives with investment. *CIRAD Perspectives* No. 7, January 2011. On Sakai.
- Pearce, Fred. 2010. Will REDD Preserve Forests Or Merely Provide a Fig Leaf? *Yale 360*, on Sakai and on line at <http://www.e360.yale.edu/content/feature.msp?id=2277> (accessed 12-18-2012)

Additional background (optional):

- Broeckhoff, Derek, and Kathryn Zyla. 2008. *Outside the Cap: Opportunities and Limitations of Greenhouse Gas Offsets*. World Resources Institute. On line (accessed 12-20-1012) at [http://pdf.wri.org/outside\\_the\\_cap.pdf](http://pdf.wri.org/outside_the_cap.pdf)
- Hotz, Robert. 2007. Reaping a profit from the air. *Los Angeles Times*, February 10, 2007. On Sakai.
- McNish, Tyler. 2012. Carbon offsets are a bridge too far in the tradable property rights revolution. *Harvard Environmental Law Rev.* 36:387-443. On Sakai and on line at <http://www3.law.harvard.edu/journals/elr/2012/08/01/carbon-offsets-are-a-bridge-too-far-in-the-tradable-property-rights-revolution/> (accessed 1/4/2013). [An excellent detailed description of how the global carbon offsets market works and its problems, and an argument for using a public investment fund instead.]
- Olander, Lydia. 2008. *Designing Offsets Policy for the U.S.* Nicholas Institute for

- Environmental Policy Solutions, Duke University, Paper NI R 08-01. On line at [http://nicholasinstitute.duke.edu/climate/policydesign/designing-offsets-policy-for-the-u.s/at\\_download/paper](http://nicholasinstitute.duke.edu/climate/policydesign/designing-offsets-policy-for-the-u.s/at_download/paper) (accessed 12-18-2012)
- Schapiro, Mark. 2010. 'Perverse' Carbon Payments Send Flood of Money to China. *Yale Environment 360*. On Sakai and on line (accessed 12-18-2012) at [http://e360.yale.edu/feature/perverse\\_co2\\_payments\\_send\\_flood\\_of\\_money\\_to\\_china\\_/2350/](http://e360.yale.edu/feature/perverse_co2_payments_send_flood_of_money_to_china_/2350/)
- Ecosystem Marketplace (Katoomba Group). 2010. *Leveraging the Landscape: State of the Forest Carbon Markets 2012*. Read Exec. Summary, pp. i-viii. (accessed 12-18-2012) [http://moderncms.ecosystemmarketplace.com/repository/moderncms\\_documents/vcarbon\\_2010.2.pdf](http://moderncms.ecosystemmarketplace.com/repository/moderncms_documents/vcarbon_2010.2.pdf)
- Mercer, D. Evan; Cooley, David; and Katherine Hamilton. 2010. *Taking Stock: Payments for Forest Ecosystem Services in the United States*. U.S. Forest Service, Southern Research Station. [http://www.srs.fs.usda.gov/pubs/ja/2011/ja\\_2011\\_mercer\\_001.pdf](http://www.srs.fs.usda.gov/pubs/ja/2011/ja_2011_mercer_001.pdf) (accessed 12-20-2012) [an overview of all types of PES now in use in the U.S.]

Optional: consumer purchase options for carbon offsets

- Trexler Climate-Energy Services. 2006. A Consumers' Guide to Retail Carbon Offset Providers. Clean Air / Cool Planet. On line (accessed 12-20-2012) at <http://www.cleanair-coolplanet.org/ConsumersGuidetoCarbonOffsets.pdf>
- Rosen-Molina, Mike. 2007. Carbon Credit Report: Can buying carbon credits to offset the greenhouse gases you spew in daily life really help save us from global warming? *East Bay Monthly*, <http://www.themonthly.com/feature-08-07.html> (accessed 12-20-2012)
- Revkin, Andrew. 2007. Carbon-Neutral Is Hip, but Is It Green? *NY Times*, April 29, 2007. <http://www.nytimes.com/2007/04/29/weekinreview/29revkin.html?pagewanted=all&r=0>

**2/20 Markets for Ecosystem Services**

-Discussion (case study): Is the Catskills example a good example of an ecosystem services market (why or why not)? For what other applications would you see PES as a promising too, and why (or why not)? What additional or different design considerations would need to go into other applications of PES?

