Science in Environmental Policy

Science plays a fundamental role in environmental policy. It can put an issue on the political agenda, it often guides and underpins rationales for policy, while enabling us to monitor implementation. In short, science can provide a reason for humankind to act on environmental problems, while policy enables us to do so. Therefore, understanding how science translates into policy – from a theoretical, historical and practical perspective – and the role scientists play in doing so, is critical to understanding environmental governance. This course explores how the scientific process, as well as scientists themselves, influence environmental policy – from agenda setting, to legislation and implementation. In order to ground the discussion, the course will focus on specific issues including, but not necessarily limited to: stratospheric ozone depletion, climate change, genetically modified organisms (GMOs), pesticides, acid rain, whaling and nutrient pollution. For each issue, we will examine:

- How the science evolved – from its beginnings to the present day
- How and why the issue entered the policy arena
- What role scientists played – both as individuals and in groups – and how their role evolved as the issue progressed
- The controversies that inevitably arise as the interests of scientists, policy-makers, and other stakeholders interact.

Outside speakers will be brought in to provide firsthand experience, and team assignments will allow students to better understand the dynamics and challenges of the science-policy relationship.

Grading Criteria

<table>
<thead>
<tr>
<th>Item</th>
<th>Percent of final grade</th>
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<tr>
<td>Assignments during semester</td>
<td>50%</td>
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<tr>
<td>Participation</td>
<td>10%</td>
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<tr>
<td>Final paper</td>
<td>40%</td>
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Participation

Participation is an important component of the class and of your final grade (10%). Classes will be a mix of lecture and discussion. You will be expected to attend every class, and if you need to miss class, or you fall ill, please let me know ASAP. Missing more than one class without permission will negatively impact your grade. There will be an online discussion board where you will be expected to post at least two questions based on the reading before every class. This will help drive active class conversation, which in turn will help us better unpack the assumptions, arguments and implications of the topics we discuss. In addition, several of the assignments will require you to present
in front of the class – either individually or as part of a team – which will feed into how your participation is graded.

Assignments

You will have six assignments during the semester and a final paper. For three of the assignments you will be focusing on different points along the science-policy continuum. The first will be a critical profile of a scientist (their work and their role in the policy world), the second will involve you creating a set of policy recommendations based on recent science, and the third will require you to devise a communications strategy for an organization involved in a scientific controversy. The final paper will tie all these together (see below). You will also be asked to write two discussion papers based on readings from one week of class and briefly present your points to class. These will be assigned the week before so that we make sure to cover all the material in the course. The final in-semester assignment will be a description of the research topic and a preliminary bibliography for your final research paper, which I will comment on, but will not give a letter grade.

Final paper – The goal of this paper is for you to dissect a scientific controversy that has plagued a particular environmental issue (15-20 pages, double-spaced, 12pt font). I want you to apply the skills and lessons you learn in class and from the assignments to chronicle how the controversy arose, how it was managed (or not), and what the lasting consequences were, both on the scientific establishment and the policy world. Questions that should drive your investigation include: What was the scientific basis for the controversy? How did scientists and policy-makers respond, and how did their attitude to the controversy change over time? Did scientists communicate in unison or was there dissent amongst the ranks? Was there a communications strategy of any kind? Has it changed how policy is developed on this issue? By following a particular controversy from cradle-to-grave, this assignment will give you the opportunity to investigate many of the challenges of translating science into policy that we will cover in class. All the students will give 10-minute presentations of their papers in the final class.

Due dates: Research topic and preliminary bibliography (Friday March 11); Final paper (Friday May 6)

Plagiarism and academic support

Plagiarism results in failure in the class and referral to your academic dean. It includes: copying sentences or fragments from any source without quotes and references; not citing a source used in your papers; citing internet information without proper citation; presenting someone else’s work as your own; or inadvertently copying verbatim from any source. More detail can be found at http://cas.nyu.edu/page/academicintegrity. NYU offers academic support and tutoring at the University Learning Center: www.nyu.edu/cas/ulc , (212) 998-8085.
Class schedule

Introduction and overview (Weeks 1-2)

- What are the traditional roles of a scientist and a policy maker? Is there overlap?
- What is the current thinking on the nature of their relationship?
- What forms can the scientist/policy-maker relationship take?
- What are some the organizing principles that will help frame our investigation of scientist/policy-maker relationships across different environmental issues?

