

The Challenge of Climate Adaptation
ENV 670-660
University of Pennsylvania – MES Program
Spring 2014
Prof. Ira Feldman

Course Description:

The climate change dialogue in the U.S. has been, until recently, largely focused on the "mitigation" issues relating to the reduction in emissions of greenhouse gasses (GHGs). While mitigation remains critically important, the challenge of climate "adaptation" must also be considered to fully understand the implications of climate change. The scope of adaptation is largely dependent on how aggressively and successfully we address mitigation of greenhouse gas emissions, and, at present, adaptation approaches and best practices are still evolving.

As we begin 2014, the public and private sectors are entering a new phase in addressing the challenge of climate adaptation. On Nov. 1, 2013, the White House Council on Environmental Quality announced a new Executive Order titled, "Preparing the United States for the Impacts of Climate Change." At the same time, the Environmental Protection Agency released for public comment a set of 17 draft program and regional adaptation plans. We also have passed the one-year milestone after the devastation wrought by "Superstorm Sandy," an event that focused greater attention on adaptation and resilience and triggered several follow-on initiatives at the local, state, regional and federal levels. In the U.S., many communities and businesses now have advanced from resilience planning to action-oriented implementation. At the international level, adaptation was squarely on the agenda at the recently-completed UNFCCC meetings in Warsaw, Poland at COP-19.

This course will approach climate adaptation from a multidisciplinary perspective -- technical, political, financial, and regulatory. After introducing the basic concepts of climate adaptation, the course will explore the current state of play at each level of scale -- from the local to the global -- and examine several of the key emerging topics that will affect public and private sector activities.

Instructor Contact Information:

Phone: 202-669-1858

E-mail: ira@greentrack.com

Office hours by appointment

Course Materials and Text:

This is a rapidly evolving field with an interdisciplinary community of practice; new reports and other materials are continuously being released, posted on websites and discussed on blogs. Our goal in this course is to develop a shared understanding of climate adaptation.

Most course materials will be accessible on the web, distributed via email as attachments and/or posted on a CANVAS site.

There is no required text for this course, however, the following are recommended as useful sources of introductory materials:

- Lisa F. Schipper and Ian Burton (eds.), *The Earthscan Reader on Adaptation to Climate Change* (Earthscan, 2008) (Paperback edition, ISBN 9781844075317).
- Susanne C. Moser and Maxwell Boykoff (eds.), *Successful Adaptation to Climate Change: Linking Science and Policy in a Rapidly Changing World* (Routledge, 2013) (Paperback edition, ISBN 9780415525008)

Background resources are recommended below for each class session, and other materials may be suggested in advance of each class, *but these are intended as starting points only*. It is expected that you will use your research skills to locate additional and relevant information and that you will share your findings with classmates in class discussion and via blog or journal, as discussed below.

Assignments and grading:

There is no exam.

There will be two required papers – the first one will be an adaptation case study; the other can be (at your option) either a report on a "special topic" in climate adaptation (something not on the syllabus or a topic you wish to delve into further) or a second case study. (If a second case study is selected, then it must be compared/contrasted with the first case study.)

One of these papers (selected in consultation with the instructor) will be the basis of a short student presentation during the last several class sessions. Taken together, these 2 papers and the in-class presentation will comprise 2/3 of the final grade.

The remaining 1/3 of the final grade will be based on a combination of class participation and a student journal or blog tracking the weekly course topics. The "Climate Adaptation Scholars" group on LinkedIn has been established as our online discussion space.

Further details on these requirements will be discussed during first class session.

Class format:

This course is a graduate level seminar and will include presentations by the instructor and several invited guest lecturers. Ideally we will all engage in an interactive dialogue to develop our shared understanding. Implicit is the expectation that your preparation in advance of each session is essential in order to facilitate a lively and useful exchange of information on each topic.

I want to encourage you to pursue your individual interests, therefore I will offer great flexibility in tailoring the course requirements to reflect your own professional and disciplinary preferences. Please make me aware of your interests and expectations as soon as possible.