- Frisch, Carla M. 2006. *Payment for Ecosystem Services: A Consideration of New York's Catskill/Delaware Watershed*. UNC Chapel Hill Senior Honors Thesis, Chapters 4-5. On Sakai.
- Sagoff, Mark. 2002. On the Value of Natural Ecosystems: The Catskills Parable. *Politics and the Life Sciences* 21(1): (2002): 19-25. On line (accessed 12-20-2012) at <http://politicsandthelifesciences.org/Contents/Contents-2002-3/PLS2002-3-4.pdf>
- Pagiola, Stefano; Arcenas, Agustin; and Gunars Platais. 2005. Can Payments for Environmental Services Help Reduce Poverty? An Exploration of the Issues and the Evidence to Date from Latin America. *World Development* 33:237-53. [http://www2.gsu.edu/~wwwcec/docs/doc%20updates/New%20Folder%20%282%29/Pagiola\\_etal\\_05\\_poverty%2520EPS.pdf](http://www2.gsu.edu/~wwwcec/docs/doc%20updates/New%20Folder%20%282%29/Pagiola_etal_05_poverty%2520EPS.pdf) (accessed 12-20-2012)

**2/25 Topic statement and initial working bibliography due**

**2/25 Markets for Ecosystem Services (Guest: Professor Jim Salzman, Duke Law)**

-Discussion: In addition to carbon offsets, a major new category of environmental policy instruments has recently developed in the form of "markets for ecosystem services." What are ecosystem services, and what are the essential elements necessary to create markets for them? What fundamental questions underlie the creation and design of such markets, and

what are their advantages, disadvantages, and unresolved issues?

- Salzman, James. 2005. *Designing Payments for Ecosystem Services*. PERC Reports (accessed 12-20-2012). <http://perc.org/sites/default/files/ps48.pdf>
- Kestenbaum, David. 2013. 'Give Me The Money Or I'll Shoot The Trees'. NPR, February 07, 2013. On line (accessed 3-7-2013) at <http://www.npr.org/blogs/money/2013/02/07/171301983/give-me-the-money-or-ill-shoot-the-trees>

Additional background (optional):

- Salzman, James. 2009. *A Policymaker's Guide to Designing Payments for Ecosystem Services*. Asian Development Bank. On line (accessed 12-20-2012) [http://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=2703&context=faculty\\_scholarship](http://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=2703&context=faculty_scholarship)
- United Nations Food & Agriculture Organization. 2007. *The State of Food and Agriculture: Paying Farmers for Ecosystem Services*. On line (accessed 12-20-2012) at <ftp://ftp.fao.org/docrep/fao/010/a1200e/a1200e00.pdf>
- Mercer, D. Evan; Cooley, David; and Katherine Hamilton. 2010. *Taking Stock: Payments for Forest Ecosystem Services in the United States*. U.S. Forest Service, Southern Research Station. [http://www.srs.fs.usda.gov/pubs/ja/2011/ja\\_2011\\_mercer\\_001.pdf](http://www.srs.fs.usda.gov/pubs/ja/2011/ja_2011_mercer_001.pdf) (accessed 12-20-2012)
- Scherr, Sarah J.; Bennett, Michael T.; Loughney, Molly; and Kerstin Canby. 2006. *Developing Future Ecosystem Services Payments in China: Lessons Learned from International Experience*. See especially Chapters 3 and 4. On line (accessed 1/4/2011) at [http://www.forest-trends.org/documents/files/doc\\_99.pdf](http://www.forest-trends.org/documents/files/doc_99.pdf)

**2/27 Expenditures, investments, subsidies, rebates**

-Discussion: What are the differences among government expenditures, investments, subsidies, rebates, and “tax breaks?” What are the pros and cons of using these sorts of instruments to achieve environmental policy goals? What important criteria and questions must be applied to them? (for example, who should pay for them, what incentives do they create, and should the costs of environmental services to the poor, or of environmental policy impacts on the poor, be subsidized, among other questions?)

How would you distinguish between “good” and “perverse” subsidies?

Stern, Chapter 9, p. 102-108.