Readings:
The Honest Broker: Making Sense of Science in Policy and Politics by Roger Pielke Jr, 2007 (Chapters 1-3)
The Fifth Branch: Science Advisers as Policymakers by Sheila Jasanoff, 1990 (Chapters 1 & 11)
Science in Environmental Policy: The Politics of Objective Advice by Ann Campbell Keller, 2009 (Introduction & Chapter 1)
Environmental Communication and the Public Sphere by Robert Cox, 2015 (Chapter 6)

Recommended: Merchants of Doubt, by Erik M. Conway and Naomi Oreskes, 2010

Stratospheric ozone depletion (Week 3-4)

Readings:
Characterizing uncertainty in expert assessments: ozone depletion and the West Antarctic ice sheet, Oreilly et al. 2011
Ozone Connections: Expert Networks in Global Environmental Governance by Penelope Canan and Nancy Reichman, 2002 (Chapters 1, 3 & 7)
Ozone Diplomacy: New Directions in Safeguarding the Planet by Richard E. Benedick, 1998 (Chapters 2, 9 & 19)

Guest speaker:
- A.R. Ravishankara (former Chair of the Montreal Protocol’s Scientific Assessment Panel)

Climate change (Week 5-7)

Assignment (Write a profile): From either your readings on stratospheric ozone depletion or climate change, I want you to choose a particular scientist that interests you and do a critical profile on him/her. What was/is their research focus? How did they get involved in policy? What were their views on the issue and how were they perceived by other members of the scientific community? Do you believe they were right in how they managed their relationship with the policy world? Why? Length: 4 pages, double-spaced, 12pt font
Due date: Beginning of first class Week 8

Readings (pages TBD):
- History of the Science and Politics of Climate Change by Bert Bolin, 2007 (Chapters 1-4)
- Evaluation, characterization, and communication of uncertainty by the intergovernmental panel on climate change—an introductory essay by Gary Yohe and Michael Oppenheimer, 2011
- Climate change assessments: Review of the processes and procedures of the IPCC, InterAcademy Council, 2010 (Executive Summary)
- Climate change prediction: Erring on the side of least drama? By Keynyn Brysse et al.
- Pathways to deep decarbonization by Emmanuel Guerin et al. (Executive Summary)

Guest speakers:
- Kert Davies (Executive Director of the Climate Investigation Center)
- Michael Oppenheimer (Professor at Princeton University)

Pesticides (Week 8)

Readings:
Silent Spring by Rachel Carson (Chapters 1-3 & 17)

Nitrogen (Week 9)

Assignment (Policy recommendations): You will synthesize the latest science on nitrogen pollution and then develop a set of policy recommendations for how this issue should be managed at the international scale. Currently there is no globally coordinated approach to managing nitrogen pollution, so it will be up to you to come up with a set of recommendations that take into account the science and that you believe would be politically feasible. Questions you should ask yourself include: is it better to create a new institution to manage this issue, or use an existing one? How would your recommendations interact with current action on other environmental issues? What institutions exist that you think would need to be involved in global nitrogen management? What roles should scientists play in order to implement your policy recommendations? Length: 4 pages, double-spaced, 12pt font.

Due date: Beginning of first class Week 10

Readings:
Smil, Enriching the Earth (Chapters 1, 4 & 10)
GMOs (Week 10-11)

Assignment (Communications strategy): You will be split into teams that manage communications for an internationally renowned scientific institution. Yesterday, a huge scientific controversy sprang up in the media involving one of your scientists. It is your job to devise a communications strategy: you need to decide what the public messaging should be, who you should talk to both publicly and privately (e.g. Science blogs? Cable news? Other scientific organizations?...), who should be involved etc. You will submit a memo and present the results in class. More details will be provided after class has begun. We will have a Professor from the Steinhardt School give a guest lecture on environmental communications to help us organize our approach to this assignment. Length: 4 pages, double-spaced, 12pt font

Due date: Beginning of first class Week 12

Whaling (Week 12)

Readings:
The Sounding of the Whale: Science and the Cetaceans in the Twentieth Century by D. Graham Burnett, 2012 (Chapters 1, 2 & 4)

Guest speaker
- Clare Perry (Senior Campaigner at the Environmental Investigations Agency)

Sustainable Development (Week 13)

Readings:
Post-2015 Consensus, Smart Development Goals

Guest speaker
- Walter Baethgen (Professor at Columbia University)

Final paper presentations (Week 14)