Note that changes to the schedule below may be necessary to accommodate invited guest presenters.

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Class schedule (with topics and resources):

Class 1 – Jan 16

- Orientation and course requirements
- Introductions
- Overview
 - *Distinguishing climate change “mitigation” and “adaptation”*
 - *Interdisciplinary nature of adaptation*
 - *Current political and scientific state of play*

Resources:

Ira Feldman & Joshua Kahan, “Preparing for the Day After Tomorrow: Frameworks for Climate Change Adaptation,” 8 Sustainable Development Law & Policy 61, Fall 2007: http://greentrack.com/articles/GT1003_article_Frameworks-for-Climate-Change-Adaptation_v02.pdf.

ISSD, “Summary of the Durban Climate Change Conference (28 November - 11 December 2011),” in Earth Negotiations Bulletin, Volume 12 Number 534 - Tuesday, 13 December 2011: <http://www.iisd.ca/vol12/enb12534e.html>

Class 2 – Jan 23

- Overview of UNFCCC framework and institutions
- US Federal policy approaches

Resources:

UNFCCC adaptation website:
<http://unfccc.int/adaptation/items/4159.php>

White House CEQ adaptation webpage:
<http://www.whitehouse.gov/administration/eop/ceq/initiatives/adaptation>

Class 3 – Jan 30

- Anticipated costs of adaptation
- “Risk management” and “Change management”

Resources:

Martin Parry, et al., “Assessing the Costs of Climate Adaptation,” (IIED report, 2009):
[https://workspace.imperial.ac.uk/climatechange/public/Martin%20Parry%20Book%20art\(web\).pdf](https://workspace.imperial.ac.uk/climatechange/public/Martin%20Parry%20Book%20art(web).pdf)

Roger Jones & Benjamin Preston, “Climate Adaptation and Risk Management,” (CSES report, 2010):
http://www.cses.com/documents/climate/15_Jones_&_Preston_Adaptation_and_Risk_Management_2010.pdf

Class 4 – Feb 6

- Stakeholders, public participation and governance

Resources:

Harriet Bulkeley, et al., “The role of institutions, governance and planning for mitigation and adaptation by cities,” in Hoornweg, D., Frire, M., Lee, M., Bhada, P. and Yuen, B (eds.) *Cities and Climate Change: responding to an urgent agenda*, World Bank, pp. 68-88 (2011):
<http://www.eci.ox.ac.uk/publications/downloads/bulkeley-schroeder-janda09.pdf>.

JoAnn Carmin, David Dodman, & Eric Chu. “Engaging Stakeholders in Urban Climate Adaptation: Early Lessons from Early Adapters.” UGEC Viewpoints 6: 8-10 (2011):
<http://www.ugec.org/docs/ViewpointsVI%20Nov2011.pdf>.

Class 5 – Feb 13

- Local level and regional case studies

Resources:

ICLEI and King County, Washington, “Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments” (2007):
<<http://cses.washington.edu/db/pdf/snoveretalgb574.pdf>>

CCAP report, "Urban Leaders – Lessons Learned" (2011):
[www.ccap.org/docs/.../Urban Leaders Lessons Learned FINAL.pdf](http://www.ccap.org/docs/.../Urban_Leaders_Lessons_Learned_FINAL.pdf)

New York City Panel on Climate Change Report, "Climate Change Adaptation in New York City: Building a Risk Management Response" (2010):
< <http://www.nyas.org/Publications/Annals/Detail.aspx?cid=ab9d0f9f-1cb1-4f21-b0c8-7607daa5dfcc>>.