Myers, Norman. 1998. *Perverse Subsidies*. Winnipeg, Manitoba: International Institute for Sustainable Development (IISD). Read pp. 1-12, 17-30; skim more as interested. *On Sakai*.

U.S. EPA. 2001. Subsidies for Pollution Control. Pp. 111-42 in its *The United States Experience With Economic Incentives for Protecting the Environment*, Report No. EPA-240-R-01-001, January 2001. *Skim* for examples of environmental subsidies. On line (accessed 12-18-2012) at [http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/\\$file/EE-0216B-13.pdf](http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/$file/EE-0216B-13.pdf)

Additional background (optional):

Newell, Richard. 2008. A U.S. Innovation Strategy for Climate Change Mitigation. The Hamilton Project, Brookings Institution (full report). Washington, DC: Brookings. [http://www.brookings.edu/~media/Research/Files/Papers/2008/12/climate%20change%20newell/12\\_climate\\_change\\_newell.PDF](http://www.brookings.edu/~media/Research/Files/Papers/2008/12/climate%20change%20newell/12_climate_change_newell.PDF) (accessed 12-17-2012)

Gilbert E. Metcalf. 2007. Federal Tax Policy Towards Energy. MIT Joint Program on the Science and Policy of Global Change, Report No. 142.  
[http://globalchange.mit.edu/files/document/MITJPSPGC\\_Rpt142.pdf](http://globalchange.mit.edu/files/document/MITJPSPGC_Rpt142.pdf)

### 3/4      **Debate: subsidies, public investments, and tax breaks**

-Discussion: Is the Obama Administration's recent American Recovery and Reinvestment Act (ARRA, or "stimulus funding") an "investment" or a "subsidy" for such things as renewable energy? Is it good policy? Why or why not? Can the Obama administration and the Congress simultaneously provide both immediate economic stimulus and the foundations for a longer-term transition to a greener economy, particularly in the energy and motor vehicle sectors?

Vice-President's Report on the Recovery Act. 2010. *The Recovery Act: Transforming the American Economy Through Innovation*. Read Executive Summary, pp. 1-3 and 17-26; skim more as interested. On line (accessed 1/4/2011) at

[http://www.whitehouse.gov/sites/default/files/uploads/Recovery\\_Act\\_Innovation.pdf](http://www.whitehouse.gov/sites/default/files/uploads/Recovery_Act_Innovation.pdf)

Lipton, Eric, and Clifford Kraus. 2011. A Gold Rush of Subsidies in Clean Energy Search. *New York Times*, November 11, 2011. On line (accessed 12-18-2012) at

<http://www.nytimes.com/2011/11/12/business/energy-environment/a-cornucopia-of-help-for-renewable-energy.html?pagewanted=all>

Climate change: Why a verdant New Deal would be a bad deal. *The Economist*, Nov. 6, 2008. On line (accessed 12-12-12) at <http://www.economist.com/node/12562343> ..

Solyndra. *New York Times Topics*, updated May 31, 2012.

<http://topics.nytimes.com/top/news/business/companies/solyndra/index.html>

What would be the pros and cons of "feebates" (combining a subsidy with a revenue-neutral tax or surcharge)?

Langer, Therese. 2005. Vehicle Efficiency Incentives: An Update on Feebates for States. American Council for an Energy-Efficient Economy, Report No. T051. Read pp. 4-9. <http://www.aceee.org/sites/default/files/publications/researchreports/t051.pdf> (accessed 12-17-2012)

Greene, David L.; Patterson, Philip D.; Singh, Margaret; and Jia Li. 2005. Feebates, rebates and gas-guzzler taxes: a study of incentives for increased fuel economy. Read abstract and conclusions, skim rest as interested. *Energy Policy* 33: 757-775. On line (accessed 12-17-2012) at

[http://www.mnspruce.ornl.gov/sci/ees/etsd/cta\\_new/Publications/Reports/FeebateEnergyPolicy\\_FINAL.pdf](http://www.mnspruce.ornl.gov/sci/ees/etsd/cta_new/Publications/Reports/FeebateEnergyPolicy_FINAL.pdf)

Final discussion question: What would you consider examples of legitimate and desirable environmental subsidies that should be kept or created, and what would you consider examples of "perverse" subsidies that should be abolished? What principles would you use to distinguish between these?

