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## PIA 2502 GLOBAL ENVIRONMENTAL POLICY

Spring 2013

This course applies tools from economics, political science and risk analysis to address environmental issues, cognizant of the state of science and uncertainties. First, we address the inter-linkages between economic development and environmental protection, with China as a case study. We explore methods to estimate the benefits from environmental services and the costs from environmental degradation (e.g., hedonics, integrated assessment). Second, we address the root causes of environmental problems (market failures such as externalities, public goods; government failures, and asymmetrical power). Third, we examine policy tools to address environmental problems (e.g. regulations, tradable permits, taxes, payment for environmental services, voluntary approaches, information disclosure). Fourth, we examine the link between international trade and the environment (e.g., technology transfer and WTO disputes e.g. Shrimp-Turtle, Asbestos, Reformulated Gasoline) and international treaties (e.g. the Basel Convention, the Montreal Protocol, the Kyoto Protocol). Fifth, we discuss the challenges presented by climate change, including food security, water security, the spread of infectious diseases and extreme events. We discuss efforts to address climate change adaptation and mitigation and the recognition that climate change represents national security challenges.

At the end of this course, students should be able to:

- Write policy memos with solid arguments and analysis, backed by empirical evidence
- Articulate the underlying reason for an environment problem
- Describe how various policy tools can incentivize the internalization of environmental costs
- Describe how various policy tools can incentivize shifts towards policies with lower environmental footprint.

I have developed and taught/will teach two companion courses.

PIA 2522 Global Energy Policy (Spring 2014) addresses Energy-Environment issues.

PIA 2553 Global Health Policy (Spring 2013) addresses Health-Environment issues.

Powerpoints and Readings are posted on courseweb.

## **Week 1: Environment and Development**

### **Section 1: Economics in Environmental Policy**

#### **Powerpoint**

How Economics can inform Environmental Policy

#### **Reading**

Fullerton D., 1998. How Economists See the Environment. Nature, Macmillan Publishers.

The Economist, 1991. A Price on the Priceless. August 17<sup>th</sup>.

Kenneth Arrow et al., 1996. Is There a Role for Benefit-Cost Analysis in Environmental, Health, and Safety Regulation? *Science*, New Series, 272(5259), p.221-222.

Olmstead, Sheila. 2013. Applying Market Principles to Environmental Policy in Vig and Kraft, Environment Policy: Directions for the 21<sup>st</sup> century

### **Section 2: China: Environment and Development**

#### **Powerpoint**

China's Environmental Challenges

China's Policies towards Greening the Economy

#### **Readings**

Kelly Sims Gallagher and Johanna Lewis, China's Quest for a Green Economy, in Vig and Kraft, Environment Policy: Directions for the 21<sup>st</sup> century

### **Section 3: Poverty and Environment**

#### **PowerPoint**

Relationship between poverty and environmental degradation

Environmental Kuznet Curve

Open Access & Potential solutions

#### **Reading**

Pranab Bardhan and Christopher Udry, 1999. Development Microeconomics. Oxford Scholarship Online. Ch. 13 Environment and Development

### **Section 4: Environment and National Security**

#### **Reading**

Joshua W. Busby. 2007. Climate Change and National Security  
An Agenda for Action. Council of Foreign Relations

## **Week 2: Economic Assessment of Environmental Benefits**

### **Section 1: Methods to estimate benefits from environmental services**

#### **Powerpoint**

Hedonic method

#### **Powerpoint**

Averted Mortality or Illnesses

**Powerpoint**

Environmental and Social Impact Assessment:

**Readings**

Jeffrey R. Vincent, 2010. Microeconomic Analysis of Innovative Environmental Programs in Developing Countries. *Rev Environ Econ Policy* 4(2), pp.221-233

Richard K. Morgan. The state of the art of impact assessment in 2012  
Impact Assessment and Project Appraisal  
Special Issue: Volume 30, Issue 1, 2012, pages 5-14

S. Gamper-Rabindran and C. Timmins, Does hazardous waste remediation raise housing values? evidence of spatially localized benefits.  
Journal of Environmental Economics and Management, forthcoming

S. Gamper-Rabindran, S. Khan and C. Timmins. "The Impact of Piped Water Provision on Infant Mortality in Brazil: A Quantile Panel Data Approach,"  
Journal of Development Economics, 92(2) 2010: 188-200.

