



Envr 580 - Policy Design for Environmental Health Solutions

(Credit Hours: 3)

ESE/MPH Core

Department of Environmental Sciences and Engineering

Gillings School of Global Public Health

Spring 2019 Syllabus

Class Location:

Meeting Times:

Faculty:

Office:

Email:

Phone:

Office

Hours:

TA:

Email:

Phone:

Office

Hours:

Course Overview

This course is one of three core courses in the “Environmental Health Solutions” concentration offered by the Department of Engineering and Environmental Sciences as part of the Gillings School of Global Public Health MPH program. More information about the new MPH concentrations can be found [here](#).

In this course students will be introduced to the types of “policy instruments” that can be used to solve environmental health problems. The course is divided in three parts. The first part (Weeks 1-6) provides a conceptual framework for understand the tasks

involved in solving environmental health problems. Students are introduced to the eight-steps in policy analysis. The second part of the course (Weeks 7 and 8) introduces to students to the main institutions responsible for solving environmental health problems at the local, state, federal, and global levels. The third part (Weeks 9-15) presents an in-depth description of the main policy instruments used to tackle environmental health problems.

Teaching cases will be used throughout the semester to better illustrate the conceptual framework and the challenges associated with designing, implementing, and evaluating policies to solve a range of different environmental health problems in both industrialized and developing countries. Students are required to study each of the teaching cases before the case is presented in class and come to class prepared for an in-depth discussion of the case. Students who are not familiar with the teaching case method will find it useful to read the following:

“Learning by the Case Method.” Kennedy School of Government Case Program. N15-86-11360. 6 pages.

Learning Objectives and Competencies

This course is designed to help you achieve the following seven learning objectives:

1. To teach students the steps (tasks) in the policy design and implementation that lead to environmental health solutions;
2. To develop students’ understanding of the main policy instruments (tools) that can be used to improve environmental health;
3. To familiarize students with the existing local, state, federal, and international institutions with responsibility for solving environmental health problems;
4. To help students choose the best policy instrument(s) to solve an environmental health problem;
5. To help students understand the roles and contributions of different disciplines in finding and implementing environmental health solutions;
6. To develop students’ skills in organizing and presenting information about environmental health problems and their solutions for policymakers to facilitate effective decision making;
7. To show students how to structure white papers and technical reports on environmental health solutions and to development student writing skills.

In addition, this course will provide MPH students concentrating in “Environmental Health Solutions” with following four required competencies:

1. Evaluate effective actions or interventions that improve environmental health outcomes, and be able to compare and assess programs, policies, engineering solutions and/or other approaches to achieve these outcomes;

2. Examine and critique ethical and legal dimensions of public health and environmental interventions on individuals and communities
3. Demonstrate written and oral communication skills related to environmental sciences and engineering issues within a public health context;
4. Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety

Assignments and Evaluation

Students will be evaluated based on the following three assessments:

1. Term paper (40%)
2. Final Exam (30%)
4. Presentation and participation in teaching cases (30%)

Term Paper: analysis of an environmental health policy tools application. Each student is expected to develop and submit a paper that examines in detail the potential for applying one or more policy instruments to correct an environmental health problem. An initial version of the paper will be distributed to the class for discussion, and then revised and refined before final submission for grading. The paper should show the student's detailed understanding of the principles involved both with a policy instrument and with the environmental health problem to which the policy instrument is applied. The student should consider the essential characteristics of the instrument and the problem in designing such an application, and the likely challenges that would need to be taken into consideration 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 an environmental health problem not yet well addressed by such instruments. In either case this is intended as an exercise both in critical analysis and in 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 **xxx**. A full draft of the paper is to be distributed to all members of the class for discussion, and for written and oral comment by one of the other students (comment assignments to be drawn at random). Draft papers are due 1 week in advance. 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 based on class discussion, will be due at the final class of the semester.

There are many interesting current examples of environmental health policy tool applications for your consideration. Please consultant with the instructors about possible ideas for topics.

Final course grades will be determined using the following grading scale:

For graduate students:

H	94.0 or above	High Pass: Clear excellence
P	70-93.9	Pass: Entirely satisfactory graduate work
L	50-69.9	Low Pass: Inadequate graduate work
F	less than 50	Fail

For Undergraduate students:

A - Mastery of course content at the highest level of attainment that can reasonably be expected of students at a given stage of development. The A grade states clearly that the students have shown such outstanding promise in the aspect of the discipline under study that he/she may be strongly encouraged to continue

B - Strong performance demonstrating a high level of attainment for a student at a given stage of development. The B grade states that the student has shown solid promise in the aspect of the discipline under study.

C - A totally acceptable performance demonstrating an adequate level of attainment for a student at a given stage of development. The C grade states that, while not yet showing unusual promise, the student may continue to study in the discipline with reasonable hope of intellectual development.