### 3/6      **Product responsibility (life-cycle analysis, extended producer responsibility, liability)**

-Discussion: What is "extended producer responsibility," and how might it serve as an environmental policy tool? What design issues would be involved – for instance, in EPR for

electronics products, a major and growing category of toxic waste products – and how would you design an effective EPR system for electronic wastes?

What are the advantages and disadvantages of imposing clearer liability for environmental consequences more generally as an environmental policy tool?

- Walls, Margaret. 2006. Extended Producer Responsibility and Product Design: Economic Theory and Selected Case Studies. Discussion Paper 06-08. Washington, DC: Resources for the Future. <http://www.rff.org/Documents/RFF-DP-06-08-REV.pdf> (12-20-2012)
- Stern, Chapter 10, p. 115-119.
- Shavell, Steven. 1984. Liability for Harm versus Regulation for Safety. *Journal of Legal Studies* 13:357-74. *On Sakai*.

Additional background (optional):

- Abraham, Kenneth S. 1988. Environmental Liability and the Limits of Insurance. *Columbia Law Review* 88(5): 942-988. *On Sakai*.
- Richardson, Benjamin J. 2002. Mandating Environmental Liability Insurance. *12 Duke Envtl. L. & Policy Forum* 12: 293-329. *On Sakai*.
- U.S. EPA. 2001. Liability Approaches. Pp. 143-51 in its *The United States Experience With Economic Incentives for Protecting the Environment*, Report No. EPA-240-R-01-001, January 2001. On line (accessed 1/4/2011) at [http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/\\$file/EE-0216B-13.pdf](http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/$file/EE-0216B-13.pdf)

**3/11, 3/13 No class (spring break)**

**3/18 Information tools: disclosure/reporting (cases: US Toxics Release Inventory, Indonesia's PROPER program)**

-Discussion: How do information disclosure and reporting requirements, such as TRI and PROPER, function as an environmental policy tool? What are their strengths and limitations? How would you refine their design to make them more effective? Can you think of other environmental applications of them that might also be effective?

- Tietenberg, Tom, and David Wheeler. 1998. Empowering the Community: Information Strategies for Pollution Control. *Frontiers of Environmental Economics*, edited by H. Folmer, H. L. Gabel, S. Gerking and A. Rose. (Cheltenham, UK: Edward Elgar, 2001), pp. 85-120. On line (12-20-2012) at <http://www.colby.edu/personal/t/ttieten/front.pdf>
- U.S. EPA. 2001. Information Disclosure. Pp. 153-164 in its *The United States Experience With Economic Incentives for Protecting the Environment*, Report No. EPA-240-R-01-001, January 2001. On line (accessed 12-20-2012) at [http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/\\$file/EE-0216B-13.pdf](http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/$file/EE-0216B-13.pdf)
- Afsah, Shakeb, and Jeffrey R. Vincent. 1997. Putting Pressure on Polluters: Indonesia's PROPER Program. Case Study for the HIID 1997 Asia Environmental Economics Policy Seminar, Harvard Institute for International Development. *On Sakai*.

Additional background (optional):

- EPA. The Toxics Release Inventory. <http://www.epa.gov/tri/triprogram/whatis.htm>
- García, Jorge H.; Afsah, Shakeb; and Thomas Stern. 2008. What Kinds of Firms Are More Sensitive to Public Disclosure Programs for Pollution Control? The Case of Indonesia's PROPER Program. Environment for Development Discussion Paper Series Paper no. EfD DP 08-12, March 2008. On line (accessed 12-20-2012) at <http://www.efdinitiative.org/research/publications/publications-repository/what-kind>

[s-of-firms-are-more-sensitive-to-public-disclosure-programs-for-pollution-control-the-case-of-indonesia2019s-proper-program/files/EfD-DP-08-12.pdf](https://www.epa.gov/efd/efd-dp-08-12.pdf)

**3/20 Information tools: labeling (cases: “ecolabels,” “carbon footprint” labels)**

-Discussion: How do environmental labeling programs function as an environmental policy tool? What different types of labels are there, and what important differences exist among the characteristics of each of these types and their related design considerations? Examples? What are the main strengths and limitations of each? What would be necessary to design an effective carbon labeling program?