Robert Mendelsohn and Sheila Olmstead. 2009. The Economic Valuation of Environmental Amenities and Disamenities: Methods and Applications. Annual Review of Environment and Resources. Vol. 34: 325-347

**Section 2: Memo writing**

**Powerpoint**

Common Writing Mistakes  
Grammar Style  
How to Write  
Tips on Writing a Policy Memo  
Memo Samples

**Week 3: Benefits from Environmental Services**

**Section 1: Payment for Ecosystem Services**

**PowerPoint**

Payment for Environmental Services  
Why PES?  
Mechanisms and Types  
ES Markets

**Section 2: Addressing Deforestation**

**PowerPoint**

Key Problem: Forest contribute to ecosystem services  
but providers do not get paid for this service

Introduction to Deforestation  
Why care about deforestation?  
The rate and extent of deforestation worldwide  
What are the drivers of deforestation in the Amazon?

**PowerPoint**

Solutions to Deforestation  
The Problem  
What has been done so far?

**Readings**

Subhrendu K. Pattanayak, Sven Wunder, and Paul J. Ferraro, 2010. Show Me the Money: Do Payments Supply Environmental Services in Developing Countries? *Rev Environ Econ Policy* 4(2), pp. 54-274

Simon Zbinden and David R. Lee, 2005. Paying for Environmental Services: An Analysis Of Participation in Costa Rica's PSA Program. *World Development*, 33(2), pp. 255–272

Manrique Rojas and Bruce Aylward, 2003. What Are We Learning From Experiences With Markets For Environmental Services In Costa Rica? A Review and Critique of the Literature. Environmental Economics Programme.

**Week 4: Governments and Environmental Management**

**Section 1: Why governments rationally “waste” natural resources**

**Powerpoint**

“Understanding Why Governments in Developing Countries Waste Natural Resources”  
Analytical tool  
Case Studies  
Competition between politicians and natural resource exploiters for control of money from extraction  
Reasons governments pick natural resource activities for manipulation  
Institutional problems  
Suggested reforms

**Reading**

William Ascher, 2000. Understanding Why Governments in Developing Countries Waste Natural Resources. *Environment* 42 (2)

**Section 2: Policies to incentivize governments'/corporations' stewardship of the Environment**

**Powerpoint**

Economic Tools to Impede the Funding of and Profits from Conflict  
How These Conflicts Exploit Natural Resources.

**Reading**

Paul Collier, 2012. *The Plundered Planet. Why We Must--and How We Can--  
Manage Nature for Global Prosperity* (read selectively)

**Week 5: International Agreement: Montreal Protocol**

**Section 1: Montreal Protocol and Ozone Layer**

**PowerPoint**

Assessment of Montreal Protocol  
Case Study: Montreal Protocol by Scott Barrett  
Global Policy to Protect Stratospheric Ozone  
Ozone Depletion and CFCs: Some science

**Section 2: Policy Instrument: Technology Transfer**

**Reading**

Elinor Ostrom, et al., 1999. Revisiting the Commons: Local Lessons, Global  
Challenges. *Science*, 284, pp.278-282

**Suggested book**

Parson, E.A. *Protecting the ozone layer : science and strategy*. New York, NY:  
Oxford University Press. 2003

**Week 6: Climate Change**

**Section 1: Climate Change Overview**

**Powerpoint**

Climate Change Impacts  
Climate Change Observation  
Climate Change Predictions  
Kyoto and Beyond

**Reading**

Nathan E. Hultman, David M. Hassenzahl, and Steve Rayner. Climate Risk.  
*Annual Review of Environment and Resources*. Vol. 35: 283-303 (November  
2010)