D - A marginal performance in the required exercises demonstrating a minimal passing level of attainment. A student has given no evidence of prospective growth in the discipline; an accumulation of D grades should be taken to mean that the student would be well advised not to continue in the academic field.

F - For whatever reason, an unacceptable performance. The F grade indicates that the student's performance in the required exercises has revealed almost no understanding of the course content. A grade of F should warrant an advisor's questioning whether the student may suitably register for further study in the discipline before remedial work is undertaken.

Texts and Resources

Students will read portions of the following four textbooks ...

- 1) Sterner, Thomas. 2003. *Policy Instruments for Environmental and Natural Resource Management*. Washington, DC: Resources for the Future Press.
- 2) Whittington, Dale. *Introduction to Public Policy Analysis*. [in preparation]
- 3) Howlett, M., M. Ramesh, and A. Perl. (2009). *Studying Public Policy: Policy Cycles & Policy Subsystems*. Oxford U. Press.
- 4) Tietenberg, Tom H. 2006. *Emissions Trading: Principles and Practice*. Second Edition, RFF Press.

Requirements and Expectations

It is expected that students will attend all class sessions and participate in the discussion of the teaching cases. Students are permitted to use computers during class for note-taking and other class-related work only. At the instructor's discretion, those using computers or other electronics during class for non-class related purposes may be asked to leave the class and/or lose participation credit for the class session.

Readings should be completed before class attendance. At the end of the semester, students are expected to completion the course evaluation.

It is important that students 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. One basic reason for this 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 or disagree with them. A second is to distinguish clearly between someone else's ideas and arguments and your own, and not confuse the two. And a third 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 (see below) and of the standards of ethical writing.

Prerequisites: (Preparation needed before starting the course)
Complete all COMPASS modules and MPH Core Modules

Recognizing, Valuing and Encouraging Diversity & Inclusion in the Classroom

We share the School's [commitment to diversity](#). We are committed to ensuring that the School is a diverse, inclusive, civil and welcoming community. Diversity and inclusion are central to our mission — to improve public health, promote individual well-being and eliminate health inequities across North Carolina and around the world. Diversity and inclusion are assets that contribute to our strength, excellence and individual and institutional success. We welcome, value and learn from individual differences and perspectives. These include but are not limited to: cultural and racial/ethnic background; country of origin; gender; age; socioeconomic status; physical and learning abilities; physical appearance; religion; political perspective; sexual identity and veteran status. Diversity, inclusiveness and civility are core values we hold, as well as characteristics of the School that we intend to strengthen.

We are committed to expanding diversity and inclusiveness across the School — among faculty, staff, students, on advisory groups, and in our curricula, leadership, policies and practices. We measure diversity and inclusion not only in numbers, but also by the extent to which students, alumni, faculty and staff members perceive the

School's environment as welcoming, valuing all individuals and supporting their development.”

In this class, we practice these commitments in the following ways:

- Develop classroom participation approaches that acknowledge the diversity of ways of contributing in the classroom and foster participation and engagement of *all* students.
- Structure assessment approaches that acknowledge different methods for acquiring knowledge and demonstrating proficiency.
- Encourage and solicit feedback from students to continually improve inclusive practices.

As a student in the class, you are also expected to understand and uphold the following UNC policies:

Diversity and Inclusion at the Gillings School of Global Public Health:

<http://sph.unc.edu/resource-pages/diversity/>

UNC Non-Discrimination Policies:

<http://policy.sites.unc.edu/files/2013/04/nondiscrim.pdf>

Prohibited Discrimination, Harassment, and Related Misconduct at UNC:

<https://deanofstudents.unc.edu/incident-reporting/prohibited-harassmentsexual-misconduct>

These resources are also of relevance:

Resources for Equity in Public Health

<https://docs.google.com/spreadsheets/d/1ni3gMokYtxXP1l6bjhTSHqGITNwPBSsUuogavlXXJY/edit#gid=679802843>

UNC Honor Code

As a student at UNC-Chapel Hill, you are bound by the university's Honor Code, through which UNC maintains standards of academic excellence and community values. It is your responsibility to learn about and abide by the code. All written assignments or presentations (including team projects) should be completed in a manner that demonstrates academic integrity and excellence. Work should be completed in your own words, but your ideas should be supported with well-cited evidence and theory. To ensure effective functioning of the Honor System at UNC, students are expected to:

- a. Conduct all academic work within the letter and spirit of the Honor Code, which prohibits the giving or receiving of unauthorized aid in all academic processes.
- b. Learn the recognized techniques of proper attribution of sources used in written work; and to identify allowable resource materials or aids to be used during completion of any graded work.