Sterner, pp. 122-26

U.S. EPA. 2001. Information Disclosure: Labeling Schemes. Pp. 164-172 in its *The United States Experience With Economic Incentives for Protecting the Environment*, Report No. EPA-240-R-01-001, January 2001. On line (accessed 12-20-2012) at [http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/\\$file/EE-0216B-13.pdf](http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/$file/EE-0216B-13.pdf)

Thøgersen, John. 2002. Promoting “green” consumer behavior with eco-labels. Chapter 5 in *New Tools for Environmental Protection*, edited by Thomas Dietz and Paul C. Stern. Washington, DC: National Academy Press, pp. 83-104. *On Sakai*.

Carbon Trust. 2008. *Working with Tesco: case study (groceries)*. *On Sakai*.

Specter, Michael. 2008. Big Foot: In measuring carbon emissions, it’s easy to confuse morality and science. *The New Yorker*, February 25, 2008. *On Sakai*.

Additional background (optional):

Müller, Edda. 2005. Environmental Labeling, Innovation, and the Toolbox of Environmental Policy: Lessons Learned from the German Blue Angel Program. Chapter 2 in *Environmental Policymaking: Assessing the Use of Alternative Policy Instruments*, edited by Michael T. Hatch (Albany, NY: SUNY Press), pp.17-44. *On Sakai*.

Behind the Eco-Label, a Debate Over Antarctic Toothfish. *Science* 329:1596-97, September 24, 2010. *On Sakai*.

**3/25 Draft research papers due**

**3/25 Insurance (Guest: Professor Don Hornstein, UNC Law)**

-Discussion: How does insurance function as an environmental policy tool, and how can it be designed to function as an effective tool and not create perverse incentives? What would be the essential characteristics of an effective insurance program as a policy tool for incentivizing coastal property owners in the face of hurricanes and a potentially increased rate of sea level rise?

Hornstein, Donald T. Climate Change and Insurance: An Introduction. (working paper, 9 pp.). *On Sakai*.

Klein, Robert. 2010. Can property insurance companies in hurricane-prone areas sustain their operations? Wharton Issue Brief. On line (accessed 12-20-2012) at [http://opim.wharton.upenn.edu/risk/library/WRCib20102\\_hurricane-ins-markets.pdf](http://opim.wharton.upenn.edu/risk/library/WRCib20102_hurricane-ins-markets.pdf)

King, Rawle. 2012. The National Flood Insurance Program: Status and Remaining Issues for Congress. Congressional Research Service Report No. R42850 (7-5700). Read pp. 1-8. On line (accessed 12-20-2012) at <http://www.fas.org/sgp/crs/misc/R42850.pdf>

- Kunreuther, Howard, and Erwann Michel-Kerjan. 2009. Encouraging Adaptation to Climate Change: Long-Term Flood Insurance. Resources for the Future (RFF) Issue Brief; Risk Center Working Paper # 2009-10-01, The Wharton School, University of Pennsylvania. On line (accessed 12-20-2012) at <http://opim.wharton.upenn.edu/risk/library/RFF-IB-09-13.pdf>
- Mills, Evan. 2013. The Greening of Insurance. *Science* 338: 1424-25. *On Sakai* and on line at <http://www.sciencemag.org/content/338/6113/1424.full> (accessed 1-7-2013)

Additional background (optional):

- Property Casualty Insurers Association of America. (no date). *The Milliman Report: An Analysis of the North Carolina Beach Plan and the Future of the State's Property Insurance System*. *On Sakai*.
- Hornstein, Donald T., and Daniel E. Peterson. 2009. Best bet for the Beach Plan. *News & Observer*, July 16, 2009. *On Sakai*.
- Murawski, John. 2009. Law shifts burden for storm damage. *News & Observer*, August 7, 2009. *On Sakai*.
- Ranii, David. 2009. Reforms increase competition for home insurance. *News & Observer*, Aug. 15, 2009. *On Sakai*.