**Section 2: Health Effects Climate Change**

**Powerpoint**

Climate change and health

**Reading**

Samuel S. Myers and Jonathan A. Patz. Emerging Threats to Human Health from  
Global Environmental Change. *Annual Review of Environment and Resources*  
Vol. 34: 223-252. November 2009

### **Section 3: Cap and Trade**

#### **Powerpoint**

Cap and Trade in application: The EU Emissions Trading Scheme (ETS)

Cap and Trade in application: US

#### **Reading**

T Laing, M Sato, M Grubb, C Comberti (2013) Assessing the effectiveness of the EU Emissions Trading System. LSE Working Paper

Ruth Greenspan Bell, 2002. Are Market-Based Instruments the Right First Choice for Countries in Transition? Resources for the Future, 146.

### **Week 7: Policies to Address Climate Change**

#### **Section 4: Technology Innovation and Climate Change**

##### **Powerpoint**

The Invention and Transfer of Climate Change Mitigation (CCM) Technologies: Evidence Based on Patent Data.

Technology Innovation and Climate Change

##### **Reading**

N Johnstone, I Haščič, D Popp. Renewable energy policies and technological innovation: Evidence based on patent counts. *Environmental and Resource Economics*, 2010

#### **Section 5: International Technology Transfers: Drivers**

##### **Powerpoint**

Price, Trade,

Foreign Direct Investment, Tech transfer Agreements

##### **Reading**

Dechezleprêtre, Antoine, Matthieu Glachant, and Yann Ménière. "What drives the international transfer of climate change mitigation technologies? Empirical evidence from patent data." *Environmental and resource economics* 54.2 (2013): 161-178.

### **Week 8: Trade & Environment Part 1**

#### **Section 1: Basic Trade Theory**

##### **PowerPoint**

Comparative Advantage

#### **Section 2: Trade & Environment**

##### **Powerpoint**

NAFTA and the Environment

##### **Reading**

Shanti Gamper-Rabindran, 2006. NAFTA and the Environment: What can the data tell us? *Economic Development and Cultural Change*, pp.605-633

### **Week 9: Trade and Environment Part 2**

#### **Section 3: WTO**

##### **PowerPoint**

WTO-Asbestos case between France and Canada  
Shrimp-Turtle/Tuna-Dolphin  
Beef Hormone case  
WTO Environmental Health and Safety Standards

##### **Reading**

Trish Kelly, 2003. The WTO, the Environment, and Health and Safety Standards

#### **Section 4: Hazardous Waste Trade**

##### **Powerpoint**

Hazardous Waste

##### **Video**

PBS Video: Following the trail of toxic E-waste

##### **Reading**

The Basel Convention. Where Are WEEE in Africa? Findings from the Basel Convention E-waste Africa Programme. Châtelaine, Switzerland: The Basel Convention, United Nations Environment Programme (2011).

### **Week 10: GMO Part 1**

#### **Section 1: GMO**

##### **PowerPoint**

The Health Risks of Genetically Modified Foods  
GMO definition  
Uses of GMO  
Growth of GMO  
Arguments for and against GMO  
International disputes on GMO  
Developing Countries and GMO

##### **Reading**

Jeffrey Smith, 2010. Script for PowerPoint Presentation based on two books:  
Genetic Roulette: The Documented Health Risks of Genetically Engineered Foods and Seeds of Deception.

#### **Section 2: GMO, Sustainable Agriculture and Food Security**

##### **Reading**

Miguel A. Altieri, C. I. Nicholls. Agroecology Scaling Up for Food Sovereignty

and Resiliency *Sustainable Agriculture Reviews* Volume 11, 2012, pp 1-29

## **Week 10: GMO Part 2**

### **Section 3: Regulatory Capture**

Documentary on GMO's – 1:49 hours

#### **Reading**

Jeffrey Smith, 2010. WikiLeaks: US Should Retaliate Against EU for Genetically Modified Resistance