Class 6 – Feb 20

- State-level adaptation plans and initiatives

Resources:

California adaptation plan:
<http://www.climatechange.ca.gov/adaptation/>

Maryland adaptation plans:
<http://www.dnr.state.md.us/climatechange/>

Class 7 – Feb 27

- Federal agency adaptation plans and activities

Resources:

Federal Agency Climate Change Adaptation Planning -- Implementing Instructions (2011):
http://www.whitehouse.gov/sites/default/files/microsites/ceq/adaptation_final_implementing_instructions_3_3.pdf

US EPA's climate adaptation policy statement (2011):
<http://www.epa.gov/climatechange/effects/downloads/adaptation-statement.pdf>

Class 8 – March 6

- Private sector initiatives and activities (part 1)

Resources:

UNFCCC Private Sector Initiative website:
http://unfccc.int/adaptation/nairobi_work_programme/private_sector_initiative/items/4623.php

Shardul Agrawala, et al., "Private Sector Engagement in Adaptation to Climate Change," (OECD report, 2011): <http://www.oecdilibrary.org/docserver/download/fulltext/5kg221jkf1g7.pdf?expires=1326342065&id=id&accname=guest&checksum=43EEB904ABE34CDD06EF8DAD1ECEE216>

-- SPRING BREAK --

Class 9 – March 20

- Financing climate adaptation
- Legal implications

Resources:

World Bank, "Mobilizing Climate Finance" (report to G20, 2011): http://www.g20-g8.com/g8-g20/root/bank_objects/G20_Climate_Finance_report.pdf.

Edna Sussman, et al., "Climate Change Adaptation: Fostering Progress through Law and Regulation," New York University Law School Environmental Law Journal, Vol. 18, No. 55 (2010): http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1675935

Daniel Farber, "A Legal Framework for Climate Adaptation Assessment," RFF (2009): <http://www.rff.org/rff/documents/RFF-IB-09-14.pdf>

Class 10 – March 27

- Community based adaptation
- Ecosystem based adaptation

Resources:

Saleemul Huq & Hannah Reid, "Community Based Adaptation" (IIED Briefing Paper (2007): <http://pubs.iied.org/pdfs/17005IIED.pdf?>>.

"Ecosystem-based Adaptation: A Natural Response to Climate Change" (IUCN report, 2009): <http://data.iucn.org/dbtw-wpd/edocs/2009-049.pdf>.

Class 11 – April 3

- Private sector initiatives and activities (part 2)

ACCO Climate Adaptation webpage: <http://www.accoonline.org/groups-adaptation-research.html>

Edelman Climate Adaptation blog: <http://climateadaptationexchange.com/>.

BSR Climate Adaptation website: <http://www.bsr.org/en/our-insights/climate-change-adaptation>

Class 12 – April 10

- Built environment
- Green Infrastructure
- Transportation

Student Presentations

Resources:

Bill Gething, “Design for Future Climate: Opportunities for Adaptation in the Built Environment,” (Innovate UK report, 2010):
<http://www.innovateuk.org/ourstrategy/innovationplatforms/lowimpactbuilding/design-for-future-climate-report-.ashx>

CCAP Green Infrastructure report (2011):
[www.ccap.org/docs/resources/989/Green Infrastructure FINAL.pdf](http://www.ccap.org/docs/resources/989/Green%20Infrastructure%20FINAL.pdf)

US DOT adaptation webpage:
http://www.fhwa.dot.gov/hep/climatechange/chapter_seven.htm.

Class 13 – April 17

- Disaster risk reduction and adaptation
- Public health
- Ethical issues

Resources:

Jessica Mercer, "Disaster Risk Reduction and Climate Change Adaptation: Are We Reinventing the Wheel?" *Journal of International Development* 22, 247–264 (2010): http://unfccc.int/files/adaptation/nairobi_work_programme/partners_and_action_pledges/application/pdf/nwp_expert_jessica_mercer.pdf.

Jonathan Samet, "Public Health: Adapting to Climate Change," RFF (2006): <<http://www.rff.org/rff/documents/RFF-IB-10-06.pdf>>.

Don Brown, "Going Deeper On What Happened in Durban: An Ethical Critique of Durban Outcomes," on Climate Ethics blog: <http://rockblogs.psu.edu/climate/2011/12/going-deeper-on-what-happened-in-durban-an-ethical-critique-of-durban-outcomes.html>.

Student presentations

Class 14 – April 24

- Need for new institutions, processes, tools
- Immediate prospects and the long-term perspective
- Wrap up

Student presentations