**3/27 “Voluntary” approaches**

-Discussion: What is a “voluntary” approach as an environmental policy tool, and what are its strengths and limitations? Under what circumstances can “voluntary” commitments by businesses – for instance, the adoption of Energy Star appliance or home labeling, or the 33/50 program for reducing toxic chemicals, or an ISO 14001 Environmental Management System – be relied on to assure environmental performance?

Sterner, pp. 119-22

- U.S. EPA. 2001. Voluntary Programs. Pp. 173-96 (*skim for examples*) in its *The United States Experience With Economic Incentives for Protecting the Environment*, Report No. EPA-240-R-01-001, January 2001. On line (accessed 12-20-2012) at [http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/\\$file/EE-0216B-13.pdf](http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0216B-13.pdf/$file/EE-0216B-13.pdf)
- Andrews, R. N. L. 1998. Environmental Regulation and Business “Self-Regulation.” *Policy Sciences* 31:177-97. *On Sakai*.
- Andrews, R. N. L.; Hutson, A.; and D. Edwards Jr. 2006. Environmental Management Under Pressure: How Do Mandates Affect Performance? Chapter 5 in *Leveraging the Private Sector: Management-Based Strategies for Improving Environmental Performance*, edited by Cary Coglianese and Jennifer Nash. Washington, DC: Resources for the Future Press, pp. 111-136. *On Sakai*.
- May, Peter J. 2005. Regulation and Compliance Motivations: Examining Different Approaches. *Public Administration Review* 65(1):31-44. *On Sakai*.

Additional background (optional):

- Hatch, Michael T. 2005. Voluntary Agreements: Cornerstone or Fig Leaf in German Climate Change Policy? Chapter 5 in his *Environmental Policymaking: Assessing the Use of Alternative Policy Instruments* (Albany, NY: SUNY Press), pp. 97-124
- Mazurek, Janice. 1998. *The use of voluntary agreements in the United States: an initial survey*. Document No. ENV/EPOC/GEEI(98)27/FINAL. Paris: OECD. <http://search.oecd.org/officialdocuments/displaydocumentpdf/?cote=ENV/EPOC/GEEI%2898%2927/FINAL&doclanguage=en> (accessed 12-20-2012)

#### 4/1 Choice architecture (“nudges”)

-Discussion: How does purposely designing the architecture of people’s choices – “nudging” those of individuals, and also those of businesses and other organizations – function as an environmental policy instrument? What are its strengths and limitations? What is the promise and what are the limits of this approach? (Note the differences between Thaler et al.’s somewhat simplified presentation and Stern’s deeper grounding in the environmental psychology literature and its applications).

How would you apply behavioral approaches to reducing the barriers to “green” building? Come prepared for a detailed discussion of policy instrument design for this important sector, which is responsible for some 40 percent of U.S. energy use and many environmental impacts.

Thaler, Richard H., Sunstein, Cass R. and John P. Balz. 2010. Choice Architecture. On Sakai, and on line at <http://ssrn.com/abstract=1583509> (“nudges”).

Stern, P.C. 2005. Understanding Individuals’ Environmentally Significant Behavior. *Environmental L. Rev.* 35: 10785-10790. On Sakai.

Kunreuther, Howard, and Elke Weber. (under review, 2012). Facilitating and Aiding Human Decisions to Adapt to or Mitigate the Impacts of Climate Change. Unpublished paper, under review by *Review of Environmental Economics and Policy*. On Sakai.

Hoffman, Andrew J., and Rebecca Henn. 2008. Overcoming the Social and Psychological Barriers to Green Building. *Organization & Environment* 21(4): 390-419. On Sakai.

#### 4/3 State-level instruments

-Discussion: How does the range of environmental policy instruments, and instrument selection processes, by state and local governments differ from national policymaking? What differences must be recognized in the context for policymaking? In state and local powers? In opportunities and limitations for using policy tools? What are the advantages and disadvantages of state and local environmental policy tools as opposed to national ones?

Over the past several decades, North Carolina has been one of the most progressive of the southeastern states in adopting its own tools for environmental protection (though clearly not as actively so as California). If California can take such an innovative and proactive approach to climate change (both mitigation and adaptation – see fact sheet below) and to other environmental policy issues, why don’t other states such as North Carolina that also have major stakes in the outcomes act as proactively?

What environmental policy instruments and strategies would you propose for North Carolina in the context of the new political leadership elected in 2010 and 2012?