Doug Gurian-Sherman, 2011. No Seeds, No Independent Research.  
LATimes.com

#### **Suggested Book**

Jonathan B. Wiener, Michael D. Rogers, James K. Hammitt, Peter H. Sand  
The Reality of Precaution: Comparing Risk Regulation in the United States and Europe. 2010. RFF Press

## **Week 11: Antibiotics and Agriculture**

### **Section 1: Antibiotic Resistance and Agriculture**

#### **Powerpoint**

Non-therapeutic Use of Antibiotics in Animal Agriculture

### **Section 2: Problem and Solutions**

#### **Powerpoint**

Policy Responses

#### **Reading**

Antimicrobial Resistance in Developing Countries. Part I: Recent Trends and Current Status

Antimicrobial Resistance in Developing Countries. Part II: Strategies for Containment

Extending the Cure: Policy responses to the growing threat of antibiotic resistance

## **Week 12: International Law**

### **Section 1: US/EU based companies and pollution in developing countries**

#### **Powerpoint**

Union Carbide in Bhopal India

Stakeholder action against Dow Chemical (which bought Union Carbide)

### **Section 2: Laws in US and EU to incentivize firms operating in developing countries**

#### **Powerpoint**

Wiwa vs. Royal Dutch Shell: From the Protest Grounds to the Court Room



Transfigura, Dumping in Ivory Coast, Court Case in Netherlands

### **Section 3: Indigenous Rights**

#### **Powerpoint**

Inter-American Court

#### **Reading**

S. James Anaya and Claudio Grossman, 2002. The Case of Awas Tingni v. Nicaragua: A New Step in the International Law of Indigenous Peoples. *Arizona Journal of International and Comparative Law*, 19(1).

#### **Video**

#### **Human Rights and the Environment**

Case of Chevron Texaco and pollution in the Ecuadorian Amazon-13 minutes  
Crude Oil-DVD

### **Week 13: Regulations, New Regulatory Approaches and Corporate Social Responsibility**

#### **Section 1: Corporate Social Responsibility**

#### **Powerpoint**

Concepts, key issues, context  
Key CSR drivers  
Implications for corporations  
Implications for development

#### **Section 2: Self-regulation:**

#### **Powerpoint**

Responsible Care and industrial accidents

#### **Reading**

S. Finger and S. Gamper-Rabindran, Testing the effects of self-regulation on industrial accidents. *Journal of Regulatory Economics*, 2012

#### **Section 3: Voluntary Standards**

#### **Powerpoint**

Worker Exposure to Toxins  
Voluntary and Mandatory Standards  
Relative effects on exposure

#### **Reading**

S. Finger and S. Gamper-Rabindran, Protecting workers from chemical exposure: do voluntary standards reduce exposure? Center for Industry Studies working paper # 36, 2012

#### **Section 4: Information Provision**

**Reading**

E. Somanathan, 2010. Effects of Information on Environmental Quality in Developing Countries. *Rev Environ Econ Policy* 4(2), pp. 275-292

Allen Blackman, 2010. Alternative Pollution Control Policies in Developing Countries. *Rev Environ Econ Policy* 4(2), pp. 234-253

**Week 14: Air and Water**

**Section 1: Water, Prices and Markets**

**Powerpoint**

Water as a human right? Or should we price water?

**Reading**

Sheila Olmstead. 2010. The Economics of Managing Scarce Water Resources Review of Environmental Economics and Policy. Vol. 4, No. 2

**Section 2: Water Conflict**

**Powerpoint**

Water Facts

Causes of Conflict

Nile Basin

Other Water Conflicts

**Reading**

Aaron T. Wolf, 2007. Shared Waters: Conflict and Cooperation. Annual Review of Environmental Resources, 32, pp.241–269

**Video**

Links to 5 short videos on Water Conflict

**Section 3: Reducing Air Pollution: Health Benefits**

**Powerpoint**

China: Interconnections Between Air Pollution, Climate Change and Health:

**Section 4: Regional Air Pollution**

**Powerpoint**

Regional Air Pollution - Science

Regional Air Pollution Policy