Accessibility

UNC-CH supports all reasonable accommodations, including resources and services, for students with disabilities, chronic medical conditions, a temporary disability, or a pregnancy complication resulting in difficulties with accessing learning opportunities.

All accommodations are coordinated through the UNC Office of Accessibility Resources & Services (ARS), <http://accessibility.unc.edu>; phone 919-962-8300, email accessibility@unc.edu. Students must document/register their need for accommodations with ARS before accommodations can be implemented.

Semester Schedule

Part 1 – Solving Environmental Health Problems: A Conceptual Framework

Week 1: Task 1- Understanding Status Quo Conditions; Task 2 – Forecasting the Dynamic Baseline

Readings:

Whittington, D. “Introduction to Public Policy Analysis.” Chapters 1-3. [in preparation]

Howlett, M., M. Ramesh, and A. Perl. (2009). “Chapter 4: Agenda Setting.” Pp. 92-108. In *Studying Public Policy: Policy Cycles & Policy Subsystems*. Oxford U. Press.

Teaching Case: Keeping an Open Mind in an Emergency: CDC’s Experiments with ‘Team B’

Week 2: Task 3 – Policy Instruments: Typologies; Task 4 – Causal Models for Linking the Implementation of Policy Instruments to Outcomes

Readings:

Whittington, D. “Introduction to Public Policy Analysis.” Chapters 4 & 5. [in preparation]

Howlett, M., M. Ramesh, and A. Perl. (2009). "Chapter 5: Policy Formulation: Policy Instruments and Policy Design." Pp. 110-138. In *Studying Public Policy: Policy Cycles & Policy Subsystems*." Oxford U. Press.

Howlett, M. (1991). "Policy Instruments, Policy Styles, and Policy Implementation." *Policy Studies Journal*. 19, 2: 1-21.

Week 3: Task 5 – Criteria for Assessing Outcomes (including environmental justice and equality)

Readings:

Whittington, D. "Introduction to Public Policy Analysis." Chapter 6. [in preparation]

Teaching Case: "Liquor Tax Reform in Thailand: Competing Interests and Objectives" [Kennedy School]

Week 4: Task 6 – Organizing Information for Decision-makers

Readings:

Whittington, D. "Introduction to Public Policy Analysis." Chapter 7. [in preparation]

Thaler, Richard H., Cass R. Sunstein, and John P. Balz. "Choice Architecture." SSRN Scholarly Paper. Rochester, NY: Social Science Research Network, April 2, 2010. <http://papers.ssrn.com/abstract=1583509> .

Teaching Case: "Malaria and DDT in Uganda" [Chan School of Public Health]

Week 5: Task 7 – Strategy and Implementation

Readings:

Whittington, D. "Introduction to Public Policy Analysis." Chapter 8. [in preparation]

Howlett, M., M. Ramesh, and A. Perl. "Chapter 7: Policy Implementation." Pp. 160-177. In *Studying Public Policy: Policy Cycles & Policy Subsystems*." Oxford U. Press.

Wolf, C. (1979). "A Theory of Nonmarket Failure: Framework for Implementation Analysis. The *Journal of Law & Economics*, Vol. 22, No. 1, pp. 107-139.

Lindblom, C.E. (1959). The Science of "Muddling Through." *Public Administration Review*, Vol. 19, No. 2 (Spring), pp. 79-88.

Teaching Case: "Ek Sonn Chan and the Transformation of the Phnom Penh Water Supply Authority." Lee Kuan Yew School. IWP/CR No. 1/2009.

Week 6: Task 8 – Monitoring and Evaluation, Adaptation

Whittington, D. "Introduction to Public Policy Analysis." Chapter 9. [in preparation]

Howlett, M., M. Ramesh, and A. Perl. (2009). "Chapter 8: Policy Evaluation: Policy-Making as Learning." Pp. 178-196. In *Studying Public Policy: Policy Cycles & Policy Subsystems*." Oxford U. Press.

Teaching Case: Oregon's Wind Energy Health Impact Assessment

Part II: An Introduction to Existing Institutions with Responsibilities for Solving Environmental Health problems (Task 1)

Week 7 – Local and State Institutions with Responsibility for Solving Environmental Health Problems

Teaching Case: The West Nile Virus Outbreak in New York City: The City Responds

Week 8 - Federal and International Institutions with Responsibility for Solving Environmental Health Problems

Teaching Case: United States Environmental Protection Agency Addresses Arsenic in Drinking Water

Part III – A Survey of Policy Instruments for Environmental Health Solutions (Task 3)

Week 9 – Regulatory Instruments (Ambient standards; technology-based, technology-forcing, and performance-based permits; risk-based restrictions; other varieties, "command-and-control" versus other types)
Readings

Stern: pp. 61-72 (see list of textbooks above)

Teaching Case: Air Quality and Public Health in Megacities: Has Air Quality Improved Due to Driving Restrictions in Mexico City? [Chan School of Public Health]

Week 10 – Environmental Taxes and Charges
Readings

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.