Rabe, Barry G. 2004. The Politics of Climate Change, State Style. Chapter 1 in his *Statehouse and Greenhouse: The Emerging Politics of American Climate Change Policy* (Washington, DC: Brookings), pp. 1-37. On Sakai.

California’s Climate Plan. On line (accessed January 4, 2013) at [http://www.arb.ca.gov/cc/cleanenergy/clean\\_fs2.htm](http://www.arb.ca.gov/cc/cleanenergy/clean_fs2.htm) . For more details, browse California Climate Change Portal, <http://www.climatechange.ca.gov/>

NC Sustainable Energy Association. 2007. *A Citizens’ Guide: The North Carolina Renewable Energy and Energy Efficiency Portfolio Standard*. On line (accessed 1/3/2013) at [http://energync.org/assets/files/podcast\\_episodes/a-citizens-guide-to-the-nc-reps/a-citizens-guide-north-carolina-renewable-energy-energy-efficiency-portfolio-standard.pdf](http://energync.org/assets/files/podcast_episodes/a-citizens-guide-to-the-nc-reps/a-citizens-guide-north-carolina-renewable-energy-energy-efficiency-portfolio-standard.pdf)

Cordato, Roy. 2012. Rethinking A Misguided Mandate. John Locke Foundation, Dec. 13th,

2012. On line (accessed 1-3-2012) at <http://www.johnlocke.org/agenda2012/4b-renewableenergy.html>  
Murawski, John. 2012. Progress, Duke want to slash payments for green energy. Raleigh *News & Observer*, December 25, 2012. On line (accessed 1-3-2013) at <http://www.newsobserver.com/2012/12/25/2565806/progress-duke-want-to-slash-payments.html#storylink=misearch>

Additional background (optional):

Andreen, William, et al. 2008. Cooperative Federalism and Climate Change: Why Federal, State, and Local Governments Must Continue to Partner. Center for Progressive Reform White Paper No. 803, May 24, 2008. Read pp. 3-17. *On Sakai* and on line at <http://www.progressivereform.org/articles/federalismClimateChange.pdf> (accessed 1/3/2013)  
Heath, Milton S., Jr., and Alex L. Hess III. 2007. The Evolution of Modern North Carolina Environmental and Conservation Policy Legislation. *Campbell L. Rev.* 29: 535-589.  
Wiener, Jonathan. 2007. Think Globally, Act Globally: The Limits of Local Climate Policies. *Univ. of Pennsylvania Law Review* 155:1961-79. *On Sakai* and on line (accessed 1/4/2013) at <https://www.law.upenn.edu/journals/lawreview/articles/volume155/issue6/Wiener155U.Pa.L.Rev.1961%282007%29.pdf> .

#### 4/8      **International applications**

-Discussion: How would you expect the choices of environmental policy tools to differ in different countries and cultures (or do they)? What do Blackman and Harrington and Wiener each conclude, and why might you agree or disagree with them? What differences would you expect to need to address in a different country or cultural context, and what similarities would you expect both in the tools and in the processes for selecting them? What can we learn from the experiences of other countries and cultures about the advantages, disadvantages, and essential elements of environmental policy tools?

Blackman, Allen, and Winston Harrington. 1998. The Use of Economic Incentives in Developing Countries: Lessons from International Experience with Industrial Air Pollution. RFF Discussion Paper 99-39. *On Sakai* and on line (accessed 1-4-2013) at <http://www.rff.org/rff/Documents/RFF-DP-99-39.pdf>

Wiener, Jonathan B. 1999. Global Environmental Regulation: Instrument Choice in Legal Context. 108 *Yale Law J.* 108:678-800. Read pp. 678-685 and 798-800; skim or delve into other sections as interested. *On Sakai*.

Browse web sites that publish environmental policy analyses in developing countries – EEPSEA (Economy and Environment Program for Southeast Asia) and LACEEP (Latin American and Caribbean Environmental Economics Program) for interesting papers on environmental policy instruments in Asian and Latin American countries: see <http://www.eepsea.net/> and <http://www.laceep.org/publications/policy-briefs> (both accessed 1-3-2013).

Additional background (optional):

Browse international examples in Sterner, e.g. Chap. 24 (pp. 278-315), Chap. 25 (pp. 316-342) and Part VI (pp. 346-429)

U.S. Environmental Protection Agency. 2004. [International Experiences With Economic Incentives for Protecting the Environment](#). Report No. EPA-236-R-04-001. Accessed 2-6-2011.

Wang, Hua, and Ming Chen. 1999. How the Chinese system of charges and subsidies affects pollution control efforts by China's top polluters. World Bank Research Paper 2198. *On Sakai*.

Wang, Hua, and David Wheeler. 2005. Financial incentives and endogenous enforcement in China's pollution levy system. *J. Environ. Econ. and Mgt.* 49: 174-96. *On Sakai*.

**4/10 Presentations**

**4/15 Presentations**

**4/17 Presentations**

**4/22 Presentations**

**4/24 *Final papers due***

#### 4/24 **Instrument combinations, institutional challenges to instrument choice, and concluding discussion**

-Discussion: When does it make sense to combine multiple environmental policy instruments, instead of just one? How might one go about doing so? Why are particular tools chosen or not? Why do environmental policy tools succeed or fail (different tools in same setting, same tools in different setting)? Can tools be transferred from a “successful” case to other settings?

Sternner Chap. 18, Design of policy instruments, pp. 212-218

Sternner Chap. 32, Policy issues and potential solutions, pp. 432-447

Sauer, P.; Dvorak, A.; Paroha, L.; Carmin, J.; and R. N. L. Andrews. 1996. Economic and Environmental Impacts of Household Conversion to Cleaner Fuel in the Czech Republic. *Prague Economic Papers* 5(2):147-160. On Sakai.

Keohane, Nathaniel O.; Richard L. Revesz; and Robert N. Stavins. 1998. The choice of regulatory instruments in environmental policy. *Harvard Envr. Law Rev.* 22:313-67. On Sakai.

##### Additional background (optional):

Jackson, Tim. 2009. *Prosperity Without Growth? The Transition to a Sustainable Economy*. UK Sustainable Development Commission. On Sakai and (accessed 12-12-2012) at [http://www.sd-commission.org.uk/publications/downloads/prosperity\\_without\\_growth\\_report.pdf](http://www.sd-commission.org.uk/publications/downloads/prosperity_without_growth_report.pdf)  
How is Jackson’s argument similar to or different from David Pearce’s, with which we began the semester? Lessons?

#### 5/4 **FINAL EXAM: Saturday, May 4, 4:00-7:00 p.m.**

A few other useful web sites:

Resources for the Future: <http://www.rff.org/Publications/Pages/default.aspx> (See separate sections for discussion papers, RFF reports, issues briefs, etc.)

Prof. Tom Tietenberg’s home page: <http://www.colby.edu/personal/t/thtieten/> (Includes additional papers on applications of emissions trading and other economic incentive tools).

Prof. Robert Stavins’ on-line environmental economics and policy publication list: <http://www.hks.harvard.edu/fs/rstavins/cvweb.html>

U.S. EPA Office of Policy: <http://www.epa.gov/op/>

U.S. EPA National Center for Environmental Economics: <http://yosemite.epa.gov/ee/epa/eed.nsf/Webpages/EnvironmentalEconomicsReports.html>

MIT Joint Program on the Science and Policy of Global Change: <http://globalchange.mit.edu/pubs/all-reports.php>

Ecosystem Marketplace web site (resources on payment system design for ecosystem services) <http://ecosystemmarketplace.com/>

American Council for an Energy-Efficient Economy: <http://aceee.org/>

Blue/Green Alliance / Apollo Alliance for a Green Economy:

<http://www.bluegreenalliance.org/apollo/apollo-reports>

International Association for Study of the Commons:

<http://www.iasc-commons.org/library-resources>

Rocky Mountain Institute

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

“Progressive” environmental research and advocacy organizations (a few examples):

<http://www.edf.org/policy-resources>

<http://www.c2es.org/>

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

“Conservative” environmental research and advocacy organizations (a few examples):

<http://www.aei.org/policy/energy-and-the-environment/>

<http://www.cato.org/research/energy-environment>

<http://heartland.org/issues/environment>

<http://perc.org/>