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.

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.

Kaplow, Louis, and Steven Shavell. "On the Superiority of Corrective Taxes to Quantity Regulation." *American Law and Economics Review*. Vol. 4, No. 1, 2002. pp. 1-17.

Teaching Case: Pricing Carbon: The Birth of British Columbia's Carbon Tax. (Kennedy School)

Week 11 - Markets for Tradeable Permits

Readings

Tietenberg, Tom H. 2006. *Emissions Trading: Principles and Practice*. Second Edition, RFF Press.

U.S. EPA. 2001. *The United States Experience with Economic Incentives for Protecting the Environment*, Report No. EPA-240-R-01-001, January 2001. Available on line from EPA or on Blackboard site.

[http://yosemite.epa.gov/ee/epa/eermfile.nsf/11f680ff78df42f585256b45007e6235/da1eb5228bd1257b852569e0007130c6/\\$FILE/EE-0216B-13.pdf](http://yosemite.epa.gov/ee/epa/eermfile.nsf/11f680ff78df42f585256b45007e6235/da1eb5228bd1257b852569e0007130c6/$FILE/EE-0216B-13.pdf)

Teaching Case: [to be determined]

Week 12 - Information Tools, Voluntary Approaches

Information Treatments-

Readings

Sterner, pp. 122-26

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.

LaPlante, Benoit, Jerome Foulon and Paul Lanoie. 2002. Incentives for pollution control: Regulation or information? *Journal of Environmental Economics and Management*, 44, 2002, 169-187.

Voluntary Approaches

Readings

Sterner, pp. 119-22

Andrews, R. N. L. 1998. Environmental Regulation and Business “Self-Regulation.” *Policy Sciences* 31:177-97.

May, Peter J. 2005. Regulation and Compliance Motivations: Examining Different Approaches. *Public Administration Review* 65(1):31-44

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

Teaching Case – Fighting Pollution with Data: Environmental Audits and the Gujarat Pollution Control Board (Kennedy School)

Week 13 - Fostering Innovation in Technology, Organizations, Services

Readings

Edler, J. and J. Fagerberg. 2017. “Innovation policy: what, why, and how”. *Oxford Review of Economic Policy*. Volume 33, Number 1, 2–23.

Martin, B.R. (2012). “The evolution of science policy and innovation studies.” *Research Policy*. 41, 1219– 1239.

Teaching Case – “Technological Innovation for Global Health: Vaxess’ Long Road to Heat-Stable Vaccines (Kennedy School)

Week 14: Subsidies and investments; Assignment of Legal Liability; Changing Institutions

Subsidies and Investments

Readings

Sterner, Chapter 9, p. 102-108.

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.

Myers, Norman. 1998. *Perverse Subsidies*. Winnipeg, Manitoba: International Institute for Sustainable Development (IISD), pp. 1-12, 17-30.

Assignment of Legal Liability

Readings

Sternner, Chapter 10, p. 115-119.

Shavell, Steven. 1984. Liability for Harm versus Regulation for Safety. *Journal of Legal Studies* 13:357-74

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.

Changing Institutions

Readings

Fung, Archon. "Survey Article: Recipes for Public Spheres: Eight Institutional Design Choices and Their Consequences." *Journal of Political Philosophy*. 11, no. 3 (September 1, 2003): 338–67. doi:10.1111/1467- 9760.00181.

Vining, A. R., and A. E. Boardman. "Public--Private Partnerships: Eight Rules for Governments." *Public Works, Management & Policy* 13, no. 2 (October 1, 2008): 149–61. doi:10.1177/1087724X08323843.

Dumol, Mark. (2000). *The Manila Water Concession: A Key Government Official's Diary of the World's Largest Privatization*. 137 pages. The World Bank, Washington D.C.

Teaching Case: The Privatization of Water in Cartagena, Colombia [Kennedy School]

Week 15 - Choice of Policy Instruments; Combining Policy Instruments; Concluding Observations

Readings

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

Braathen, Nils Axel. "Instrument Mixes for Environmental Policy: How Many Stones Should Be Used to Kill a Bird?" *International Review of Environmental and Resource Economics*, 1: 2 (May 16, 2007): 185–235. doi:10.1561/101.00000005.

Howlett, Michael, and Pablo del Rio. "The Parameters of Policy Portfolios: Verticality and Horizontality in Design Spaces and Their Consequences for Policy Mix Formulation." *Environment and Planning C* 33, no. 5 (2015): 1233–45.